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# **Dear IJONTE Readers,**

International Journal on New Trends in Education and Their Implications- IJONTE appears on your screen now as Volume 5, Number 2. In this issue it publishes 20 articles. And this time, 51 authors from 9 different countries are placed. These are Australia, Bulgaria, Iran, Israel, Poland, South Africa, Slovenia, Turkey and United Kingdom.

Our journal has been published for over five years. It has been followed by many people and a lot of articles have been sent to be published. 242 articles have been sent to referees for forthcoming issues. They will be published according to the order and the results. Articles are sent to referees without names and addresses of the authors. The articles who get positive responses will be published and the authors will be informed. The articles who are not accepted to be published will be returned to their authors.

We wish you success and easiness in your studies.

Cordially,

1<sup>st</sup> April, 2014

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# REDEFINING A TEACHER EDUCATION PROGRAM: CLINICAL SUPERVISION MODEL AND ULUDAGKDM

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# ABSTRACT

Teaching practice develops three-way partnerships among the university, cooperating school, and the teacher trainee to improve trainees' performance in the classroom. The partnership becomes meaningful when stakeholders are fully engaged in mutual cooperation. In order to facilitate collaboration and communication among the stakeholders, a web-based Learning Management System, entitled UludagKDM was developed as part of a Tübitak-EVRENA project. This study, qualitative in nature, was conducted with university supervisors and teacher trainees to examine the effectiveness of UludagKDM regarding its organizational and communicational aspects. The data, analyzed through categorization of themes, revealed that the existing system needs to be re-examined or another social media should be considered for the purposes of communication and feedback.

Key Words: Teacher training, Clinical Supervision Model, Teaching practice.



# INTRODUCTION

The aim of teaching practice in teacher education is to give an opportunity for teacher trainees (TT) to experience a real life classroom environment. In this environment they are likely to face authentic classroom issues and get feedback from their peers, cooperating teachers (CT) and university supervisors (US) in order to be more effective educators. Dwindling financial resources have forced many university teacher training programs to explore alternative supervision models. Advances in technology have enabled these alternative models to utilize web based techniques for communication with the TT and CT. These new techniques have enhanced teacher training by not requiring as much in person, face to face interaction.

Thus, the use of this type of technology in teacher training is increasing and educational researchers have begun to study this phenomenon. Some of the researchers investigated the teaching environment in general such as online and blended. As an example of investigations of the platforms, King (2002) advocated that online courses, especially hybrid courses, designed with a format offering a flexible, content rich, and personalized learning environment provide benefits not only for knowledge and practice in teacher education but also developing a lifelong learning perspective and professional development. Similarly Caner (2010) stated that a blended learning environment would improve the effectiveness of teaching practice by providing more feedback opportunities among pre-service teachers and their supervisors. Cheong (2010) also conducted a study to investigate the change in pre-service teachers' teaching efficacy by using "Second Life" as a virtual learning platform. He stated that "Second Life" platform can offer valuable teaching experiences to pre-service teachers by collaborative teaching practice opportunities.

In addition to the studies mentioned above, there are some studies focusing on the effect of specific technologies used in these environments to teacher training. For example, Wu and Lee (2004) prepared a computer-mediated communication environment in a teaching practicum course for computer science preservice teachers and experienced computer teachers. They found that this environment was helpful for supporting pre-service teachers' learning. They stated that a video-enhanced environment provided the opportunity for pre-service teachers to increase reflection on their teaching. They also found that the skills of experienced teachers in using such technology-oriented learning environments were enhanced. In another experimental research study Whipp (2003) investigated the effect of an online discussion platform on preservice teachers' level of reflection in their writings. Prospective teachers were inclined to write more detailed reflections and the online platform became more effective when there were more possibilities for online collaboration, discussion of relevant readings, and questioning from teachers and peers. Moreover Koç, Peker, and Osmanoğlu (2009) studied the effect of online video case discussions among pre-service and in-service teachers. They reported that there was a positive interaction between the video cases and discussion participants. Further they found that pre-service and in-service teachers were able to achieve theory-practice connections. In addition, the online forum discussion of video cases supported professional development of pre-service teachers because of collective engagement of pre-service and in-service teachers in that environment. In a different study, Hramiak, Boulton and Irvin (2009) investigated the use of blogs as an alternative to reflective paper-based diaries in teacher training. They stated that blogs were more beneficial than paper-based diaries because blogs provided continuous opportunities for supervisors to assist pre-service teachers in their reflective practice. While these studies demonstrate the effectiveness of online technologies in enhancing the teaching practice, they are generally dyadic in nature (USs and TTs). In order to achieve maximum effectiveness, the use of these technologies in the teaching practice must be triadic, and include CTs as well. This approach stands in stark contrast to the traditional teaching training practices in Turkey.

# **Teacher Education in Turkey**

Teacher education programs in all Faculties of Education in Turkey follow a prescribed sequence of courses as determined by the Ministry of National Education. These courses are designed to provide the TTs with knowledge of their field, educational methodologies and class management techniques. The single most important aspect of teacher training is the teaching practice. Teaching practice enables the TT to combine their



knowledge and skills into effective teaching practice (Gürsoy & Damar, 2007; Özkılıç, Bilgin & Kartal, 2008). In most faculties this course is conducted with traditional face to face meetings. This top-down model does not promote collaboration between USs and TTs. It also does not encourage TTs' reflection on own teaching practice. In this traditional model, the US is only an evaluator usually providing feedback to the TT about deficiencies in their teaching performance. Communication and feedback are important components of the teaching practice process (Eraslan, 2009; Erdem, 2008).

This idea triggered a collaborative research project between Faculty of Education at Uludağ University in Turkey and the College of Education at Georgia State University in the USA. The project goal was to develop, implement, and evaluate a "Clinical Supervision Model" (CSM) for the teaching practice. This model provides a framework for continuous, systematic and constructive feedback to TTs. The project involves the development of a unique education course that can be used by USs, CTs and TTs. The aim of this new teacher training course is to develop three-way partnerships among the university, cooperating school, and the teacher trainee to improve trainees' performance in the classroom. In order to facilitate easier collaboration and communication among the three stakeholders, the project developed a web-based Learning Management System, UludagKDM.

The main objective of the project is to implement a clinical supervision model to establish a triadic cooperation between USs, CTs, and TTs. A learning management system called UludagKDM was designed to support the teaching practice course during 2012-2013 academic year. As a part of this project, current study briefly describes and gives examples of how teacher trainees used UludagKDM, identifies perceptions of teacher trainees in terms of the use of the system. This project is original in terms of being the first offering a hybrid teaching practice course in elementary teacher education programs in Turkey.

# **Clinical Supervision Model**

The Clinical Supervision Model (CSM) is a five-stage model to help teacher trainees' professional development through observation and three-way feedback (Acheson & Gall, 2003). The CSM cycle includes pre-conference, observation and data collection, data analysis, post-conference, and reflection stages (Figure 1). The CSM requires the cooperating teacher and the supervisor to give systematic feedback to the teacher trainee for her/his professional development during the teaching practice process. The three stakeholders, supervisor, cooperating teacher and the teacher trainer, cooperatively work via three-way conferences before and after the observation of the teacher trainee's teaching. The model gives opportunities for reflection and enhances cooperation.



Figure 1: Clinical Supervision Model Cycle



# UludagKDM System

As part of the project, a learning management system on Moodle platform was designed to include information about the CSM. This included an online version of the teaching practice manual developed for this project. The system has also included weekly course information, example videos of pre/post conferences, and evaluation forms and surveys. Teacher trainees were required to submit their course requirements using UludagKDM system. The unique feature of this system was to include all stakeholders of teaching practice course.

# METHOD

The overall goal of the project was to evaluate the effectiveness of the CSM in improving TTs performance in the classroom. Thus a quasi-experimental design was utilized where TTs were randomly placed in either the group that use the CSM and UludagKDM (experimental group), or the group that experienced the traditional teaching practice (control group). This paper describes and analyzes the CSM group's use of the UludagKDM via interviews of 20 randomly selected TTs in the experimental group.

#### **Participants**

A random group of ten TTs were interviewed at the end of the fall term and a different random group of ten TTs at the end of the spring term. Participants were 4th year TTs at 2012-2013 academic year at a large public university at western Turkey. They were almost exclusively female and 21-24 years old.

#### **Data Collection**

An interview technique was employed for data collection. In order to allow the participants' flexibility in their answers, open-ended questions were prepared. In the first step of data collection process, selected TTs were contacted via e-mail. All the interviews were conducted in the researcher's office which is a quiet and comfortable place for the interviews. Reflective listening techniques (Jentz & Murphy, 2005) were employed during face-to-face interviews. The interviews were carried out in fall and spring semesters of 2012-2013 and were voice recorded. Interviews took almost half an hour. All the voice recorded interviews were transcribed verbatim by the researchers.

The current paper reports on a qualitative study examining TTs' and USs experiences with the UludagKDM system. Specifically how the use of the system impacted collaboration during the teaching practice process. TTs were asked to answer below questions:

- 1. How often did you use UludagKDM?
- 2. How did you contact/get feedback from your US/CT through UludagKDM?
- 3. What do you think about the navigation of UludagKDM?
- 5. What else do you suggest to be included in UludagKDM?

USs were asked to answer below questions:

- 1. How often did you use the UludagKDM and for what purposes?
- 2. How did you contact your TTs (through UludagKDM/phone/email)?
- 3. How did you give your feedback to your TTs (through UludagKDM/phone/email)?
- 4. What kept you from using UludagKDM?
- 5. Would you prefer using Facebook instead of UludagKDM?

#### **Data Analysis**

Data collected in face-to-face meetings were put in a standard format for data analysis using the "descriptive analysis" technique. The aim of the descriptive analysis is to arrange data and report it to readers by interpreting findings (Yıldırım & Şimşek, 2005). A descriptive analysis, the model developed by Strauss and Corbin (1990) was employed: (i) coding, (ii) determining themes, (iii) arranging data according to codes and themes, (iv) interpreting the findings and (v) reporting. In order to ensure confidentiality, a pseudonym was given to each participant.



# Reliability

In order to ensure reliability of the study, some precautions were taken, such as (i) data were used as direct quotations from the interviews without making any comments on them, and (ii) a random sampling method was used in order to get opinions and experiences of TTs with UludagKDM. The interview questions were asked in a similar manner. Data were analyzed by two independent researchers to confirm the themes found. In addition, consistent records were kept of the interviews and the same steps in coding and analyzing data were used by each researcher.

#### RESULTS

#### **Fall Semester**

In response to the first research question, most TTs reported that they only used UludagKDM during the first and final week of the semester. Only two TT reported that they logged in UludagKDM every week to submit course requirements and check if there is an announcement or message from their USs. Two TTs reported that since they did not have an internet connection at home, they submitted all course requirements at the end of the semester and did not use the UludagKDM until then. One TT stated that "If there had been announcements we would have to check UludagKDM more often."

In response to the second research question, it was reported that none of the TTs received feedback from their supervisors through UludagKDM system. Rather, they communicated with their USs via face-to-face, e-mail, or phone. TTs preferred either face-to-face meetings (four out of ten), phone calls (two out of ten), email (two out of ten), or both face-to-face and email (two out of ten) communication for getting feedback for their lesson plans and teaching. One TT said that "I would like to receive instant feedback for my lesson plans and my teaching. That is why I preferred to visit my professor at her office and talk face-to-face. UludagKDM would be so formal and not adequate to get decent feedback." Another TT, email user, preferred using email to get feedback since she was able to make the changes and send newer version to her US as much as she needs until her US is satisfied with the result. She stated that "I am more familiar with email than UludagKDM. It was easier and faster for me to email my modifications through email and get feedback from my US."

The third question was about the navigation and usability of UludagKDM system. Although four TTs had concerns with the navigation, six were able to figure out how to use the system at the beginning of the semester. Positive comments included statements such as "Even a novice Internet user can use this system with no help" and the other was "Since I am an active Internet user, I had no problem with UludagKDM." The first interviewee was satisfied with the system and she was using it more than once a week. Although she received help with the registration with the system, she used the rest without any help. There were some negative perceptions of especially two TTs. One of them reported that the navigation of the system was confusing. She couldn't even register by herself until the last week of the semester. She contacted to her US via phone and CT face to face at school in order to get feedback. She submitted her course requirements and lesson plans in person to her supervisor. Three other TTs had negative feelings about the system and they reported that they prefer to get face to face feedback and discussions instead of using an online platform. They also had problems while uploading their files to the system.

When TTs were asked about their suggestions to improve UludagKDM, one suggested including chat sessions to get instant feedback from her US and CT, and also to share experiences with her friends. She also suggested putting a document into UludagKDM homepage consisting of examples of educational materials to use during teaching and some suggestions for course management. She said that she would use the system more if we provide more useful documents to TTs. Another TT offered to include a forum so that all TTs can share their experiences during the practicum and they can suggest solutions to problems related to UludagKDM. One of the TTs suggested not using UludagKDM at all since he does not see it useful and prefers face to face feedback and discussions. Another one suggested including a guide for using the system at the homepage.



The experimental group (48 teacher trainees, 10 supervisors and 10 cooperating teachers) were supposed to use UludagKDM to give feedback to each other at least three times during 14-week semester and evaluate the clinical supervision model and each other at the end. Although everybody in the experimental group filled out the necessary forms, TTs reported that they discarded those forms, instead they contacted their USs and CTs face to face.

# **Spring Semester**

During 2012-2013 spring semester, UludagKDM system redesigned to include TTs' suggestions to make it more easy to use and to allow teacher trainees share multiple files with their supervisors. Although the TTs were more positive about UludagKDM, it is reported that their use was mostly limited to homework submission. Out of 10 interviewees only one reported that she and her supervisor were communicating through UludagKDM from time to time. She was the only TT who used the system more than once a week. The rest of them were communicating and getting feedback from their USs by phone, email or face to face. None of the CTs have used the system either. They only used the system at the end of the semester to fill out the evaluation forms and the surveys.

In the spring semester, TTs reported that they found the UludagKDM more user-friendly. They stated that after a semester of use, they got used to use the system and the navigation. All suggested that UludagKDM has to have a forum to share experiences and lesson plans or a chat option to ask questions related to the teaching practice. Two of the TTs did not have internet connection available, so they reported that they had problem using the system and have not submitted any course requirements at all through UludagKDM. They submitted a portfolio at the end of the semester instead of using UludagKDM.

When we asked whether their USs used the UludagKDM for giving feedback or for other announcements, only one reported positively. One said that "since we were having a face to face meeting every week, we did not need to use the UludagKDM for communication. When I need to ask for help after our meeting, I was calling my supervisor by phone." Another comment was "Phoning was easier than using UludagKDM. I was sending my course requirements by email and submitting through UludagKDM just to obey the rule of the course." The other TT reported that "UludagKDM was good for submitting course requirements since when we send them by email, our US might not organize them all. UludagKDM kept them more organized. But, it was not convenient for communication. Phone or email is a better way." One teacher trainee was still not sure how to use the system. She said that "I still don't know how we would communicate through UludagKDM."

When they were asked about their suggestions, all of the interviewees suggested including chat sessions and announcement link, 6 suggested having forum and 2 recommended to make the UludagKDM look like Facebook.

#### **University Supervisors' Interviews**

Eight USs were supervising the experimental group of 48 TTs during the project. All USs were interviewed about their experience with UludagKDM at the end of spring semester. While six USs were female, two were male. Four USs had at least ten year of experience on supervising, while three had less experience. They were between 26 to 45 year old.

In response to the first question, USs reported that they used UludagKDM just to check whether TTs submitted course requirements weekly. One US said that "I was using UludagKDM often to check TTs course requirements and lesson plans. Through the end of semester I used the system less and prefer phone or email." For questions about communication and feedback through UludagKDM, USs responded that their preference for communication was email (8), phone calls (7) and face-to-face meetings (2). None of them used the UludagKDM for communication purposes. USs used these methods for feedback as well. One US said that "I gave my written feedback by email and oral feedback by phone. After the observations we did post-conference meetings face to face."



For the response to the fourth question, USs reported below reasons for not using the system:

- Navigation was so confusing, hard to use, and time consuming
- Email and phone calls were easier and faster
- It was not a requirement
- USs were not familiar with the system
- TTs had problems using the system so do USs
- The system should be more user friendly
- Menus and sub-menus are so confusing

One US suggested to change the look of the system and use less menus and links so that she might use system. She reported that "I was so confused about finding the right pages to check TTs lesson plans and send TTs messages. TTs were not able to find my course materials, so we had to call each other even at nights." Another US reported that "I am so used to talk face to face with my TTs during teaching practice. I did not need to use another system for communication or feedback."

Because of the low use of UludagKDM, USs were asked whether they prefer to use Facebook or other similar social media instead of UludagKDM. Out of ten TTs, five were positive, 4 were negative and one was not sure. Positive TTs reported that almost everybody has a Facebook account and they use it all day long. It would be easier for them to communicate with their USs. Negative comments were about Facebook being very informal media and should stay like that. One TT said that "Facebook is for fun not for class work" One of TTs had no Facebook account and was not sure if she would like to have one for class work. USs were mostly positive about using Facebook. One of them reported that "It would be useful to share experiences to each other and answer common problems at once." Another US stated that "If it is hard to modify UludagKDM soon, it would be better to use Facebook since everybody knows how to use it." Other US said that "Close groups in Facebook can create a better network between US and her TTs and let them all share ideas and problems in one place faster and easier."

# **CONCLUSIONS AND DISCUSSION**

Overall responses to the interview questions from the fall and the spring indicated that TTs found the UludagKDM system difficult to use and only used it to submit course requirements. It was not used as a means of communication, which was one of its primary purposes, between TTs and their USs and CTs. We believe that the primary reason TTs did not use the system was the lack of its use by USs. Aside from course requirement submission, there were no announcements or document sharing for TTs by USs or CTs on the UludagKDM system. We believe that another issue surrounding the lack of use UludagKDM system is related to the Moodle platform. As mentioned previously TTs found the Moodle platform difficult to navigate and not user friendly. USs chose not to use chat or form option on Moodle as they found it difficult to navigate. All respondents indicated their preference towards more informal ways of communication. We believe that this is due to the emphasis on this type of communication, which is more compatible with Turkish culture. During the registration process it became evident that CTs were not technologically savvy, even two had no email addresses. This may cause CTs not use the UludagKDM system. They gave their feedback through face-to-face discussions during conference sessions following TTs teaching.

Because of the TTs expressed negative opinions regarding UludagKDM, in the spring semester TTs were asked whether Facebook could be an option to replace UludagKDM. While five teacher trainees were positive, four were negative and one was not sure. Positive ones were suggesting that if there is a group created for this course they can share their experiences with their friends, get feedback from everyone and help others. The other one preferred Facebook since it has a chat option and everybody uses Facebook. One response was "If there will be a close group page, Facebook is better. UludagKDM is OK too but I prefer Facebook." Another similar comment was "When we turn on our computers, Facebook is on. That's why it would be easier to use Facebook. We can see posts immediately. We would be following everything updated." One teacher trainee



was undecided. She thought that "Facebook is a different social media. It is not for scientific purposes. We can only share photos and experiences but we should not use it instead of UludagKDM." Two interviewees were not using Facebook and were against the idea of its use. The other two were users of Facebook, but they would like to keep it personal. One reported that "Facebook is for our friends, for fun and to spend our spare time. The course is more serious. Keep the course at UludagKDM but reorganize it to make it more fun to use."

In conclusion, based on the feedback from TTs regarding the UludagKDM, Facebook could be an option for the next semester. Online technology can help to keep the line of communication open between all stakeholders by preventing physical distance from impeding communication. A number of studies have indicated that the successful pedagogical use of technology depends on teachers' attitudes and acceptance towards technology.

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# **GOVERNMENTALITY OF YOUTH: EUROPEANISATION AND DISPOSITIF OF LEARNING**

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"Europe's future depends on its youth. Yet, life chances of many young people are blighted" (COM, 2008, p. 7).

# ABSTRACT

The aim of the paper is to describe the policy and practice of forming European space of governing youth by creating a need for transferring and exchanging data, information and knowledge about youth. I attempt to elaborate thesis, that supply and demand for data exchange indicate a system of governing installing less obvious relations of power. This demand for data, information and knowledge releases and implements characteristic technologies of government and the concepts of "truth" about the world. Drawing upon the analyses of governing youth, I suggest introducing the notion of a dispositif of learning as a category used to describe a particular type of power relations constituting the identity of contemporary youth in the European Union policy.

Key Words: Youth policy; governmentality; europeanisation; dispositif; learning.

# INTRODUCTION

The concept of youth policy refers to legal acts and accompanying them practices of international and national institutions, and other agendas, whose actions are aimed at putting within their reach all important spheres of social functioning (education, the labour market, culture, social work, health, participating in political life, functioning within the legal system, etc.) (Sinczuch, 2009). The aim of this paper is to describe the policy and practice of forming European space of governing youth by creating a need for transferring and exchanging data, information and knowledge about youth. I attempt to elaborate Maarten Simon's (2007) thesis, who argues that supply and demand for data exchange indicate a new system of governing installing less obvious relations of power. This demand for data, information and knowledge releases and implements characteristic technologies of government and the concepts of "truth" about the world. Drawing upon the analyses of governing youth, I suggest introducing the notion of a dispositif of learning as a theoretical category used to describe and interpret a particular type of power relations constituting the identity of contemporary youth in the EU policy.

Both the meaning of the notion of dispositif and all reflections and analyses presented in the paper have been influenced by Michel Foucault's, Mitchell Dean's and other theoreticians' of government and governmentality concepts thought. I undertake an analysis of relations between power and knowledge, of the space which emerges between social practice and its representation. Such an analytics of government includes examining various ways of thinking of the character of power and knowledge about who and what is to be the subject of government, the analysis of constituted identities and techniques and strategies used to achieve certain goals (Dean, 2010).

These immanent interrelations of knowledge and identity constructs in power relations place these analyses within the area of studies of education policy, i.e. the policy oriented at creating conditions for human



development. The notion of development is not unequivocal: its definitions and the concepts of processes and activities facilitating human development have their world-view and philosophical bases.

From this perspective, an interesting question arises which concerns power relations within the area of European youth policy, including its implementation in Poland. Before presenting the results of my investigation, I will discuss some basic theoretical and methodological assumptions.

# ASSUMPTIONS AND METHOD - ANALYTICS OF GOVERNMENTALITY

From Foucault's perspective, government means constructing a field of possible activity, the "conduct of conduct", i. e. working upon our areas of freedom according to what we believe to be true about who we are (Dean, 2010). Human activity is thought as something which can be regulated, shaped and directed towards particular goals according to a certain rationality<sup>1</sup>. The aim of an analytics of governmentality is not to evaluate particular rationalities but to attempt to identify and describe these rationalities which support, reinforce or repeal certain concepts of the subject. What underlies the notion of governmentality is the fusion of socially constructed knowledge and power. In this context, I assume that young people govern themselves according to what they take to be true about their existence, and according to what and in what ways should be subjected to directing and operating. On the other hand, these ways of governing oneself and others construct certain "truths" about youth. Governing youth is unthinkable without a particular concept of youth which defines a discursive field for the rationalisation of exercising power.

An analytics of government examines the conditions of existence and the ways of operating of certain dispositifs (apparatuses) which can be understood as "regimes of government" (Dean, 2010), i.e. more or less organized at a particular time and place ways of producing knowledge, problematisation and practice. Regimes of practice are institutional practices and, at the same time, they include various ways of thinking about those institutional practices and turning them into objects of knowledge and subjecting problematisation.

An analytics of government attempts to show in what way a dispositif originates certain forms of knowledge and depends on them; it considers in what way this regime possesses a technical dimension and analyses characteristic techniques and mechanisms through which these practices operate, seek to realize their goals and achieve results. According to Dean (2010), this dependence of regimes of practices on forms of knowledge accounts for their relation with definite, explicit "programmes" exploiting certain types of knowledge to act upon the desires, aspirations and needs of agents existing within them. Such "programmes" will be discussed with reference to youth policy.

Summing up this part of discussion, I want to emphasize the fact that youth policy involves not only power relations but the issues of oneself and identity. Power, knowledge and the subject determine three general axes of government which correspond with what Dean called the areas of *techne, episteme* and *ethos* (Dean, 2010). An analytics of government involves examining:

- 1) fields of visibility, "areas of visibility", characteristic forms of imaging and representing youth,
- 2) rhetoric, characteristic vocabulary and procedures of producing knowledge,
- 3) ways of acting, intervening and directing,
- 4) characteristic ways of forming subjects, actors and agents (Dean, 2010).

Undertaking an attempt at an analytics of governing youth at the European level, I relied on the data and information obtained from documents and reports of the UE published on the European Commission website

<sup>&</sup>lt;sup>1</sup> Rationality is understood here as a way of giving sense, i. e. as a form of thinking striving to be clear and systematic about the aspects of things existence, about what they are like and what they ought to be like (Dean, 2010).



as well as materials issued by the Foundation for the Development of the Education System<sup>2</sup> – a national agency which coordinates the realisation of the EU youth policy in Poland<sup>3</sup>.

# RESULTS

The analysis of documents, reports and other publications of the EU and, on the national level, publications of the Foundation for the Development of Education System indicates specific logic of forming subjects and other agents. It is the logic of intervention into education policy and practice, which activates the need to provide feedback information. This "driving force" generates data and information by putting forward proposals based on " best practice" to be used in education policy.

The directives and assumptions at the level of particular mechanisms and techniques (the area of *techne*) are present in the policy and practice of creating common European space, a comprehensive map of youth policy – space for making comparisons, best practice models and competitiveness. The areas of visibility and their underlying indicators enable continuous comparison of results achieved by particular Member States. I discuss feedback system and evaluation techniques as specific "technologies of achieving results" (Walters, Haahr, 2011).

# Creating the EU space of youth policy

The term "EU youth policy" refers to the growing number of the EU initiatives aimed at youth as an important subject of the UE politics. The UE programmes for youth have been implemented since 1988. The legal basis for the EU programmes within the "youth" area is provided by Article 149 of the Treaty of Amsterdam signed in 1997 (assumptions concerning youth policy are included in chapter 3 titled *Education, Vocational Training and Youth* (Wallace, Bendit, 2009)). Aside from apparent interest in formal education, the document introduced a programme for informal education named "Youth for Europe". The aim of this programme was to organise culturally differentiated experiences enabling the development of cross-cultural competence (such as tolerance or language skills) which is considered as a necessary condition for European citizenship. Thus, activities within programmes for formal and informal education enabled exchanging information and experience in the area of youth between Member States (Wallace, Bendit, 2009). Today, the major documents determining youth policy of the EU are: "The White Paper. A New Impetus for European Youth" (2001), the "Revised European Charter on the Participation of Young People in Local and Regional Life" (2003), the "European Youth Pact" (2005) and "Youth Strategy" (2009). Various programmes aimed at youth and people working with young people are essential elements of this policy.

A renewed framework of European cooperation in the youth policy field for the years 2010-2018 has been defined by the EU Youth Strategy approved by the EU Council in 2009 (Council Resolution, 2009). The aims determined by the Strategy are being realised on the basis of the open method of coordination (OMC) employed in cooperation between the EU Member States. Although youth policy is implemented at the EU level, the Commission does not have authority to replace national policies. Nevertheless, a comprehensive map of the EU youth policy is being created, where particular practices and legal regulations of a country are put within visible space at the EU scale.

The practice called the Open Method of Coordination as a way of enforcing integration and effective realisation of common aims by all Member States was first approved at the European Council Summit in Lisbon in 2000 (Walters, Haahr, 2011). The major elements of OMC are included in four points:

- 1) central setting of strategic goals (at the meetings of European Councils and Councils of Ministers, preceded by preparatory works of the European Commission);
- 2) measurability (quantification of goals and results enabling their comparison, e.g. between Member States);

<sup>&</sup>lt;sup>2</sup> Foundation for the Development of the Education System - the State Treasury Foundation which aim is coordinating of educational programmes of the European Union, among others.

<sup>&</sup>lt;sup>3</sup> See the list of the data base in *References* 



- 3) decentralised implementation (at the Member State level and lower) without explicit tools for realisation strategic goals;
- 4) systematic monitoring, evaluation and reporting results of strategies implementation (through regular comparison and peer evaluation by Member States and the European Council) (Walters, Haahr, 2011).

According to the above assumptions, the goals and fundamental priorities of the EU youth policy are agreed upon at the EU level by the representatives of the European Commission and the governments of Member States, and Member States are responsible for the ways of their realisation. In this mechanism, continuous evaluation of progress and peer comparison of achieved results play a significant role. Although the European Commission does not intervene into the methods of implementation of particular central directives, Member States are obliged to submit regular reports which provide a basis for the assessment of the extent of agreed goals realisation. The open method of coordination calls on Member States to undertake specific activities within "fields of action" and suggests a set o tools, which include, first of all, data based policy, learning from each other, regular reports on progress, disseminating results and monitoring, structural dialogue with young people and youth organisations (European Commission, 2012, p. 4).

Youth Strategy is represented as a tree rooted in a multi-sectoral approach which grows into eight branches ("fields of action"): Education and Training, Employment and Entrepreneurship, Social Inclusion, Health and Well-Being, Participation, Creativity and Culture, Voluntary Activities and Youth and the World (As seen in Figure 1).



Figure 1: Youth Strategy as a tree rooted in a multi-sectoral approach with eight branches Source: Joint Report of the Council and the Commission on the implementation of the renewed framework for European cooperation in the youth field, OJ C 394, 2012, p. 6.



The image of the branched tree shows connections between particular fields of action: "Health and Well-Being" grows from the branch "Employment and Entrepreneurship", "Participation" from "Creativity and Culture", "Social Inclusion" from "Education and Training", and, at the top of the tree, there is a field called "Youth and the World". The eight areas of multi-sectoral actions aimed at youth gather together differentiated and heterogeneous social practices and create their representations. Continuous evaluation of youth policy turns these multi-contextual social processes into comparable and measurable indicators, which make it possible to find places of "best practice" in a single view and create lists and comparisons. This characteristic normalisation included in the discourse of "best practice" operates relying on a set of 40 indicators of evaluation of the all eight "fields of action". The set of indicators, developed by a "team of experts" in 2011, helps classify and assess youth characteristics and behaviours which have been made "visible". For example, in the field of "Education and Training", four basic indicators of goals realisation have been distinguished, which are presented in the documents of the UE in a table consisting of the following elements: indicator's name, its definition, goal for the EU to be achieved by 2000 and institutions gathering and disseminating data and information (as seen in Table 1).

Table 1: Measurement indicators in the field of action "Education and Training"	

Indicator		Definition and comment
(1) Early leavers	from education and	Definition: % of the population aged 18-24 with at most lower
training		secondary education and who is no longer in education or
		training.
		EU target: Less than 10 % by 2020.
		Source: Eurostat, EU LFS.
(2) Low achievers	Reading	Definition: Share of 15-year olds who get a score of 1 or below
		(on a scale from 1 to 5) in PISA tests.
	Mathematics	EU target: less than 15 % by 2020.
		<u>Source:</u> OECD – PISA
	Science	
	Science	
(3) Tertiary education attainment		Definition: Share of population aged 30-34 with tertiary
		education attainment.
		EU target: By 2020, at least 40%.
		Source: Eurostat, EU LFS.
(4) Young people (20-24) having completed		Definition: Percentage of the population 20-24 having
at least upper		completed at least upper secondary education (ISCED level 3c
secondary education		long).
		Source: Eurostat, EU LFS.

Source: Commission Staff Working Document On EU indicators in the field of youth, SEC(2011) 401 final, p. 5.

Similarly, a few indicators, institutions responsible for their measurement and an expected goal to be achieved by 2000 were ascribed to each field of action. The technique which serves to create the EU space of youth policy is visualization of the field which is managed. A map, a graph and tables which combine distinct places, contexts and factors create common space for comparisons, references, and positioning according to particular indicators. In this context, the aspect of governing youth resting on a particular kind of information politics becomes distinctly evident. It is not only the problem of more and more advanced techniques of gathering data and information, but, first of all, of activating and reinforcing the need for feedback information on progress, results and 'best practice" in realisation of particular programmes and strategies, and disseminating them at the EU scale. The official bureau of statistics of the UE, Eurostat presents ranking the EU Member States on



their progress in achieving particular goals in the form of ratings and tables. A subsection concerning youth which shows the latest data about indicators has been created on the Eurostat website.

This practice of creating a comprehensive map involves a few elements: systematic evaluation of the distinguished "fields of action" relying on some chosen indicators, numerous expert reports on the situation of youth in Europe, reports on progress and results of youth policy realisation (at a national and the EU levels) and an expanded network of information, which enables efficient and effective flow of gathered data and information. The effectiveness of the open method of coordination is supported by an information network which offers current knowledge about education, Europe, trainings, work and youth activity to young people, their tutors and teachers. A great deal of complex tools serve these aims: information programmes and news portals<sup>4</sup>. This task is efficiently realized by Eurodesk network. Within the Eurodesk programme, the consultants from across Europe are in permanent touch with each other online and they create a database and gather information for youth concerning education, Europe, trainings, work and youth activity. Moreover, they inform about the most important youth events, cooperation opportunities and possibilities of applying for funding in Poland and Europe. They are also responsible for the content of the European Youth Portal (www.europa.eu.int/youth).

A major technique serving realisation of this type of information politics is regular reporting progress, advancement and results of the national-level implementation of youth policy. Information concerning realisation of Youth Strategy in 2010-2012 was gathered by the European Commission from reports submitted by all member states by the end of 2012. The reports were prepared by providing answers to a comprehensive questionnaire concerning all aspects of the Youth Strategy<sup>5</sup>. All national youth reports are available on the European Commission website. It is worth pointing out that Norway, Switzerland, Montenegro and Croatia submitted these documents on a voluntary basis. The summary of the national reports was compiled "cumulatively": the answers to various questions were summed up; the analysis of trends in separate "fields of action", specific projects and initiatives, and the effectiveness of use of EU funds by each country were presented. The authors of the summary emphasized *learning from each other* as a key factor for the EU Youth Strategy implementation and therefore examples of good practices carried out by the Member States were highlighted (European Commission, 2012).

The "cumulative" report includes general overview of legislations, political strategies and inter-ministerial cooperation which shape youth policy in separate Member States and non-EU countries (31 states altogether were described). The report also shows the way these countries view the EU Youth Strategy impact for national and local youth policies and connections between the EU and national levels.

The report stresses the links between national youth policies and the UE Youth Strategy priorities, pointing out that a number of actions connected to the five "fields of action" were implemented in Member States even before the UE Youth Strategy came into force. According to the National Youth Reports, close relationships between the UE Youth Strategy and National Youth Strategies make the distinction artificial. These common priorities pointed out in the majority of reports are:

- "cross-sectoral and inter-ministerial cooperation;
- convincing local authorities to put 'youth' on the agenda;
- highlighting the added value of non-formal education and youth work for other policy areas;

<sup>&</sup>lt;sup>4</sup> For example: The European Youth Portal (<u>www.europa.eu/youth</u>), European Job Mobility Portal EURES (<u>www.europa.eu.int/eures</u>), Online European Knowledge Centre for Youth Policy (<u>www.youth-knowledge.net</u>), portal for schools interested in cooperation with schools from other EU countries e-Twinning (<u>www.etwinning.net</u>).

<sup>&</sup>lt;sup>5</sup> National Youth Reports concern the period from the beginning of 2001 until the end of 2011 and mention activities planned for 2012.



• consequences of high youth unemployment and its social impact on young people" (European Commission, 2012, p. 17).

Submitting reports leads to collecting data and information which are then used for correcting programmes for youth and people working with youth and become fundamental tools for the realisation of the UE goals. Evaluation provides a basis for creating modified versions of programmes and constructing new ones. This is what happened, for example, in 2007, when the UE new generation programmes concerning informal education, which are to be realised until 2013, came into force (Youth policy, 2007). At the national level, data and information concerning the implementation of specific European programmes aimed at youth are collected by specially appointed national agencies. Each of the national agencies is responsible for organising national and international trainings and workshops for people interested in participating or already taking part in projects of the EU programmes. They also provide information and help for potential participants and beneficiaries of a programme during the preparation and realisation period of projects. The programmes implementing the EU youth policy in Poland are coordinated by the Foundation for the Development of the Education System. Entering the EU structures by Poland in 2004 decided on the youth policy orientation. "The State Strategy for Youth for 2003-2012" (2013) adopted by the Council of Ministers in 2003 includes a number of stipulations, strategic objectives and fields of action addressed to youth. The goals set out under the Strategy are realised through the Open Method of Coordination applied in the area of cooperation between the EU Member States.

#### Youth as an object of expertise

In the context of the above considerations, we can notice that the policy of management "through data" is not just limited to governing which relies on the results of current empirical studies, but it is realised due to the connection between aspirations and needs which justify the existence of the specific form of government. What I mean here is generating and fostering a specific need in society: on the one hand, a need "to be informed", and on the other hand, a need to produce more and more "certain" and reliable knowledge. The point is to create a demand for currently valid and reliable knowledge. In this new type of power relation youth has become (once more) an extremely attractive object of expertise – the object of ongoing production of data, information and knowledge. This is what the authors of the Youth Strategy write about it:

"Better knowledge is a must for sound policy. Current tools (e.g. Eurostat data, national reports, European Knowledge Centre for Youth Policy (EKCYP), EU Research Framework Programme) are the first step, as well as the triennial report on Youth in Europe. There is *an equal need* (emphasis added) to share research results and for networking of researchers throughout Europe" (Commission of The European Communities, 2009, p. 13).

The concept of "evidence-based" youth policy combines the actions of the European Commission and the European Council, the result of which is a common initiative to set up the European Knowledge Centre for Youth Policy. The centre does not only collects empirical data about youth, youth policy and youth studies in separate states, but also information concerning national and the UE experts in the field of this research.

The first comprehensive study concerning youth in Europe is "The White Paper. A New Impetus for European Youth", which followed long months of public consultations between politicians and young people, researchers, administrative staff, non-governmental organisations and institutions working with youth. This document determined the priorities and goals of Polish youth policy drawn up in the "State Strategy for Youth for 2003-2012" (2003).

A number of studies commissioned by national and supranational agendas are invested in youth nowadays. The report "Youth in Europe. A Statistical Portrait", which presents youth situation in 27 Member States of the European Union, provides a good example. The publication includes statistic data and analyses which display similarities and differences between young people from various European countries in terms of demography, lifestyles, education, the labour market and active citizenship. In 2009, Youth Ministers adopted the renewed framework for cooperation, according to which a similar report will be published by the European Council every three years.



The European Commission has also published research concerning the use of the above mentioned indicators by Member States (ECORYS, 2011). In addition, the youth database has been recently expanded by the results of five socioeconomic research projects on youth (within the 7<sup>th</sup> European Framework Programme for Research), which focused on marginalised groups of young people (homeless, unemployed, youth from care centres and ethnical minorities) and their social inclusion. In 2011 the Commission also carried out a Eurobarometer survey on youth, which completed the set of the UE youth indicators and the Commission standards concerning mobility (European Commission, 2012).

Thus we proceed to the issue of forms of knowledge and rationalities arising from the activity of government and underpinning it, i. e. to the area of *episteme* of government (Dean 2010).

# Producing "truth" about youth

The third dimension of the analysis of government practices involves forms of thought, knowledge and types of rationality which are constructed (created and transformed) in practices of government. Looking at the problem from the perspective of the concept of governmentality, I assume that governing youth demands certain form of thought as well as a concept of youth. Practices of government adopt and realise particular forms of knowledge about young man as an object of their activities. Understood this way, "truth" about youth seeks to make certain areas and problems governable. It is located at a specific time and place, taking a definite material form- of a text, a graph or a table (Dean, 2010).

This immanent connection of knowledge and power, concepts of youth and governing young people is visible in the analysed documents:

",Young people are not a burdensome responsibility but a critical resource to society which can be mobilised to achieve higher social goals" (Commission of the European Communities, 2009, 2).

"Young people should make the best of their potential. This vision is addressed to all, but actions should focus on those with fewer opportunities. It is based on a dual approach:

- *Investing in Youth:* putting in place greater resources to develop policy areas that affect young people in their daily life and improve their well being.

- *Empowering Youth:* promoting the potential of young people for the renewal of society and to contribute to EU values and goals" (Commission of The European Communities, 2009, p. 4)

The European Commission considers education and investing in human capital to be invariably crucial for participation in the labour market, social integration and for increasing competitiveness. The concept of youth as capital presupposes that young people have to be willing to learn throughout their lives and constantly develop their skills so that they are able to adjust to current and future needs in the labour market. (Commission of the European Communities, 2009).

The process of constructing "truth" about youth becomes visible in the "surfaces of emergent discourses" (Foucault, 1972) about youth. Following the authors of Youth Strategy, we will encounter "eight fields" constituting the fragmented world of youth: Education and Training, Employment and Entrepreneurship, Social Inclusion, Health and Well-being, Participation, Creativity and Culture, Voluntary Activities and Youth and the World. Each of the "fields of action" involves a definite form of knowledge about young man, supported by data from numerous expert reports. Regularity of Strategy discourse is disclosed in attributing special importance to youth participation and self-improvement.

The emphasis on the involvement and participation of young people is an inherent element of the UE youth policy. In the strategic documents, they constitute a condition for success in fundamental goals and tasks realisation.

Documents defining youth policy, e.g. "The Revised European Charter on the Participation of Young People in Local and Regional Life" (2003), provide for particular ways of "youth participation" and organizational structures. Mobilization techniques (Walters, Haahr, 2011) focus "agency" around a specific set of aims to



construct young people into an involved citizens, and as active members of youth communities and organizations. The discourse of active participation provides young people with opportunities for "taking part" in resolving specific and defined problems. Participation is to be a recipe for the improvement of the situation of "endangered" youth, i.e. endangered with social exclusion, unemployment, poverty, and substance abuse.

Youth participation and its equivalent – social inclusion – constitute a vital element in consultations with young people within so called structured dialogue. The main idea of the structured dialogue is a principle included in the UE Council resolution, which says "nothing about us without us".

Summing up the above considerations, it is worth emphasizing once more that operating of the EU youth policy as governmentality is revealed in a few dimensions:

- in characteristic forms of imaging, creating fields of visibility for the eight areas of action towards /of youth in European space; "fields of visibility" are created by using indicators, regular reporting, expertise, and then comparing results and best practices; through juxtaposing and comparing mutual connections between distant factors in common priorities of the UE Member States are shown;
- 2) in characteristic vocabulary, rhetoric of participation and self-improvement as well as in procedures of production "truth" about youth as social and individual capital;
- 3) in the ways of directing learning from each other, expanding information politics, acting upon the needs of "learning society" which needs current and reliable data, information and knowledge for development;
- 4) and finally, in some characteristic ways of shaping subjects who are learning, who are endowed with capital and potential of youth, in which social and economic forces should be invested. The elements of youth governmentality have been distinguished at the analytical level, whereas in social

(education) practice they constitute a network of factors immanently connected with one another, which I define as dispositif of learning.

# **CONCLUSIONS AND INTERPRETATION**

# Youth policy as dispositif of learning

An analysis of a dispositif includes examining a network of relations between the areas of *techne, episteme* and *ethos*. A dispositif is not limited to discourse but it involves some non-discursive elements (Dreyfus, Rabinow, 1982; Agamben, 2009). Relying of Foucault's works (1995, 2000, 2010), I assumed that a dispositive is a network of relations consisting of institutions, organized and legally enforced actions and discourses, and various statements (e.g. scientific, philosophical, moral). Understood in this way, a dispositive does not mean an assemblage of autonomous elements but it refers to a composition of relations between them, which serves as a mechanism producing truth about the world, representations including some forms of rationalities which legitimise particular social practices.

I perceive governmentality of youth in European space as the realisation of a particular type of dispositif, which employs the ideas of active participation and self-improvement. According to the "logic of intervention", self-improvement is aimed at achieving results and it assumes self-reflection and reporting on achieved results and best practices. The issue of education policy shaped by data is frequently brought up in the contemporary education discourse. Critical approaches point out that political decisions sanctioned by the results of large-scale studies (supranational and international) are disputable since they suggest their worldview (philosophical) neutrality and underestimate heterogeneous contextual conditions which cannot be reduced to statistical comparisons (Lawn, 2011, Saari, 2012). Youth policy evaluation turns these diversified, heterogeneous social processes into simple, comparable, measurable indicators, graphs, diagrams, which gather various social practices into a comprehensive representation (Saari, 2012).

The technologies of "optimisations of results" (Walters, Haahr, 2011), standardisation and comparability of results reflect connections between personal and institutional aspirations and needs for possessing current, valid and reliable knowledge. In the context of the manifestations of the particular demand for knowledge and "being informed" described above, this network of discursive and non-discursive relations appears as a



particular dispositif of learning. In schematic form the relations between the distinguished elements of governing youth understood as a dispositif of learning are shown in Figure 2.



Figure 2: Governing Youth as a Dispositif of Learning Source: Own research.

The categorical notion of education originally included two processes: teaching and learning. Since 1980s' there has been an apparent change, determined as a paradigmatic change (Malewski, 2010), which is related to the replacement of the term "education" with the notion of "learning", aspiring to take a central position in



thinking about educational practice (Hejnicka-Bezwińska, 2008). This shift of the stress from education to learning underlines the role of the learning subject in the practice of "inclusion", in designing own educational biography, results of learning and self-improvement. In this type of discourse the notion of learning has been referred to as some kind of capital, i.e. something which can be and should be governed, and which decides on employment (Simons, Masschelein, 2008).

Introducing the category of dispositif of learning, I emphasize the importance of learning discourse for governmentality of youth, underlying its *technical aspects*. Thus the rationality of governing youth is disclosed, the rationality which relies on the *realisation of the concept of the learning subject, on directing young people* so that they wish "to learn" through active participation in suggested projects and also learn from others in continuous pursuit for self-improvement.

In the EU youth policy, due to the references to the idea of "lifelong learning", we do not only hear about the importance of formal education but also about the informal one. The dispositif of learning says that "things" (knowledge, skills, competences) "govern" the contemporary world, and this world is the best and only possible. In view of the huge importance which is nowadays assigned to the phenomenon of "learning", youth is rationalised as a resource/capital. Talking about capital, I mean these ideas which attribute to youth certain potential and value, whose increase and development have social, economic and political significance. The rationality of governing, according to which youth is a resource, can be seen in assigning an exceptional role to qualifications and education of young people. A discursive basis for the concept of youth is provided by the language of human capital theory, which describes education of youth in economic categories as investment in oneself, and investment in knowledge, skills and competences as ideologically and theoretically justified. The Youth Strategy, youth mobility programmes and "lifelong learning" programmes as elements of the dispositif of learning are a form of investment in youth, where individual actions of youth and education practices are located within a visible field of social and political space of the European Union.

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# SOCIAL CHANGE, EDUCATION AND TEACHER TRAINING POLICIES

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#### ABSTRACT

One of the highly problematic areas of education is teacher training and its process. Increasing the level of success and quality of teachers is among the most pressing and debated areas of education almost in every society. Education, teacher training, and teacher training process, the most important components of education, cannot be considered without due consideration to social developments and changes. With this reality in mind, this study focuses on the dynamic relationships between society, education, and teacher training policies from a sociological perspective, since it is a must to know the dynamic structure of society and the process of change in order to be able to fully understand and soundly evaluate teacher training policies.

Key Words: Education, education and society, societal change, teacher, teacher training policies.

# **INTRODUCTION**

The rapid developments and changes both in industry and in communication technologies have made their impact deeply felt on various institutional structures, among which lies education. The changes in science and technology have caused radical changes in societal structures. Teacher training process, the core of education, has gained crucial importance within the sphere of the ever-increasing international competition together with globalization, since well-trained students and quality education could be provided by teachers, who occupy a very important role among the main strategic human resources. Also, the direct relationship between the development of individuals and societies and the type, content, and quality of education they receive cannot be denied. Given this crucially important role of teacher training running in parallel with the changes and developments across the globe, it has become a need to revise teacher training process both on a local and global scale. Quality education can be delivered only by well-trained teachers who can also be good role models.

Methodologically, any social event or phenomenon has to be subjected to scientific analysis and evaluation considering its own social reality. Any approach or attempt ignoring this reality amounts to nothing more than temporary solutions and evaluating the events superficially. Temporary policies cause new problems and deadlocks rather than offering solutions to problems. In this sense, the education system has to renew itself in terms of its goal, process, content, theory, and practice and adapt to changes both socially and globally. As long as phenomena like education and schooling/training are not dealt with within a society's structural dynamics, it cannot be fully grasped and serious and long lasting solutions to existing problems cannot be found.

Developments, especially in science, communication and technology have deeply affected social system and education. While influencing society on the one hand, the education system with human being as its input and output is affected by the changes in society. Therefore, any education system has to revise and renew itself in accordance with the changes and developments taking place in its own environment. The success of an education system is directly related to how well it understands and positions itself to developments happening in the world.

Increasing the capacity of teachers who educate the future generation of a society is always important. The issue to increase student success and teacher quality occupies an important place in almost every society.



Generally, people have the perception that teachers are responsible for the low level of student success and success disparity of students from different sub-groups (Özcan, 2011:17). Within this framework, we will try to seek answers to questions like; "What kind of changes in the teacher training system have taken place since the first teacher training schools were opened?". "What factors have caused these changes?" "Have these changes met social needs and expectations?" In other words, we will discuss teacher training policy system in Turkey from a sociological perspective and will consider it from a wide perspective.

# SOCIAL CHANGE AND EDUCATION

Society consists of people who come together for common grounds and goals; share the same rules and live in solidarity. Rather than having a static structure, society has a dynamic structure and is open to change. Regardless of where human beings live, their relationship with their environment is dynamic, which leads to change (Hunt, 1972:87). Therefore, no matter how traditional and conservative a culture or a society is, it is subject to constant change (Fichter, 1994:166). Societal structures, institutions and the network of relations between them do constantly change. Social change covers the basic transformations in social structure and norms (in patterns of feelings, ideas, and behaviors). These changes could be discerned in areas ranging from knowledge, values, technology, culture, material culture, family, education, religion, economy, art, social stratification, and inter-group relations to human beings' acceptance of changes about perceptions of the relationship with themselves and with their world (Durugönül, 2003:598). Social change is a differentiation of quality and quality which appears at different time periods in societal structures (Erkal, 2006:227). This deserves consideration and appreciation, which is a must for a society to be able to continue its existence in a sound and reasonable way.

Human beings are the one and only creature that needs education. Society, which consists of human beings, has to equip its members with knowledge, value, attitude, and skills to survive. Given this, every society needs educational institutions to continue its existence. Educational institutions, which exist to meet this demand, are the patterns of a network (Bilgiseven, 1992:14).

Education, a component of social system, interacts with family, politics, economy, and religion, which are some of the other components of the social system. As being one of the fundamental components of the social system, education is also one of the causes of social changes. Scientific and technological developments have deeply affected the education systems of many societies and led to changes (Talas, 2013:166). This deeply-felt impact has been such that during the transition from industrial society to information society, it affected the teaching profession extensively as well as it influenced formal training. In information society, knowledge is offered to the service of everyone; not a privilege offered only to a particular group. This widespread access to information has deeply affected learning and teaching processes. What counts in today's information society is not having access to information and disseminating it; what is important is being able to detect information critically from the vast ocean of information and use the 'right' information. What is even more important is having the skills and creativity to produce 'information' itself (Özcan, 2011:19-20). It is impossible to secure a place among the modern societies and to compete with them in this ever-globalizing world without due importance to these processes.

# **EDUCATION AND TEACHER**

The fundamental goal of education is to transmit culture; more importantly, it is to prepare the society for the future (Sağ, 2003:12). Every nation has its own peculiar education system, which is founded in accordance with the social, cultural, political, and economic features and it develops in line with the aforementioned features (Duman, 1991:19). This system is accepted and appreciated as much as it reflects the values of the society and as much as it meets its needs (Kaya, 1993:2). Given this, the education system of a country has to be shaped and structured/institutionalized in accordance with the social, economic and cultural features and needs of it. The importance of education in the development and shaping of individuals and societies is incontestable. Studies on the realization of education and its goals have pointed out that student success depends on genetics



50%, teacher quality 30%, and other factors 20%. This finding underlines the close relationship between the quality of schools and the quality of teachers.

In almost every society, school comes at the top of the list of institutions which society identifies with education. The basic feature which differentiates school from other educational institutions stems from the fact that education is on human beings and that it does change human beings. One of the integral parts of school is educationalists; that is, teachers (Özdemir, 2003:159).

The French philosopher Saint Simon, one of the founding fathers of the French Revolution, seeks an answer to the question; 'what happens if the king dies?' In fact, what he really meant to ask was; "what will the French people/France loose if the king dies?' He answers his own question simply, saying; 'If the king dies, a person from the royal family will be enthroned, in which case the French loose nothing." He continues questioning, pinpointing to; "What if France looses 10 mathematicians, 10 historians, 10 physicists, and artists?" According to him, this huge loss will be deeply felt and it will certainly affect France profoundly, since raising these people is not easy and their gaps cannot be filled right away. In fact, what Saint Simon clearly underlined in his remarks was how important a place educationist, teacher, and researcher do have in society. Undoubtedly, the most important component of education is the teacher. The teacher is the leading actor in education. The teacher is the one who constructs and shapes both the mind and character of people. Education takes the human being as a raw material and then shapes it. In this sense, the teacher is an artist who molds the human being. Given this, the teacher is the architect of society as well as the architect of education (Ülken, 1967:11). The teacher designs and shapes a society's way of thinking. In this sense, how a teacher is trained and where s/he is employed is very important.

In an attempt to understand and explain today's Turkey, it would be useful to know the outlines of the periods of changes from a historical perspective, since every period bears the traces and influences of the preceding periods in one way or the other. Therefore, an endeavor to explain a period makes it compulsory to look at the preceding historical structure. As such, the relationship between education and society must be scrutinized in line with the viewpoints of various philosophers. We will not discuss education policies of the Ottoman Empire and The Turkish Republic completely, since such as scope will overstep the boundaries of this paper, neither will it be methodologically right. However, we would like to underline the fact that the student, teacher, and teacher training process, which constitute the three main dimensions of education, have been a very important issue of discussion for a long time.

Educational institutions (madrasa) in the Ottoman Society began to deteriorate gradually beginning from the mid 16<sup>th</sup> century. These deteriorations appeared in teaching style and methodology, recruitment, and disciplinary procedures (Akyüz, 2001:68-69). According to Mehmet Efendi (1858-1914), who held an important place in Turkish Education system when the deterioration and corruption began, primary education was the basis of education. The state should have the right to provide primary education, even using force when necessary. Teachers should be civil servants with a salary. According to him, one of the most important responsibilities of the state is to protect science. Science starts from the upper class. First elite class personnel who will educate and train primary and secondary school teachers should be raised. These primary and secondary education teachers should in turn educate and train children and teenagers. As is the case in the theory known as the *"Theory of the Tree of Heaven"*, (according to which the tree has its roots above), Emrulla Efendi's model brought some new practices. According to this view, which holds that education can develop from the top to the bottom, it is necessary to establish and develop scientific mindset. This could only be realized through university (Akyüz, 2010:301).

On the other hand, one of the educationalists of the late Ottoman period, Satı Bey (1880-1968) formulated the thesis that "regulations in education should begin from the primary education", following "the Cheery Tree" model. According to him, society cannot develop and progress having a primary education system with a rotten basis. It was underlined that education with no solid footing would be doomed to fall apart in the way a building with no solid groundwork is doomed to (Sarıoğlu, 2012:87-88). In short, we are witnessing that the



quest for a model in Turkish education system regarding how the education system should be structured and how teachers should be trained began long before and intensified during the republican era.

# TEACHER TRAINING POLICIES FROM THE REPUBLICAN PERIOD TO PRESENT

When the history of teacher training system in Turkey is examined, it is seen that the first remarkable development in pre-republican Turkey begins with the foundation of Darülmuallimin; the first teacher training school aiming to train teachers for junior high schools in 1848 (Baskan and Aydın, 2006:36). This school was mainly for male students and its purpose was to train teachers for primary schools. With an ordinance declared in 1848, studying was made compulsory for children in primary (4) and junior high schools (2); 6 years in total. The first essential steps regarding primary education were taken with *Maarif-i Umumiye Nizamnamesi* dated 1869. In order to train teachers for high schools (Sultani) that emerged with the socio-political reform in 1870, Teacher Training Institution (Darülmuallimin-i Aliye) was established as a new type of school. This school comprised four-year education after junior high school. In the early 20<sup>th</sup> century, there were 17 teacher training schools and one teacher training faculty in the Ottoman Empire in 13 regions. In *Kanun-i Esasi*, dated 1876, a decree making primary education compulsory for "all the Ottoman Empire citizens" was issued.

Shortly after the proclamation of the Republic in Turkey, all schools were handed over to the Ministry of National Education (Maarif Vekâleti) under "The Law on Unification of Education" (Tevhid-i Tedrisat Kanunu) dated March 1924, law no. 430. The name "Darülmuallimin" became "Muallim Mektebi" in 1924-1925 school year and in 1935 it became "Öğretmen Okulu"; both translate Teacher Training School. In the 24<sup>th</sup> article of the law, dated March 22, 1926, law no. 789, regarding Education System (Maarif Teşkilatı), definition of teaching as a profession undertaking education which is a civil service of government and the priority and superiority of this profession over educational services were emphasized (Akyüz, 2001:344). Moreover, a regulation entailing two types of teacher schools being "First Teacher Schools" (İlk Muallim Mektepleri) and "Village Teacher Schools" (Köy Muallim Mektepleri) with the law validated in 1926, numbered 789, was introduced. In 1927-1928 school year, a teacher training implementation was set up which was directed to rural areas; two Village Teacher Schools were opened in Denizli and Kayseri with the aim of training teachers for village schools with three classrooms. In 1932-1933 school year, study period of teacher schools was increased from 5 to 6 years. By issuing a law, aiming to supply the needs of rural primary schools, dated April 17, 1940, law no. 3803, titled "The Law of Village Institute and Craftsmen Training" (Köy Enstitüsü ve Sanat Erbabı Yetiştirme Kanunu), Village Institutes were established; the education period of which was 5 years above primary school (Akyüz, 2010:393).

Until 1948, 21 village institutes had been opened in different regions of Turkey. Biennial education institutes were opened in 1974 to teach primary teachers for higher education as well. The number of primary teacher schools rose to 89 in 1973 which were 27 in 1940. In 1969, the education period of primary teacher schools were changed, as it was increased by 1 year, in short, 7 years above primary school, 4 years above junior high school in 1970-1971 school year by ministerial consent. Thereby, standard high school program was applied; the number and content of lessons as regards the teaching profession were expanded. Also, the trainees that were trained by the new program were given the chance to enter all kinds of high school and university by equating them to the high school graduates. Primary teacher schools were closed by adjudging all teachers's receiving higher education institutes were established in 1973 in an effort to enhance qualification and instead biennial education institutes were established. In teacher training, apart from standard training method, various implementations were also applied in specific periods. Although being different in terms of content and practice, some of these implementations are still processed. These implementations have been; reserve officer teacher (1960- ), substitute teacher (1961- ), initial teacher training (1970- ), *epistolary* teacher training in *expedited program* (1975-1980) (Akyüz, 2001: 353).

In 1973, the *compulsion* for teachers to receive higher education was legislated with "Basic Law of National Education", law no. 1739. Biennial higher education was introduced by the resolution of Council of Training and Education (Talim ve Terbiye Kurulu), dated 1974, law no. 191, to become a primary school teacher. For this



purpose, biennial "Education Institutes" were established. Teacher schools were also transformed into teacher high schools. The number of biennial Education Institutes, being 50 in 1976, was decreased to 17 in 1980-1981 school year and in July 20, 1982, its name was changed as "Education Academy" (Eğitim Yüksek Okulu), the duty of teacher training was handed over to universities. The study periods of Education Academies were increased to 4 years from 1989-1990 school year onwards, and these schools were transformed into "Faculties of Education" (Egitim Fakültesi) by a legislation introduced in July 3, 1992, law no. 3837 (Küçükahmet, 1993:17). Education Institutes played the biggest role in junior high school teacher training in the Republican period. Initially, in 1926-1927 school year, "Secondary Teacher School" (Orta Muallim Mektebi), which was first opened in Konya, was established to train Turkish teachers. In 1927, Pedagogy Department was added and it was moved to Ankara. Mathematics, Physics and Natural Sciences, History, Geography departments were added in 1928-1929 school year. In 1929-1930 school year, this school was named "Gazi Secondary Teacher School and Discipline Institute" (Gazi Orta Muallim Mektebi ve Terbiye Enstitüsü). By making Job Training, Painting Class and Body Discipline classes as part of the curriculum in 1932-1933 school year, Music, French, English and German classes between 1937-1948, this teacher school was transformed into an establishment that trained teachers for all the general lessons in secondary schools (Büyükkaragöz, 1987: 345). In 1967-1968 school year, study period of all departments in Gazi Education Institute was identified as 3 years, increased to 4 years in 1978-1979 school year and its name was changed to "Gazi Higher Teacher School" (Gazi Yüksek Öğretmen Okulu). When the development of secondary school teacher training in the history of the Republic is examined, it is seen that high school teachers were trained in Higher Teacher Schools and Faculty of Science and Literature department of universities, whereas secondary school teachers were generally trained in Education Institutes (Dursunoğlu, 2003).

Until 1982, teachers in Turkey were trained in schools that were associated to Ministry of National Education. The teacher training duty was handed over to universities with the Statutory Decree regarding Higher Education Establishment Organization, law no. 41. Accordingly, Higher Teacher Schools, which trained teachers until 1982, were incorporated by universities by being transformed to Faculties of Education (MEB, 2006: 4). Thereby, teacher training system was attained a new status and structure. Henceforth, the duty of teacher training was handed over to universities and employment to the Ministry of National Education (Azar, 2011:36).

Although there were efforts of cooperation between the Ministry of National Education and YÖK under the same roof of National Committee Teacher Training in the process of restructuring the faculties of education that began in the second half of 1990s, no result was achieved. A radical restructuring of faculties of education was also commenced with the Project of Advancing National Education that was actualized with the cooperation of YÖK and World Bank. Concordantly, secondary education was run together with programs training teachers for social studies, science and math along with related programs of faculties of science and literature. Later on, graduates of these faculties were decided upon to carry on with their non-thesis master's program and be given initial teacher training. Faculties of Education, until the restructuring process in 1998, fell short of supplying both qualification and quantity needs of the country. (Öztürk, 2005:314).

Running parallel to transition to 8 years of continuing education in 1977, teacher training programs for primary education in faculties of education were rearranged. In faculties of education, a primary education department was established apiece to provide for the need of teachers in primary schools. In restructuring process, standardization was made among programs training teachers for faculties of education and teacher practice was given importance to (Erdoğan, 2005:337). Ministry of National Education made alterations in the curriculum of primary and secondary schools. Yet, these alterations could not be reflected into teacher training programs in universities. Furthermore, faculties of education were understaffed with regards to instructors and instructors could not handle school experience and teacher practice sufficiently. The fact that alterations in teacher training policies were actualized as political impositions without executing comprehensive research, preparatory work and planning in the integrity of educational system can be indicated among the reasons to why the qualification aspect of teaching profession declined gradually (Azar, 2011:36-37).


One of the biggest deficiencies in educational policies and model striving in Turkey is the fact that expertness based upon professional competence was largely neglected. Besides, it could not be foreseen that implementations aiming to supply the demand for teachers (e.g. initial teacher training and epistolary education) would cause a problem reducing quality of education. In teacher training policies, frequent alterations were made without executing sufficient research and practice concerning goals and programs. While quantity prioritized under the influence of political concerns and opinions, quality was neglected. All these, along with other factors resulted in an erosion in the social status of teaching profession. In sum, a success could not be achieved in transition to the role of educational leadership in industrial and information society that can handle global challenges from the role indigenous to traditional agricultural societies where teachers are viewed as the only source of knowledge. A dynamic network of relation could not be formed among teacher, student, school and alteration in the integrity of system. Policies of various establishments that were non-coordinative and based upon different aim and strategies affected education and teacher training process in Turkey negatively. It was pointed out in the report declared by World Bank in 2005 that apart from teacher redundancy in many fields, teachers were insufficient in applying student-centered approaches and methods standing out especially in the new education programs (Aydın, 2013). However, we see that teacher training system is integrally evaluated with quality, quantity, employment, operating conditions and motivation in education policies of developed countries.

#### CONCLUSION

It is a must to prepare and implement both educational policies and teaching programs in accordance with the needs of both individuals and society. In addition to these needs, it is also equally important to know the changing social conditions and global developments and develop strategies accordingly.

In almost every society, educational systems are used/manipulated as a vehicle/tool by governments and administrative mechanisms. It is a reality that political powers have a determining and molding role in knowledge transmission and implementation processes. However, Turkish governments cannot be said to implement educational policies taking social realities and needs into account. Many governments have interfered with the education system without due conservation to the needs of the society. The three fundamental units of education; student, teacher, and the program which have to be in constant interaction with one another, have been designed and implemented with ideological concerns. Excessive politicization has dominated educational policies, as a result of which, education has been unable to play its role in making changes in a positive way. This clearly shows that education should be planned, designed and implemented in accordance with the needs and expectations of society; not shaped as governments wish.

In fact, educational policies in Turkey have been put into action not adequately considering individual and social needs that emerge as a result of social changes. Besides, new educational plans and policies have subjectively been implemented without due discussion of their necessity. These policies, the social and economic dimensions have not adequately been thought thoroughly have inevitably brought about some problems and difficulties.

Undoubtedly, education is subject to change itself and brings about change. Education, which changes and transforms the social structure positively, is at the same time, not a static but a dynamic phenomenon. From a historical perspective, it is a reality that education has changed in accordance with historical conditions and needs and restructured accordingly. In today's information age, the need of both the developing and developed countries for qualified work force has been increasing. In order for the education system to meet this need, it has to be updated and designed considering scientific and technological developments and social and economic expectations. Meeting the expectations of the society and changing it positively depends primarily on training teachers well.

We should bear in mind that the downfall of society is highly linked with raising its future generations well. For a long time in Turkey, a policy placing inadequate importance to quality in teacher training process has been followed. However, quality in education is essential, since a good teacher is a prerequisite of quality education.



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# PHENOMENOGRAPHY: A QUALITATIVE RESEARCH METHODOLOGY IN BANGLADESH

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### ABSTRACT

Theoretical framework, in educational research, guides the qualitative research process which is selected based on the researchers' goals, purpose, or focus of investigation (Ornek, 2008). Phenomenography, a qualitative research framework, is an innovative research methodology for the developing countries whereas developed countries has already been taken up. They have been using this empirical research methodology since last two decades (United Kingdom, Australia, Finland, etc). Therefore, the aim of this paper is to discuss the phenomenographic research methodology in the easiest way so that the novice researchers (who are new in phenomenography) in Bangladesh can bestow this methodology into their qualitative research paradigm. This methodology may contribute new insight to the objects of investigations (students, teachers, staffs from educational institutions) and find out the solutions of the problems connected with the educational institutions in a real setting of Bangladesh.

Key Words: Phenomenography, Qualitative research, Teaching-learning context.

### INTRODUCTION

A substantial amount of research has been carried out on students' learning and teachers' conceptions of, and approaches to teaching/learning in higher education that has benefited from a particular research approach, termed as 'phenomenography'. It is a qualitative research approach that has originated in the mid-70s from the original work of Ference Marton and his colleagues at the university of Goteborg in Sweden, but the term had come to be used by Ference Marton himself in the 80s. (Mann, Dall'Alba, & Radcliffe, 2007; Marton, 1981; Richardson, 1999). This empirical research methodology has been taken up by many other researchers in the United Kingdom (Samuelowicz & Bain, 1992), Australia (Prosser, Trigwell, & Taylor, 1994), Finland (Lindblom-Ylänne, Trigwell, Nevgi, & Ashwin, 2006), HongKong (Marton, Watkins, & Tang, 1997), China (Gao & Watkins, 2002), Taiwan (Tsai & Kuo, 2007) and so on. Bangladesh, one of the developing countries, could be benefited by introducing this methodology at their educational systems. Therefore, the aim of this article to discuss the phenomenographic research methodology in the uncomplicated way so that the novice researchers (who are new in this research paradigm) in Bangladesh can understand this methodology and hence implement this methodology into their qualitative research arena. This methodology may contribute new insight to the objects of investigations (students, teachers, staffs from educational institutions) and find out the solutions of the problems connected with the educational institutions in a real setting.

### WHAT IS PHENOMENOGRAPHY?

Phenomenography is a qualitative research approach that has been designed to find out peoples' qualitatively different experiences of the world in terms of categories of descriptions. (Marton, 1981,1986). The term 'Phenomenography' has its Greek etymological root, which has derived from the two words 'phainomenon' (appearance) and 'graphein' (description). Therefore 'phenomenography' is a description of appearances (Hasselgren & Beach, 1997). Ference Marton (1986) defines phenomenography as –'a research method for mapping the qualitatively different ways in which people experience, conceptualise, perceive, and understand various aspect of, phenomena in, the world around them' (p. 31). In this research often depicts how people understand, distinguish, recognize, imagine, conceive or experience different aspects (characteristics) of the world around them, which can clearly be articulated in one word: "Conception" (Carbone, Mannila, &



Fitzgerald, 2007; Marton & Pong, 2005). Therefore, it is dealing with people's perceived understanding or experience of a particular phenomenon.

'Phenomenography' is a research approach, based on a second-order perspective which means how subjects (the person/population of the research) experienced/conceived an object (aspect of the world) in a given situation. It is the subject's conceptions derived from their understanding and experience towards the object. This is different from the first-order perspective in which the researchers are interested in how the object actually is (Marton, 1981; Sjöström & Dahlgren, 2002). For example, in the second order approach, the experiences or conceptions are revealed from the participants not directly from the researchers whereas in first order approach experiences are coming out from the researchers.

Later Michael Prosser (2000b), one of the pioneer phenomenographers, perceived this research approach as an appropriate research methodology to study teachers' and students' conceptions of teaching and learning, their approaches to teaching and learning, and along with the outcome of teaching and learning activities. The present study is based on the Prosser (2000b) definition of phenomenography where main focused on how Bangladeshi teachers will bestow this research methodology into their teaching learning context. Therefore, Bangladeshi education system could be benefited similar to other developed countries who has already investigated many of their educational problems by using this methodology.

#### PHENOMENOGRAPHIC RESEARCH: DIFFERENT CONTEXT

Marton (1981), later on Dall'Alba (2000) mentioned three different lines of phenomenographic research. The first line focuses on the qualitatively different ways of experiencing or comprehending learning and how it links with different approaches taken on by the learners and their outcomes, which has been described by Marton (1981) as 'general aspects of learning'. The second line is about associating such research with a specific content domain e.g. physics, science, engineering, medical science, vocational (nursing, automobile) etc. The third line of research is portrayed as "pure" phenomenographic research that concentrates on people experiencing or understanding different features of their reality, not in subjects studied in education, but in their daily lives. As for example, the people questioned about their conceptions concerning political scenarios, market prices and taxation. During the last three decades, large amounts of research have been carried out using this research methodology, hence the former two lines of research are more dominant than the last one. This paper intention is to provide a simpler detailed discussion about the former two domains of phenomenographic research so that trainee researcher could be benefited for implementing in their educational context.

### AIM OF PHENOMENOGRAPHIC RESEARCH

The main aim of phenomenographic research is to discern the qualitatively different means of subject experience, and to conceptualise, interpret or grasp a range of phenomena and aspects of the world. The researchers in this paradigm believe that people are experiencing or conceiving particular phenomena in a limited number of qualitatively different ways (Bowden, 2000; Marton, 1986). Hence phenomenographers search for qualitatively different, but logically interconnected conceptions or understandings that a group of people endure for a particular context (Marton, 1994). The aim of the this research approach described more specifically by Prosser (2000b) for educational settings, as : "to develop an understanding of the relations between the teacher's and student's experiences of teaching learning, with the eventual aim of improving the quality of student learning" (p. 35). Therefore, it investigates teachers and students experience towards teaching learning situation in order to improve the quality of education.

# **RELATION BETWEEN SUBJECT, OBJECT AND RESEARCHERS**

Experience (conception, understanding, perception, apprehension) is not a separate entity, rather it is relational (Bowden, 2005). Phenomenographic research does not consider them (subject and aspect of the world) as a separate entity in a given phenomenon rather it always seeks a relation between these two entities.



More clearly, the research subject (the person who experiencing the phenomenon) and the aspects of the world (object) are not considered as separated rather they form a relation between them (see Figure 1). Thus, experience sets up a relation between a person and a given phenomenon in the world, which is titled as 'a relational approach' (Limberg, 2000). Hence relational approach is simply the close relationship between subjects and aspects of the world through which researcher can gain the subject's experience. This relation can be explained further by the following 'Figure 1'



Figure 1: Relationship between objects with subjects and researcher (Based on Bowden 2005)

Thus, this research methodology is to investigate the relationship between the subjects and objects (aspect of the world) in a given situation by the researcher (phenomenographer). Therefore, phenomenograpic research approach focuses on non-dualistic<sup>1</sup> ontological perspective which is neither an objective approach (independent of human account) nor it takes a subjectivist approach (focus on internal structures by the subject) (Mann, et al., 2007; Marton & Booth, 1997). Hence the subject and aspect of the world of a study are not independent rather they are intertwined with each other. Let us consider an example provided by Ornek's (2008) work where the existence of relationship between object and subject is more clear. When children are asked to create the number six, one may come up with 4+2, another might say 5+1, and other can reply with 3+3. Their decisions may come from their experiences related to the number 6; it could be reflections, or many other possibilities. In all the scenarios, though, 6 is created with a pair of numbers: 4 and 2, 5 and 1 or 3 and 3. As a result, researchers simply cannot deal with an object without understanding or having experienced it in some way. In the above case, the subject (children) and the object (counting numbers) are not independent; rather they are intertwined with each other.

In order to understand people's experience, Marton and Booth (1997) described referential and structural aspects of the experience (see Figure 7). The referential aspect of the experience is mentioning or highlighting the direct object or a particular meaning of the object. It is defined as a particular phenomenon which we are undergoing (experiencing) as the way it is, whereas the structural aspect is defined as how people acted towards something (an action), how they go carry out something, how something is acted upon or carried out (González, 2011; Marton & Tsui, 2004). The structural aspect of an experience has two sides, outer structure and internal structure of an object. The external structure of the way of experiencing a specific phenomenon concerned is to discern it from the outer context. This is called as external horizon. On the other hand, the internal structure of the way of experiencing a particular phenomenon is to discern the parts of that phenomenon and how they are interrelated as a whole object, which is called as internal horizon (Marton & Booth, 1997). Hence external and internal horizons, together form the structural aspects of people's

<sup>&</sup>lt;sup>1</sup> non-dualistic ontological perspective means the people (subject) and phenomenon (object) are not separated, rather they are connected.



experience of phenomenon. Marton and Booth have drawn a graphical presentation of the way of experiencing as following Figure 2:



Figure 2: Component of Experience, Source: Marton & Booth, 1997, p. 88

The structural and referential aspects are not separated (though different) rather they are dependent and intertwined (Marton & Pong, 2005). Trigwell (2000) addressed a similar statement, 'the structural and referential are also two internally related components of an experience' (p. 74). In phenomenographic research this referential aspect is often called the 'what' aspect of an experience whereas the structural aspect is called the 'how' aspect of an experience. In an educational research context, students' learning experience can be categorised as (i). referential aspects, for example, what students think about learning, their experience or comprehension of learning as a direct object and (ii) structural aspects, how students carry out or go about their learning (Marton & Booth, 1997). The structural aspect is further divided into structural aspect: (i). students' act of learning, focusing on structure and (ii). referential, focusing on their intention towards the act (see Figure 3). Here, the structural aspect which has been called the 'how' component, relates to the approaches to learning and teaching categories (Trigwell, 2000).



Figure 3: Experience of learning, source Ellis et al.(2006b)

### **METHOD OF DATA COLLECTION**

Interviews are one of the primary media of data gathering in phenomenographic research (Åkerlind, 2005a; Åkerlind, Bowden, & Green, 2005b; Marton & Booth, 1997). Phenomenographic data may also be gathered by other methods (Walsh, 2000). For example, the researcher can interpret people's conception by studying their behaviour under certain controlled situations (Marton, 1986), it can be conducted by using open-ended



questionnaires (Bliuc, Casey, Bachfischer, Goodyear, & Ellis, 2012). However, most phenomenographic studies used interviews as the medium of data collection (Åkerlind, 2005a; Limberg, 2000). Another argument is in relation to sample size or the number of participants needs to be considered during data collection. Trigwell (2000) recommended fifteen to twenty interviewees in this research practice. He had stated that a reasonable amount of variations could be provided by a minimum of ten to fifteen participants, whereas effective management of the gathered data could be brought about and allowed by a maximum of twenty (Trigwell, 2000). Moreover, this methodology requires as much variation in experience as possible. This is achieved with participants from various disciplines, level of experiences, teaching position, age and gender (Åkerlind, 2004). Therefore, for effective data management and maximum variation could be achieved by focusing on the appropriate number of participants. The following guidelines ought to be precisely adhered to during the data collection period.

- 1. Each interview should conduct with an open and friendly framework which allow interviewees to explore their understanding, experiences or ideas as fully as possible (Åkerlind, et al., 2005b; Bowden, 2000).
- 2. Especial care and guidelines should be taken when follow up questions would be required during the interview (Åkerlind, et al., 2005b; Prosser, 2000b).
- 3. There is another recommendation regarding 'bracketing' researchers own experience, own idea or concept while using follow up questions (Åkerlind, et al., 2005b; Green, 2005; Prosser, 2000b). Besides the researcher should take a non-leading role during the interview to create an environment where interviewees could reflect their awareness completely.
- 4. The data collection will be taken place as one interview basis. If the participants describe his/her awareness completely during the semi-structure interview session then no need to go back to interviewees for additional interviews (Green, 2005).

# **DATA ANALYSIS**

After collecting the data, the single most important and challenging part of phenomenographic research is to analyse the verbatim transcripts of the interview data (Åkerlind, 2005a; Prosser, 2000a). The interview will be audio-recorded and/or video recorded (video recording is optional) and will be initially transcribed verbatim, then analysed qualitatively. The aim of data analysis is to identify and discern the subjects' qualitatively different experiences or understanding in a limited number of categories. In order to achieve this, the data analysis will be guided by the research questions of a particular research. In this research methodology, there is no single technique for data analysis (Marton, 1986). González (2010), for example, employed five steps while Sjöström & Dahlgren (2002) employed seven. The author, here, has preferred the seven steps of Sjöström & Dahlgren (2002) to explain the procedure of data analysis in phenomenographic research method because of two reasons : first, these seven steps are easy to understand for the novice researchers and second, these steps do not conflict with González's (2010) five steps. The steps are as follows:

*(i). Familiarisation step:* the transcripts will be read several times in order to become familiar with their contents. This step will correct any mistakes within the transcript.

(*ii*) Compilation step: The second step will require a more focused reading in order to deduce similarities and differences from the transcripts. The primary aim of this step is to compile teachers' answers to the certain questions that have been asked during interviews. Through this process, the researcher will identify the most valued elements in answers.

(*iii*). Condensation step: This process will select extracts that seem to be relevant and meaningful for this study. The main aim of this step is to sift through and omit the irrelevant, redundant or unnecessary components within the transcript and consequently decipher the central elements of the participants' answers.

*(iv). Preliminary grouping step:* the fourth step will focus on locating and classifying similar answers into the preliminary groups. This preliminary group will be reviewed again to check whether any other groups show the same meaning under different headings. Thus, the analysis will present an initial list of categories of descriptions.



(v). Preliminary comparison of categories: this step will involve the revisions of the initial list of categories to bring forth a comparison among the preliminary listed categories. The main aim of this step is to set up boundaries among the categories. Before going through to the next step, the transcripts will be read again to check whether the preliminary established categories represent the accurate experience of the participants.

(vi). Naming the categories: After confirming the categories, the next step will be to name the categories to emphasise their essence based on the groups' internal attributes and distinguish features between them.

(vii). Final outcome space: in the last step, the researcher hopes to discover the final outcome space based on their internal relationships and qualitatively different ways of understanding the particular phenomena. It will then represent the categories in a hierarchy.

### **OUTCOMES OF PHENOMENOGRAPHY**

Similar to other research methodologies, this research approach should follow a coherent method from the beginning to the end. In order to identify faithful outcomes from this methodology, Bowden (2000) states that the study should begin with a clear intention, it should be organised with a particular purpose. Similarly, Marton (1994) says that, "whatever phenomenon or situation people encounter, we can identify a limited number of qualitatively different and logically interrelated ways in which the phenomenon or the situation is experienced and understood". Therefore, phenomenographic research outcomes will come out in a limited number of categories. These categories are logically and hierarchically organised (Marton, 1994) which is called 'categories of description' and they are derived from the subject's experience in a particular situation after careful interpretation. Åkerlind, Bowden et al. (2005b) further added that the categories of description should not be come up with researcher's own understanding rather researchers should interpret the participants experience (researchers should not focus on individual participant experience). Collier-Reed, Ingerman, & Berglund (2009) states that individuals will not be able to recognise 'their' contribution to the categories of description.

Moreover, the categories of description include some variation that distinguishes the particular category from other categories. Thus categories of description depict different ways of experiencing a phenomenon collectively which represent a 'structured set' (Åkerlind, 2005a). Therefore, categories of description come up with structural relationships between different categories. This structural relationship, often formed as a chart, table, etc., represents the 'outcome space', which is the final outcome of this research methodology (Marton, 1994). Thus, the phenomenographer does not aim to articulate merely a set of different connotations (meanings) for a phenomenon. Rather, he/she seeks to identify reasonably (logically) structured various meanings of categories that have a logical connection with one another, and also a connection that is hierarchical.

This outcome space gives a total experience of subjects in a specific phenomenon that ensures all the possible range of experiences that a number of people have experienced in a given situation (Åkerlind, 2005c). Marton and Booth (1997) introduced three criteria for evaluating the quality of the outcome spaces: (i). Something unique or distinctive about the way of experiencing the feature of the phenomena should be reflected by the individual category of outcome space. (ii) The categories are logically linked and have a relationship that is frequently hierarchical; and (iii). The outcome space should be parsimonious, i.e. the main variations in experience should be presented by as few categories as possible.

### TRUSTWORTHINESS (RELIABILITY AND VALIDITY)

Establishing trustworthiness in phenomenographic research is important like other qualitative research methodology. By checking the validity and reliability of the research, trustworthiness is ensured in qualitative research (Åkerlind, 2012). Phenomenographers should emphasise validity and reliability checks in order to



establish rigour in their research (Collier-Reed, et al., 2009). A brief description of these two factors is mentioned below:

*Validity check in phenomenography* :Validity in phenomenographic research is considered as the extent to which the research findings are replicated in phenomenon under investigation (Åkerlind, 2005c). In such research, two types of validity checks are commonly practiced (Åkerlind, 2005c; Kvale, 1996; Mann, et al., 2007). They are the communicative validity checks and the pragmatic validity checks.

The ability of the researcher to convince the relevant research community that the research methods and the concluding interpretations of the results of the study are deduced properly is known as 'Communicative Validity Check'. (Åkerlind, 2005c; Kvale, 1996). According to Åkerlind (2005c) such validity is checked by the prevalence of research seminars, conference presentations and acceptance of peer-reviewed journals. The pragmatic validity check signifies how the outcome of the research is beneficial or helpful to the target audience. (Åkerlind, 2005c; Kvale, 1996). Through the usefulness and significance of research findings, this validity will be checked.

*Reliability in phenomenography:* Reliability, in qualitative research, refers to 'replicability' of results. This is ensured through the use of appropriate methodological procedures to obtain quality and consistency in data analysis (Åkerlind, 2005c; Kvale, 1996). According to Åkerlind (2005c), two types of reliability checks are commonly used in interview-based qualitative research – the intercoder reliability check (two researchers independently code interview transcripts and compare) and the dialogic reliability check (agreement between researchers is reached through discussion). The researcher will be responsible for initially analysing data and finding out the categories. Later, the categories of description will be confirmed through discussion with other researchers who are involved with the project or other expert researchers who had expertise in phenomenographic analysis. Moreover, to further ensure reliability, the researcher aims to make their interpretive steps especially detailed with examples. Therefore, this research will describe detailed step-by-step descriptions of the analysis of the data.

### EDUCATIONAL BENEFITS OF PHENOMENOGRAPHIC RESEARCH

The results of Phenomenographic research can benefit the higher educational system of Bangladesh. In order to improve the quality of university teaching in Bangladesh, then we must look the teachers' conceptions or understanding towards their own subjects, as well as students' conceptions or understanding towards their learning of particular subjects. It is evident from the previous findings that learning about good teaching and becoming an expert teacher depends on a process of conceptual change (Martin & Ramsden, 1992). Teachers might undergo staff development programs but the practical teaching-learning situation will not be changed unless the teachers change their conceptions. Therefore, previous research has found that teachers' conceptual changes have real impact in professional development (see Ho, Watkins, & Kelly, 2001; Ramsden, 1991). If teachers change their conceptions, only then will teachers' development programs be successful. Therefore, the practical significance of this research methodology is related to changing teachers' conceptions of teaching, which will have impact on their approaches to teaching; understanding students' learning practices which will result in better learning outcomes; and also to have impact on teachers' professional development in higher educational institutions in Bangladesh. In addition, curriculum developers and education planners could be benefited by understanding teachers and students experience towards teaching-learning situation.

### CONCLUSION

In conclusion, let me summarise it all: Through this paper, I am not claiming that phenomenography is superior to all other theoretical frameworks, rather I would contend that it provides a positive means to examine alternatives where others fallen short. It is supported by other prominent researchers, as for example Svensson (1997) stated "It represents a reaction against, and an alternative to, the then dominant tradition of positivistic, behaviouristic and quantitative research (p. 171). Therfore, the practical implications of this research methodology are: to change the conceptions of teachers in order to have an effect on their teaching



approaches; understanding the learning practices of students that will produce better learning outcomes. In the end, it will also lead to the professional development of teachers in higher educational institutions in Bangladesh, with a greater impact.

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# THE EFFECT OF ACTIVITIES IN ROBOTIC APPLICATIONS ON STUDENTS' PERCEPTION ON THE NATURE OF SCIENCE AND STUDENTS' METAPHORS RELATED TO THE CONCEPT OF ROBOT

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### ABSTRACT

The purpose of this study is to examine students' perceptions of the nature of science and metaphors related to the concept of robot, to determine the differentiation in these perceptions and metaphors resulting from LEGO NXT robot applications, and to share some good examples of education-oriented activities with robots. In this study, a hybrid research method, which is a blend of a qualitative descriptive survey model, pre-test, posttest semi-experimental patterns without controlled group, is utilized. The working groups consist of 48 students, who are volunteers to take part in the research, from 3 different high schools. The data are collected using a "metaphor form" consisting of open-ended questions, utilizing the Scale for Understating Nature of Science. The findings based on our analyses are as follows: The students' perception on the nature of science is generally at medium level and there are no students with low level of perception. Activities with robots contribute considerably to the level of students' perception on the nature of science. A comparison of the results obtained from pre-test and post-test illustrates that prior to the activities, some students suppose that robots are like humans with an ability to think but after the activities none of them consider the robots to have the ability to think.

Key Words: Robots, nature of science metaphor, misconception.

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# INTRODUCTION

The nature of science has been an argument of a long-standing discussion among scientists, philosophers and education scientists. The science, apart from being a stand-alone consistent process, is an insight to understand how does this process accomplished and the process itself and to elaborate the attributes of the end-product of this process is termed as "science process skill" or "scientific literacy" (Lederman, 1992). The science literacy is to have an ability to define, to describe and to predict the natural events in which one has some interest. In a similar manner, science literacy is to have an intentional and informed stand against the regional and international scientific topics. A citizen with science literacy should be expected to make comments on the fundamental sources of and on the processes related to the scientific knowledge (NRC 1996; Bell, 2008). For an individual to acquire such knowledge, skill, and attitude and to have consciousness on the science literacy certainly depend on a number of factors. One of those factors is to "understand the nature of science". Despite the fact that this factor is considered to be one of the most important components, researches show that the students lack this understanding (Lederman, 2007).

In order to improve students' understanding on the nature of science, various Science and Technology courses have been introduced in the curriculum of high schools with expectations to provide skills such as observation, questioning, interpreting, experiment setup and research, measurement, description and generalization (Osborne and Simon 1996; Edwards and Talbot, 1997; Goldworthy, 2000). In a similar manner, Information and Communication Technologies (ICT) are expected to have positive effects on improving science and technology education and to provide educational and complementary tools (Marsh, 1994; Walton, 2000). Furthermore, it is shown that the implementation of technology in classroom provides considerable improvements in achieving the objectives of the course, in gaining some science skills, on effective use of the time, and in acquiring critical thinking and creative thinking (Webb, 1997; Goldworthy, 2000). Yalın (2002) describes the computers as highly important multifunctional tools that offer indispensable opportunities in education process.

It is not only computers that should come to mind within the scope of information and communication technologies. Besides computers, in parallel with developments in robotics in recent years, use of robots in teaching and learning environments can be seen. Model robots are beneficial especially in teaching such concepts and processes as computer programs, electronic vision, hearing, feeling, and decision-making that students perceive as too abstract or have difficulty in perceiving. As well, robots can be effective in instilling higher-order thinking skills including critical thinking, quantitative thinking, and creativity. In the literature, studies that employ programmable LEGO and Mindstorm robot family can often be encountered. For example, in a study conducted by Sartatzemi (2005), high school students were given training in basic programming using these robots and it was concluded that robots support learning. Kamada et al. (2008) expressed that high school students like to build and program robots and that the students in the experimental group were significantly better than the control group at comprehending embedded systems. The fact that the use of model robots in teaching programming increases student motivation and helps create a learning environment that is more fun was revealed by a research performed by Pásztor et al. (2010).

Considering the embodiment and motivational contributions that robot applications provide, it can be said that robots can offer significant benefits for educational practices geared towards students to help them understand the nature of science. In this context, sustainable development of a society requires scientific and technological literacy by producing scientific information and direct involvement of society in producing, processing, and utilizing knowledge. This requirement can only be met by a society which acknowledges science and scientific processes, and possesses a high level of scientific and technological literacy. Furthermore, such a society should eliminate the misconception that the science is an action performed by and devoted only to the geniuses or gifted individuals. The misperception about the nature of science and engineering hinders new generation from taking a career in science and engineering, and results in a lack of interest in science and technology among teenagers. This phenomenon is not a problem faced by developing countries only; developed countries also suffer this problem. In literature, some studies show that the younger generations are reluctant to have a carrier in science and technology due mainly to misperception about the nature of science



and engineering. In order to clear this misperception, such activities are supported among teenagers that elevate an interest in science and technology and contribute to shaping of individuals who will be exposed to scientific processes and concepts and, through these activities, be encouraged in acquiring careers in science and technology (LoPresti, Manikas and Kohlbeck, 2010; Yilmaz, Jianhong, Custer and Coleman, 2010). The activities provide means to improve the scientific and technological literacy by isolating the preconceptions and contribute to shaping of the information society.

The ever-increasing usage of technology in the daily life requires technological literacy to be a common value in the society and the technological literacy becomes an important part of scientific literacy. However, technology is misinterpreted in the society. For most people, technology is generally considered as computer, electronic gadgets and Internet (Rose, Gallup, Dugger ve Starkweather, 2004), and furthermore, technology is considered simply a direct implementation of science. The lack of understanding on the nature of technology prevents comprehending the interconnection between the scientific knowledge, the process of implementation of scientific knowledge to produce technological products and interaction between science and technology (Cajas, 2001). On the other hand, there are common misperceptions and beliefs in society such as the boys are better than girls in engineering, the engineers are asocial in daily life lacking in writing, speaking and communication skills (Yaşar, Baker, Robinson, Krause ve Roberts, 2006). Such beliefs and misperceptions are the common causes that either discourage young generation from having a career in science and technology or deter them from possessing technological literacy which is a part of scientific literacy. It should be understood that engineering is a social practice and in this profession team working and communication skills are indispensable qualities (Cajas, 1998).

The prejudices and misperceptions in the society may be better understood by investigating the metaphors of the students on the subject. A metaphor is a cognitive structure to define the not-well-known concept by creating analogies with another concept which is known (Kaya, Durmuş, 2010). Palmquist (1996) considers metaphors as cognitive strategies to improve our understanding and to provide additional point of views between concepts and events. (Arslan, Bayrakcı, 2006; Kaya, Durmuş, 2010). Metaphors are common in different spheres of education. These useful structures may also be used for a better insight of technology by the students (Kaya, Durmuş, 2010).

The purpose of this study is to examine students' perceptions of the nature of science and metaphors related to the concept of robot, to group the metaphors under conceptual categories, to determine the misconceptions, to reveal whether these perceptions and metaphors change as a result of applications based on LEGO NXT robot activities, and to share some good examples of education-oriented activities with robots.

### Sub-problems in the Research

- 1. What is the perception of the students towards the nature of science before activities?
- 2. Does the perception of the students towards the nature of science show any difference between the genders?
- 3. Does the perception of the students towards the nature of science show any difference due to the type of high school?
- 4. Does the project affect the perception of the students towards the nature of science?
- 5. What are students' metaphors related to robots?
- 6. Can the metaphors related to robots and kitchen robot be categorized based on their conceptual common features?
- 7. Is there any variation on the metaphors after the robotic activities with LEGO NXT?
- 8. What are students' misperceptions related to robots?

# METHOD

#### **Research Model**

In this study, a hybrid research method, which is a blend of a descriptive survey model, pre-test, post-test semiexperimental patterns without controlled group, is utilized. It is known that descriptive research defines the



subject under investigation. On the other hand, survey models are based on identifying the current situation as it is and with an objective perception. In this study, the aim is to identify the perception of students, who are studying in different types of high schools, on the nature of science and metaphors related to robots. The effect of activities with robots on the students' perception on the nature of science and metaphors related to robots are measured.

# **Working Group**

The working group consists of 48 students, who are volunteers to take part in the research, from 3 different high schools in the city of Konya, namely Dolapoğlu Anatolian High School (Dolapoglu AHS), Fatih Vocational High School (Fatih VHS), and Private Enderun Science High School (Enderun SHS). The gender and the distribution of the students are given in Table 1.

#### Table 1: Working Group

High School	Girl	Воу	Total
Dolapoğlu AHS	5	16	21
Fatih VHS	0	14	14
Enderun SHS	2	11	13
Total	7	41	48

### **Data Collection Tools**

# Scale for Understating Nature of Science

The data is collected using the Scale for Understating Nature of Science. This scale, developed by Can (2008), consists of 35 items which are grouped in three factors. Under the factor "science", there are 12 items aiming to measure the science perception of the students. The inner-consistency of the factor is 0.72. The factor "scientific knowledge" consists of 14 items to measure the students' perception towards scientific knowledge. The inner-consistency of this factor is given as 0.82. Another factor titled "scientist", which is comprised of 9 items, is employed to measure the students' perception towards scientists. The inner-consistency of the factor is found to be 0.69. The scale is a Likert-type scale with the lowest score of 35 and the highest score of 175.

### **Metaphor Form**

The data is collected using a questionnaire consisting of open-ended questions such as "robot is like..... since....." and "kitchen robot is a robot since it is...., "kitchen robot is not a robot since.....". The second question is not a metaphor and is used to detect misperception. An explanation about the metaphors is given to the students before they have written their opinion. It is required from the students to write down their reasoning why robots are like living-beings. In metaphor studies, "a like" statements are used to find the relation between the object which is linked to the other object using the metaphor whereas "because" statements are utilized to uncover the cause and "logical ground" in the students' metaphor (Saban, 2005, Ocak ve Gündüz, 2006).

### Activities

In this research the activities designed to integrate technology education with pre-conditions of scientific literacy by focusing on design and engineering exercises to help students develop a positive attitude towards engineering and technology and for elimination of their prejudices and misconceptions can be summarized as follows:

Activity 1 (Two People = One Robot): This is an activity in game format where the primary goal is to carry foam rubber blocks on a platform from one end to the other. Each team consists of 6 students, 3 groups of 2 carry the blocks in order. One student in every group does the carrying with eyes blindfolded and the other member of the group directs the carrier using communication rules that they both agreed upon previously. Detailed activity sheet is given in Appendix-1.

Activity 2 (Color Perception and the Human Eye): This activity aims at providing an understanding of nature of color perception and human vision system. As part of this activity, an experiment is conducted and students



brainstorm around questions asked. The final aim is to acquire knowledge about the robotic vision. A brief introduction to human vision system is supplied and the concept of color image perception is introduced by a concise explanation about the rode cells and cone cells in an eye. In addition, a competition is organized using a Color Synthesizing Software developed by the project team where the students are asked to synthesize colors from 3 primary colors. Those students that finish synthesizing colors requested at the shortest time are awarded by surprise presents. Detailed activity sheet is given in Appendix-2.

Activity 3 (Distinguishing Male/Female Voice using Artificial Ear Software): In this activity, students are expected to carry out different experiments about the sound using a sound synthesizer software installed on their computers. Firstly, they are requested to create the sound of every frequency given in a table using the sound synthesizer software and then listen to it. They are then asked to classify those sounds as "bass", "middle" or "treble". In the last experiment, students are required to find out the correct set of parameters in the Artificial Ear software, which is developed by the project team, in order to successfully distinguish female and male voices. The final goal of this activity is to instill an understanding that robots can analyze the speech if they have an ability of processing the sound signal. Successful teams are awarded by some presents. Detailed activity sheet is presented in Appendix-3.

Activity 4 (Lego Mindstorms NXT Robot Assembly): The goal of this activity is to build a programmable robot by putting together different parts and sensors in Lego Mindstorms NXT set. Programming exercises to have the robot perform small tasks are conducted on the robot built. This activity gives first-hand experience to the students that a robotic system could be constructed by using different types of small units and actuators. Lego Mindstorms NXT book set is utilized for this activity.

Activity 5 (Lego Mindstorms NXT Robot Design and Programming Competition): The last activity is designed so that students can apply the knowledge they are expected to have acquired from the previous activities. In this activity, students are required to develop and design a robot which can "see" and "hear". The robots are built from a LEGO Mindstorms NXT sets. Student teams compete for the best program resulting in the best robot show and are judged on various criteria. Detailed activity sheet is presented in Appendix-4.

### **Data Analyses**

On the data collected using the Scale for Understating Nature of Science, some statistical analyses such as the frequency, percentage, Mann–Whitney U, Kruskal-Wallis H, and t-test have been carried out and results are interpreted. The level of meaningfulness for difference and relation is accepted to be p<0.05. The raw score for each factor is determined by accumulating the responses on a 5-point Likert-type scale and the raw score is divided by the number of questions and then is multiplied by 20, which results in either the lowest score of 20 or the highest score of 100. The possible highest and lowest values for each factor are constants. The score from the scale is interpreted to classify the students' perception on the nature of science as to be low, medium and high. If the score less than 34, the perception is considered to be low; if it is between the range of 34 to 67, it is accepted to be medium; otherwise, it is regarded as high.

The analysis and interpretation of the metaphors are performed following steps as in Ocak (2005): (1) Firstly, it is determined whether a particular metaphor is presented clearly. (2) It is then determined whether each of the metaphors developed by the students is useful in understanding of the concept of robot. If so, these metaphors are included in the analysis phase. (3) The "logical ground" or "the cause that is expressed to explain the metaphor" is analyzed. (4) The metaphors which have more than one similarities declared by the students are excluded from analysis phase. (5) The metaphors which have common attributes are categorized in the same category. Collected data is then transferred into a computer for quantitative data analysis.

Out of 48 students who declared the metaphors related to the concept of robot in the pre-test, only 34 of them are included in the study based on the analyses in four processes declared above. On the other hand, 37 students' metaphors are included in the post-test. In the final stage, the number of students (f) and their percentage (%) for each metaphor and corresponding categories are calculated, the metaphors are grouped based on their common features, and tables obtained from the pre-test and post-test are created. The



questions related to the kitchen robot, which illustrates the misperception of the students, have been asked before project activities and analyzed in order to identify the misperceptions. Furthermore, Pearson Chi-square statistic method is utilized to determine the variation on the students' perception of robots after LEGO NXT robotic activities.

# Constraints

The scope of the study is restricted with In the project entitled "Hearing and Seeing with Robots" which is funded by TÜBİTAK and conducted at Mevlana University. The total number of students involved is 48.

### **FINDINGS**

The perception of students on the nature of science has been measured before the project activities in terms of the factors in the scale, namely "science", "scientific knowledge" and "scientist".

# The students' perception on the nature of science

Table 2 summarizes the perception of the students involved in the study on the nature of science.

Factor	Lov	Low Score		Medium Score		High Score	
Factor	f	%	f	%	f	%	
Science	0	0	23	47.9	25	52.1	
Scientific Knowledge	0	0	43	89.6	5	10.4	
Scientist	0	0	41	85.4	7	14.6	
Total Score	0	0	38	79,2	10	20,8	

Table 2: Students' perception on the nature of science

As seen from Table 2, the perception of the students who are from different types of high schools is found to be 79.2% medium and 20.8% high. When it is evaluated based on the factors, it is found that the perception of students on "the science" (which is 52.1%) is higher compared to the perception on "scientific knowledge" (which is 10.4) and "scientist" (which is 14.6). Based on these findings, it can be concluded that there is no student with low perception on the nature of science and in general the students' perception is at a medium level.

# The difference in the perception of the students on the nature of science with respect to gender before the activities

Table 3 illustrates the findings on whether there is a meaningful difference, with respect to gender, in the perception of the students on the nature of science.

Factor		Mean Rank	Sum of Ranks
Science	Girl	26.14	183.00
	Воу	24.22	993.00
Scientific Knowledge	Girl	17.93	125.50
	Воу	25.62	1050.50
Scientist	Girl	21.64	151.50
	Воу	24.99	1024.50
Total Score	Girl	21.29	149.00
	Воу	25.05	1027.00

Table 3: Perception on	the nature of science	with respect to a	gender (girl N=7. boy	v N= 41)
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Tect				
	Science	Knowledge	Scientist	Total Score
Mann-Whitney U	132.000	97.500	123.500	121.000
Wilcoxon W	993.000	125.500	151.500	149.000
Z	-0.337	-1.348	-0.588	-0.659
Asymp. Sig. (2-tailed)	0.736	0.178	0.557	0.510
Exact Sig. [2*(1-tailed Sig.)]	0.753	0.183	0.567	0.529

It can be concluded from Table 3 that there is no meaningful difference, in terms of total scores and factors, in the students' perception on the nature of science with respect to gender (p>0.05) and that the gender does not have any effects on the perception of the students on the nature of science.

# The difference in the perception of the students on the nature of science with respect to the type of high schools before the activities

Table 4 shows the findings on whether there are any differences in the perception of students on the nature of science with respect to the type of high schools, before the project activities.

Factor	High School		Ν	Mean Rank
Science		Fatih VHS	14	25.96
		Dolapoğlu AHS	21	25.24
		Enderun HS	13	21.73
Scientific Knowledge		Fatih VHS	14	26.71
		Dolapoğlu AHS	21	23.24
		Enderun HS	13	24.15
Scientist		Fatih VHS	14	22.32
		Dolapoğlu AHS	21	24.79
		Enderun HS	13	26.38
Total Score		Fatih VHS	14	25.36
		Dolapoğlu AHS	21	23.95
		Enderun HS	13	24.46
Test	Scie	nce	Scientist	Total Score
1030		Scientific Knowlod	00	

Tablo 4: Student perception on the nature of science w.r.t. the type of high school

Science		Scientist	Total Score	
Test		1		
Chi-Square	0,726	0,533	0,590	0,085
Df	2	2	2	2
Asymp. Sig.	0,696	0,766	0,744	0,958

In the table, it is shown that there is no meaningful difference in the perception of the students with respect to the type of high school (p>0.05). As a result, it can be declared that there is no direct effect of the type of high schools on the students' perception on the nature of science.

# The effect of the project activities on the students' perception on the nature of science

In Table 5, the findings related to the effects of the project activities on the students' perception on the nature of science are given.



Variables		Ν	$\overline{\mathbf{X}}$	S	t	sd	р
<u>Colonco</u>	Pre-test	48	67,19	8,39	FF 400	47	0.000
Science	Post-test	48	70,69	8,86	55,498		0,000
Colontific Knowledge	Pre-test	48	60,38	5,65	74.26	47	0.000
Scientific knowledge	Post-test	48	60,89	5,68	74,20		0,000
Sciontist	Pre-test	48	61,02	8,46	- 49,94	47	0.000
Scientist	Post-test	48	66,80	8,50			0,000
Total Score	Pre-test	48	64,29	5,12	00.00	47	0.000
Total Score	Post-test	48	65,57	5,58	80,99	47	0,000

Tahlo 5. Tho	offorts of the	nraiort	activitios (	nn tha	ctudonts'	norcontion
Table J. The	enects of the	project		ontine	students	perception

Concluded from Table 5 that the activities in this research do have a direct effect on the students' perception and there is a meaningful increase in the total score related to the students' perception on the nature of science (t=86.99, p<0.001). A similar effect is observable on the factor scores in that the project activities meaningfully increase the scores of all factors. As a result, it can be claimed that the robotic activities In this research has provided a considerable contribution to improve the students' perception on the nature of science.

# **Metaphors**

34 valid metaphors in the pre-test and 37 valid metaphors are determined as related to the concept of "robot". The metaphors are categorized into four groups. Examples from the categories and the related metaphors are as follows.

The category "human with ability to think" includes the metaphors below:

Student 8: Robot is like a human since it does whatever living creatures can do Student 21: Robot is like a human since it does whatever a human-being can do Student 31: Robot is like a human since it decides based on reasoning

The category "robots are unable to think and they are unfeeling" includes the metaphors below:

Student 2: Robot is like a handicapped human since it does only whatever it is asked to do. Student 24: Robot is like a human since, if it is programmed, it performs tasks using its sensors. Student 29: Robot is like unfeeling human since it operates based on some commands and the feelings do not have any effect on the commands

The category "machine" includes the metaphors below:

*Student 4: Robot is like an advanced machine since it can be controlled with advanced programming techniques.* 

Student 12: Robot is a useful man-made machine since it can be controlled by human to help human. Student 19: Robot is like airplane since it helps save time and helps us to do too much in a short time.

The category "others" includes the metaphors below:

Student 22: Robot is like a pet since it follows the commands given. Student 1: Robot is a garbage bin since it is full but only with invaluable things. Student 27: Robot is like a stone since it has no feeling, although it helps much.

Table 6 summarizes the metaphors in the corresponding categories.



Concentual Categories	Pre-test		Post-test	
	N	%	N	%
Human with ability to think	9	26	0	0
Unable to think/unfeeling human	13	38	18	49
Machine/Tool	8	24	15	41
Other	4	12	4	10
Total	34	100	37	100

Table 6: Conceptual Categories obtained from the students' metaphor related to the concept of robots

Pearson Chi-square (sd=3)=11.862; p=0.008

It can be realized from the table that the metaphors declared by the students can be categorized into four conceptual categories. In the pre-test, there are 9 metaphors in the "Human with ability to think" category. On the other hand, "Unable to think/unfeeling human" category contains 13, "Machine/Tool" category consists of 8 and "Other" category has 4 metaphors. The post-test, on the other hand, has following distribution: no metaphor in "Human with ability to think" category, 18 metaphors in "Unable to think/unfeeling human", 15 metaphors in "Machine/Tool" category and 4 metaphors in the "Other" category.

The metaphors in pre-test and post-test are investigated and it is found that a considerable amount of students (26%) in the pre-test think that the robots have ability to think like human-beings. On the other hand, none of students in the post-test agree with this metaphor. The reason behind this differentiation could be that students after the project activities have realized that robots are unable to do any task unless they are programmed by a human being.

38% of the students in the pre-test think that robots are unable to think and they are unfeeling. The percentage has increased to 49% after project activities. LEGO NXT robot kit used in the activities is suitable for building different kinds of robots and humanoids. A humanoid LEGO NXT has also been introduced to the students during the activities. The differentiation in this metaphor could be a result of introducing the humanoid which is unable to perform any task without being programmed by human.

24% of the students state that robots are like a machine in the pre-test. However this percentage is increased to 41% after the project activities. The increase can be contributed to the fact that students are exposed to the electro-mechanical systems even if they look like a humanoid robot.

The findings show that the activities have influence on the students' metaphors. In other words, the activities carried out using LEGO NXT robots create differentiation in the students' metaphors related to the concept of robots. This differentiation is statistically meaningful ( $\chi^2$ =11.862; sd=3; p=0.008). Accordingly, the activities with LEGO NXT robots have affected the students' metaphors meaningfully. Also, if investigated it is realized that the misperceptions on the concept of robots are corrected after the activities.

33 students (69%) give an affirmative response to the question of "is the kitchen robot a robot?" (kitchen robot is called "kitchen robot" in Turkish), while the remaining 15 students (31%) respond negatively. The reasons stated by the students who affirmed are as follows:

- Because it makes our life easier
- Because it helps us
- Because it is a machine with a function
- Because it saves our time and energy
- Because it operates under our control
- Because it has motors and tools

On the other hand the students who disagreed are listed their reasons as follows:

• Because it could not move



- Because it could not perform without human help
- Because it does not have arms and legs
- Because it is just a machine
- Because it is not able to give decision
- Because it is very slow

If both sets of responses are investigated thoroughly, it is found that students perception on the concept of robot are highly diverse and they are unaware of technological issues related to robots such as automatic decision making, sensors for seeing, hearing, sensing, face detection and recognition, artificial intelligence etc. According to students, every machine that helps us to save time and help human could be a robot. Furthermore, according to students, it is necessary for a robot to have an ability to move and to have arms, legs (like a human). Robots should also be quick. Only a few students (N=5) express that the automatic decision making is a criterion for a machine to be considered as a robot. As a result, it can be stated that the students have considerable misperception on the robots and robotic technologies.

### **CONCLUSIONS**

### **Conclusion on the Nature of Science**

The students' perception on the nature of science is generally at medium level and there are no students with low level of perception. This could be a result of the fact that all students were eager to take part in this research activities despite the fact that they were on holiday and all activities were held in the summer. As it is indicated in literature, the interest is a key factor in the understanding the nature of science and science literacy. Based on these findings, it can be recommended that teachers who are responsible for improving science literacy among the students should trigger the interest of students by means of robotic activities. On the other hand, having the middle level of the perception on the nature of science among the students who are involved in this research could be due to their schooling stage. This finding can be interpreted that the science and technology education starting from primary school 4<sup>th</sup> grade contributes successfully to improve the science literacy among students.

The gender and the type of school do not have crucial effect on the students' perception on the nature of science. This could be a result of having a similar curriculum in all high schools and a result of reduced number of students to an acceptable level in a classroom to improve the education quality in high schools. In a similar manner, the gender factor does not affect the perception, as technologic gadgets and tools have recently became very common in daily life decreasing the effect of gender factor. Therefore, the gender factor might be considered as a trivial factor. However, high level learning environments with enhanced technological infrastructure and skilled teachers are necessary to improve science literacy and the perception on the nature of science.

The robotic activity with in this research contributes considerably to the level of students' perception on the nature of science. All the activities in this research have been performed either as a group work or individually by the students and learning-by-doing was the main strategy. The activities are designed, as much as possible, to be an interactive, clue-based, feed-back providing activities. Therefore, it is naturally expected that all the activities contribute to have a positive effect on the behavioral difference of students, leading to improving the students' understanding on the nature of science.

### **Conclusion on the Metaphors**

After comparing the metaphors in the pre-test and post-test, it is found that some students consider robot to be like a human, with an ability to think, before the project activities. After the project activities on the other hand, no student considers robots to have an ability to think like human. There is great increase, after the project activities, in the percentage that the robots are mechanical tools without ability to think and unfeeling. In other words, the activities carried out using LEGO NXT robots create differentiation in the students' metaphors related to the concept of robots. It is found that this differentiation is statistically meaningful. Accordingly, it is found that the activities with LEGO NXT robots have affected the students' metaphors



meaningfully and if investigated it is realized that the misperceptions on the concept of robots are corrected after the activities.

The differentiations in the metaphors could be contributed to the awareness developed during the activities that robots are unable to perform any task without being programmed by a human being. Also students are exposed to the electro-mechanical systems and they have realized that even if these systems look like a humanoid robot, they are electro-mechanical systems at the end.

In order to delve into the misperception on the robots, the question "is a kitchen robot a robot" has been asked to students and responses investigated to find out the requirements which are set by students, for considering a machine as a robot. If both negative and confirmative responses are investigated thoroughly it is found that students' perceptions on the concept of robot are highly diverse and they are unaware of technological issues related to robots such as automatic decision making, sensors for seeing, hearing, sensing, face detection and recognition, artificial intelligence etc. According to the students, every machine which helps us to save time and helps humans could be a robot. Furthermore, according to students, it is necessary for a robot to have an ability to move and to have arms, legs (like a human). Robots should also be quick. Only a few students state that the automatic decision making is a criteria for a machine to be considered as a robot. As a result it can be stated that the students have considerable misperception on the robots and robotic technologies.

The findings show that as Turkish society does not follow the technological developments closely and the level of scientific and technological literacy is not high enough, it seems to be necessary to conduct projects and surveys so as to measure and to improve the scientific and technological literacy. Furthermore, TÜBİTAK Science and Society programs should be promoted in order to contribute to the developments of similar projects.

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Appendix 1:

#### TWO PEOPLE = ONE ROBOT GAME

**Goal:** The main goal of this activity is to carry foam blocks from one end of the game platform to the other end at the shortest time possible. Each team consists of 6 students. 3 groups of 2 in each team will perform carrying of blocks in order. One of the group members will be blindfolded and will do the carrying. This member will be directed by the other member using communication rules that they determine beforehand. For example, for "TURN RIGHT" operation, a touch to right shoulder of the carrier might be used. Similar rules of communication should be decided on for other operations such as "HOLD", "CARRY", etc. With instructions from his/her group-mate conveyed by these communication rules, the carrier performs desired moves to carry foam blocks to target location. Here, the carrier should gain experience as to which move he/she needs to do in response to an instruction. In order for the teams to get familiar with rules of the game, they will be given 15-20 min. of time to practice on the platform.

#### Rules:

- Four teams of six students will compete.
- Each team will have three groups of two students.
- One student in every group will be blindfolded.
- Before the competition starts, members of every group must agree upon how to communicate with each other.
  - Determine which moves are necessary to carry the blocks to the target location. E.g. FORWARD, STOP, BACKUP, RIGHT, LEFT, PICK, DROP.
  - Determine the rules to communicate these moves. For example, touching right shoulder to instruct a turn to right.
- There will be only one group from a team competing on the platform at a given time.
- Foam blocks must be stacked one on another. If a stack gets high, to prevent its collapse, another stack can be started.
- There exists blocks of two different sizes. Each big block counts 10 points; each small block counts 5 points.

#### Penalties:

- Hitting obstacle blocks on the platform.
- While putting a block on a stack, toppling other blocks.
- Directing the carrier by touching continuously.
- Stopping the carrier by grabbing him/her.
- Giving a voice instruction.

There will be a deduction of 1 point for every penalty from the team's total point.

When there is no more foam block to carry, the game ends. The team that obtains the highest carrying score minus penalty points wins.





#### Appendix 2:

#### **COLOR PERCEPTION and HUMAN EYE**

**Human Eye:** Human eye has special photoreceptor cells called "rod" and "cone" cells. It is estimated that, on the average, there are 125 million rod cells and 6-8 million cone cells in an eye. Rod cells are only sensitive to light and receive images as black & white and levels of gray. Cone cells, on the other hand, possess sensors sensitive to RED, GREEN, and BLUE colors. Each type of color sensor is sensitive to light within a certain range of wavelengths. Human eye cannot sense light waves that are outside the range of wavelengths it is sensitive for. Can you find examples? In humans with color blindness, rod cells do not function normally.

Basic Cross section of the Eye - Showing the Rods and Cones



**Experiment**: LEDs used in remote control devices of TV and similar electronic equipment emit light in infrared frequency. However, we humans cannot see this light. Why? Try taking a video or a picture of a LED on a remote control device at a moment of operation. What do you see? Please explain.

Question: If our eyes have sensors sensitive to only RED, GREEN, and BLUE colors, how come we can also see colors other than these?

#### **COLOR SYNTHESIS SOFTWARE and COMPETITION**

Goal: Analyzing how to obtain colors from three basic colors in a computer environment. Rules:

- You will be asked to synthesize different colors using the color synthesis software.
- You must show the colors that you synthesize correctly to your team coach. Your team coach will fill out the table below.

The team that finishes synthesizing colors given at the shortest time and shows them to team coach will grab surprise presents!

#### Name of the Team: .....

	EVALUATION					
	Color	Successful	Unsuccessful			
1	Color1					
2	Color2					
3	Color3					
4	Color4					
5	Color5					
6	Color6					
7	Color7					
8	Color8					



Appendix 3:

#### ARTIFICIAL EAR SOFTWARE and CLASSIFICATION of HUMAN VOICE

Goal: To understand sound waves and working principles of Auditory System.

Sound Waves: Sound waves are vibrations that can be propagated via solid, liquid or gas objects filling the space.



There are two important parameters of the sound: one is "frequency" value, the other is "amplitude" value. Knowing these two values of a sound signal provides us important information about that signal. The frequency of sound does not change with distance to the source of sound whereas its amplitude increases or decreases while getting closer to or farther away from the source.



The unit of frequency for sound signals is called Hertz. The number of oscillations or vibrations of a sound signal in a second gives us its frequency as "Hertz" (Hz). In addition, to measure the amplitude of sound the unit "decibel" (dB) is used. Within human ear's hearing thresholds, high frequency sound signals are named as "treble" sounds and low frequency sound signals "bass" sounds.

Auditory System: Sound can be defined as vibrations of air molecules. These vibrations create sound waves detected by human ear. Sound waves detected by the ear, in turn, are converted to signals interpreted by the brain. Auditory system is composed of four main components: outer ear, middle ear, inner ear, and the nerves going to the brain.



The components of auditory system can hear sound waves of between 20 and 22000 vibrations, meaning sound signals of frequency between 20 Hz and 22 KHz. Each species detects the sound signals of different frequency ranges. For example, bats, dogs and dolphins can hear sounds of frequencies outside the range that human ear can detect. Also, as a human gets older, his/her ear has more difficulty in perceiving high-frequency sounds.

#### CLASSIFICATION of SOUNDS USING ARTIFICIAL EAR SOFTWARE

**Experiment:** Using the sound synthesizer software that is installed on the computer and wearing your headphones, please test how comfortably you can hear sound signals of different frequencies. Create the sound of every frequency given in below table using the sound synthesizer software and then listen to it. Mark on the table those sounds that you perceive as "bass", "middle" or "treble".

#### Name of the Team: .....

Frequency		Bass Sound	Middle Sound	Treble Sound
1	150 Hz			
2	10000 Hz			
3	5000 Hz			
4	1400 Hz			
5	800 Hz			



#### CLASSIFICATION of FEMALE/MALE VOICES USING ARTIFICIAL EAR SOFTWARE

To distinguish female and male voices using artificial ear software providing appropriate parameters.

Goal: Rules:

- The audio files listed in below table and located in the specified folder on your computer should be played and "pitch frequency" values determined should be written in the table.
- In order for the artificial ear software to classify voices correctly, an appropriate "threshold frequency" value should be determined resulting from pitch frequency values above.
- Once the correct threshold frequency is set, you should replay each audio file and write down on the table (third column) whether the software thinks that file pertains to a male voice or a female voice.
- "Evaluation Trials" column of the table will be filled out by your team coach according to the result of classification for each audio file.

The team that finishes the correct classification of audio files given in below table first will be rewarded.

#### Name of the Team:

Audio File Name		Pitch Frequency	Classification by the Software (Male / Female)	Evaluation Trials (True / False)					
1	Audio01								
2	Audio02								
3	Audio03								
4	Audio04								
5	Audio05								



Appendix 4:



#### LEGO MINDSTORMS NXT ROBOT DESIGN and PROGRAMMING COMPETITION

Goal: To design and implement an original program on a robot to put forth the best robot show.

Rules:

- As the first step, discuss and determine a design with your group for 15 min. For the design you come up with, write down on a paper:
  - Its goal (what does it accomplish?)
  - o Graphical representation of what the robot will do
  - and give the paper to your team coach.
- At the second step, you will program your robot according to your design for the show. You will be given a total of 45 minutes to complete your implementation and tests.
- The criteria to be used for evaluation of the design are as follows:
  - o Functionality
  - o Originality
  - o Complexity
  - o Group Dynamics

At the end of competition, the group receiving the highest evaluation score will win the grand prize!



# A MODEL FOR THE ESTABLISHMENT AND DEPLOYMENT OF KNOWLEDGE MANAGEMENT IN IRANIAN NATIONAL TAX AFFAIRS $^{\rm 1}$

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### ABSTRACT

In recent years, Issues that have been regarded essential for knowledge management are based on this fact that organizations without proper strategies for maintaining their intellectual investments will not be able to survive. The ability of distinguishing between knowledge and raw data, enables the organization to change the information into related and appropriate knowledge and to achieve their goals.

The present study is trying to identify factors affecting knowledge creation in Iranian National Tax Affairs (INTA), and suggests an optimized model for establishing the knowledge management system in this organization.

In the first section, effective factors on knowledge creation in the organization are identified and ranked through applying One-Sample T test and Friedman test. Statistical population was the employees of the INTA headquarters, and sampling was carried out in a simple random manner for 149 persons.

In the second section related models of knowledge Management are being studied; and an optimal model is provided for the establishment and deployment of Knowledge Management system in INTA relying on an integrated approach for the preparation of the prerequisites, culture, implementation, and finally evaluation and audit knowledge.

Key Words: Knowledge creation, knowledge sharing, knowledge audit.

#### INTRODUCTION

At the present era, meeting the needs of customers and staff is only possible through relying on the knowledge, which is updated with the global information, utilizing new technologies, and saving the time and resources. The staffs' needs to accompany the world knowledge and taking advantage of new scientific developments are the sustainability conditions of the organization in the challenging world. The organization may not be able to take sound and in time decisions if it does not enjoy new knowledge and information of the world developments. Knowledge as the driving force has led the managers to rely on the power of knowledge rather than the staffs'. In such conditions, creating and establishing knowledge may not solely be considered as a strategy to achieve the mission and vision of the organization. Indeed, the created knowledge should be circulated in the body of the organization and be transferred to all the layers. The people must share their

<sup>&</sup>lt;sup>1</sup> - INTA



knowledge and use the shared knowledge. Mass of data and information in the Tax Organization and the need of creating and accessing updated databases, as well as the need for the staffs' experiences make the transformation of data to information necessary. As a result, the present study tries to introduce a model for the deployment of Knowledge Management (KM) through identifying accelerators for creating knowledge and examining the selected models of knowledge management in the Tax Organization.

# **RESEARCH BACKGROUND**

In recent years, many studies have been carried out on the subjects related to the KM in the Tax System of Iran. Moreover, benefitting from the concept of KM in many developed and developing countries has promoted the efficiency and improved the cultural structure of organizations and institutions. This section examines the KM experiences in Iran and some other countries.

In a case study, the Tax Organization has been studied by NasehiFard and Habibi in 2011 in the research titled "Structural Factors Effective on Innovation and Knowledge Creation in Organizations". After identifying the structural factors effective on KM in the Tax Organization through Sample T-Test, the priority of these factors were determined by Freedman Test. Among the identified factors, the highest priority was attributed to the "official organizational posts to drive KM process" and the lowest priority for "the existence of non-official structures in the organization". Furthermore, the existence of social networks and using work groups along with the bureaucracy and the flexibility of the structure of the organization are the other structural and effective factors on the knowledge creation in the Tax Organization of Iran.

In another research titled "Surveying the Impact of Social Capital in KM Development, a Case Study of Tax Organization", by Mahdian Rad and Fazli in 2012, the researchers examined the relationship between the social capital and KM in the Tax Organization, and they came up with a meaningful relationship between the two components. The results of their survey show that social capital determines 86% of the changes in the KM; and designing proper conditions and improving social capital indices in the organization are important for the KM development and its dimensions.

In the various studies carried out in Iran and other countries, infrastructural obstacles and problems of the designation of KM system have been surveyed. Among them we can refer to a study carried out by Hasanzadeh (2009). He has identified the organizational KM strategy, organizational chart, human resources, financial provision, ICT and the organizational culture as the barriers facing the KM deployment. Besides, social-cultural, management, economic and organizational factors were identified as groups of factors determining the success or failure of KM projects (Mehralizadeh & Abdi, 2012).

### **RESEARCH THEORETICAL PRINCIPLES**

#### **Knowledge Management Concepts**

Explaining concepts such as KM, due to their abstract nature, is difficult. Consequently, to clarify the principles and to understand the depth of concepts from definitions, we should mention the subject classifications and theories of experts. Knowledge and its various classifications, theoretical models and patterns should be defined before explaining the KM concept.

#### **Knowledge Definition and Different Types of Knowledge**

Huber (1991) and Nonaka defined knowledge as a belief which increases the potentials of phenomena for efficient measures and decisions. In another definition by Davenport & Prusak (2001), knowledge is a flexible and transformable compound of experiences, values, and meaningful information which provides a framework for evaluation and cohesion of information and new experiences (quoted by Kameli, 2009).

On the other hand, Woolf (1990) describes knowledge as organized and functional to resolve the problem. Turban (1992) believes that knowledge is the organized and analyzed information which should be understood and applied to resolve the problem and facilitates decision making. Myers (1996) also regards organizational



knowledge as processed information used in the processes and daily affairs. He also believes that knowledge is acquired by organizational systems, processes, regulations and culture (Beckman, 1998, quoted by Kakabadse. N & Kouzmin, A)

#### Knowledge Management Concept

Basic hypothesis of KM implies that the organizations which manage their knowledge better, are more successful in establishing relationship with the workplace challenges. KM is a center to access the processes and improvement of services, administrative decisions, adaptation, and organizational transformation (Earl, 2001, quoted by Handzic, 2007).

Clemmonz & Rumizen (2002) perceives KM as a systematic process by which the knowledge needed for the success of the organization is created, acquired, shared and strengthened (Dubois, N. & Wilkerson, T. 2008).

#### **Identifying Accelerators and Efficient Factors on Knowledge Creation**

So far, the factors accelerating the KM have been the subject of so many studies. But what is certain is that the wide range of these factors depends on the surveyed societies, which has a direct relationship with the existing background of the organizations trying to deploy KM system. So, successful implementation of KM requires multilateral and inclusive outlook to different organizational factors in a way that it helps us adopt suitable strategy for the deployment of KM system through identifying key factors.

Skryme, D., & Amidon, D. identified 7 key factors in deploying KM. These factors are: strong binding of business to implement KM, vision and knowledge map, knowledge leadership, the culture of creating and sharing knowledge, continuous learning, suitable infrastructure for technology, and systematic processes of organizational knowledge (Talebi & Salimi Torkamani, 2012).

On the other side, Asian Productivity Organization's (APO) model (2007), identifies leadership, people, processes and technology as the accelerators in government sectors. This model emphasizes on leadership and considers the support of leadership as an effective factor in creating knowledge and the success of KM system. Kuan Yew Wong & Elaine Aspinwall (2005) have expressed 11 factors affecting the successful deployment of KM. These factors are: leadership and its support, culture, information technology, objectives and strategy, evaluation, organizational infrastructure, organizational processes and activities, incentives, resources, education, human resources management (Talebi & Salimi torkamani, 2012).

The present study uses Wong & Aspinwall Model, since the factors proposed by this model covers many other factors and the existing factors of this model have been found effective on creating knowledge in the Tax Organization.

### The question of the Study

In the present study, we are trying to identify *accelerators and effective factors* on knowledge creation process in organizations and to answer the question "what factors are effective on knowledge creation and deployment in the Tax Organization?" Moreover, with regard to the existing models of KM and identified factors in the first section of the study, an appropriate model is proposed for the deployment of KM system in the Tax Organization.

#### **Statistical Population and Sampling Method**

The statistical population in this study is all the headquarter staffs of the Tax Organization in Tehran which includes 614 employees. Sample size, determined by the Cochran formula when the population size is clear, is 149 persons. In this study, random sampling has been used. In this way, the members of the statistical population enjoy the same and equal opportunity to be selected for the test regardless of their level of education and their organizational posts.



# Research Method, Data Collection Tools and the Information Collection Method

The present study uses Descriptive Data Collection and its type is Survey Research. As a result, in the first step the factors affecting the knowledge creation in the organizations are identified and the existing models are examined by considering the available theoretical background and library studies to achieve an appropriate model for the KM deployment. Furthermore, the survey research and the questionnaire titled "Identifying the Effective Factors on Knowledge Creation in the Tax Organization" were used to collect the information for the purpose of answering the question of the study.

### **Data Analysis**

The following tests were used to analyze the data resulted from the research and to answer the questions of the research.

- Kolmogorov-Smirnov Test: to determine the normality of the collected data
- One Sample T Test: to determine the factors affecting the establishment and creation of knowledge in the Tax Organization
- Freedman Test: to rank the efficient identified factors on knowledge creation and deployment.

#### **Data Analysis Results**

The validity and reliability of the questionnaire "Identifying Effective Factors on Knowledge Creation", which was used in the studies of other researchers, were examined.

The validity of the questionnaire was examined through an opinion survey of related experts and professors. The necessary modifications were made after acquiring their point of view and the validity was approved. The reliability of the questionnaire was calculated by Chronbach's alpha. The result 0.89 for the test shows the desirable reliability of the questionnaire.

The results of the Kolmogorov-Smirnov Test show that the distribution of the numbers is normal and parametric statistical hypotheses were achieved. So, Parametric Means Testing of a statistical population is used for research hypothesis testing. Likewise, the factors including leadership, culture, technology, processes, education, human resources and organizational resources were identified by One Simple T Test as the effective factors on knowledge creation in the Tax Organization.

Freedman results show that identified factors do not have the same priority and intensity and the leadership and processes enjoy the highest rank while infrastructure has the lowest rank and intensity in knowledge creation.

Factors	Mean of Ranking
Leadership	3.59
Culture	3.12
Technology	3.19
Processes & Activities	3.41
Education	3.17
Human Resources	3.24
Infrastructure	3.03

#### Table 1: The Mean of Rankings in Freedman Test

# The Importance of Leadership as an Effective Factor on Knowledge Creation while Focusing on Attitude, Knowledge and Skill

Today, emphasizing on leadership rather than management is a fundamental principle in administering the organizations and achieving their objectives. Leadership, particularly transformational leadership, with functions such as determining the objective or the mission of the organization, utilizing and preserving basic competences, human capital development, supporting and securing an efficient organizational culture and


organizational balanced controls, provide accessible opportunities for the objectives and the missions of the organization. Hence, modern organizations are in need of leaders who, with their own personal characteristics and exceptional attractions, high influence and wide outlook, are able to create the necessary enthusiasm and obligation among the employees to utmost utilize their capabilities and efforts for achieving the objectives of the organization (Javdani, 2012). Transformational leaders identify three factors of attitude, knowledge and skill in the organization and try to unite them. Highlighting the change of attitude of the staff, and creating a positive attitude towards the organization and its activities are the first and most important mission of the leaders. It is likely that sound and proper strategies and objectives. Creating a positive attitude among the staff towards the organization and its objectives. Creating a positive attitude among the staff is the only way to utilize their knowledge for the improvement of the organization. It is certain that the people, whose attitudes are not in line with the vision of the organization, are not willing to use and transfer their knowledge. At last, taking advantage of the skills of staff to achieve the objectives depends on the sound knowledge and the positive attitude towards the organization. So, transformational leaders, compared with the managers who focus on planning and management, highlight these three factors and unite them with the strategy of the organization to accomplish the mission.

#### **Energy Investment Model with a Focus on Leadership Factor and Change Management**

Energy Investment Model, proposed by Claude Lineberry in 1980, provides a framework to seek incentive attributes of a person against the results acquired from the incentives. This model proposes that attitude towards the work and the tendency to spend energy in an activity in the organization, depend on the people's previous experiences of the workplace (T. Tosti Donald, Amarant, John, 2005). Thus, in order for the leaders of the organization to prepare the change conditions, they may identify the staff's various states based on their attitude and energy through utilizing this model, and with the help of the strategies, which will be discussed later, they decrease the resistance against change, and conduct the staff's energy in line with the objectives of the organization. Besides, since the results of the present study show, the leadership factor, as the efficient factor on knowledge creation in the Tax Organization, has the highest priority. This model may have high effects on KM while taking the staff's attitude and their spent energy into account.

Energy Investment Model considers two positive and negative and two high and low states for the staff's energy. The cross point of each of these states describes a special condition of the staff.

1) Negative attitude – high energy: the staff having negative attitude towards the policies and objectives of the organization and at the same time enjoying high energy are called "cynic". They may be the people of high merits but they often feel that they are broken and they spend so much energy to explain their own failures and helplessness.

2) Negative attitude – low energy: these groups of staffs are called "deadwood", and have no energy to affect the events in their organization. They are generally being treated as scapegoat. They have the minimum involvement to their job and organization.

3) Positive attitude – low energy: these staffs are called "spectators". They speak positively about their job and organization, but they rarely spend any efforts or do anything different for their job, unless they become assured that this is safe and secure.

4) Positive attitude – high energy: these staffs are called "performers". They speak positively about their job and organization and spend considerable energy - not only for better fulfillment of their job, but for the improvement of affairs. They believe they can make a difference and they often do that.





Figure 1: Energy Investment Model

# The Strategies for Transformational Leaders to Pave the Ground for KM while Highlighting Energy Investment Model

#### A) Strategies for Cynics

To support them by senior managers, to make them involved in challenging works, to give them the opportunity to affect the affairs of the organization, to follow-up their activities, and side-by-side cooperation of the staff and the managers, using incentives to improve their attitudes and taking advantage of their high energy to achieve the objectives of the organization.

#### **B) Strategies for Spectators**

Expressing their important roles in the organization by senior managers, asking them to participate in the activities, ignoring their mistakes at the beginning and supporting them instead of reprimanding them, removing the environment of fear and anxiety for them, and praising them at the presence of the others.

#### **C)** Strategies for Deadwood

To enrich the jobs of these staffs and to create new opportunities for them, to encourage them to offer suggestions for the improvements of affairs and to implement their plans, to involve them into team works and communities, trust-making and enhancing the skills through education and training.



#### **D) Strategies for Performers**

To eliminate bureaucratic structures in the organization, to pave the way for challenging works, to provide upto-date information about their jobs, and to inform them about the progresses and the trends of affairs, to admire their works and help them promote.

#### Proposed Model for KM and the Necessity for the Tax Organization

The results of the survey research of the present study which identify the factors of leadership, culture, technology, activities and processes, education, human resources and infrastructure, respectively affecting the knowledge creation in the Tax Organization, should be framed coherently in an optimized model to embrace the activities of the organization in a knowledge-based context mixed with the principles of knowledge-centered approach in line with the strategies of the organization. For this reason, the existing KM models will be examined, and by combining the strong and positive points of these models, an optimized and appropriate model is prepared for the Tax Organization. The general schema for the classification of KM model, which may be called the zero level models, is presented in the following figure (figure 2).



Figure 2: Zero Level for Knowledge Management Models

#### Classification of Theories and Models of KM with regard to Eight Phase Model Classification

A glance to the evolution of proposed theories within the field of KM indicates the completion and improvement of KM models over time, in a way that they have evolved from multiple stages including: identification, creation, acquisition and storage to the processes of implementation, auditing and evaluation of the results. Figure 3 shows the level classification of KM theories and models during two decades (the last decade of the 20<sup>th</sup> century and the 1<sup>st</sup> decade of the 21<sup>st</sup>).





Figur 3: Level One of KM Models

#### Integrating KM models – Level 2

Classification of KM models shows that many proposed theories in different models are overlapping. It means that a theory, due to the variety of models and proposed theories, is presented in more than one rank over the years. With a holistic approach towards the proposed processes in different models, the last three groups - which embrace the implementation of KM from identification and acquisition of knowledge to the deployment stages and performance efficiency measurement - may be considered a comprehensive model. Therefore, models' classification may be summarized and subordinate groups separated to integrate KM models, preventing dispersion of proposed models, and facilitating the application of a suitable model for an organization.



Figure 4: Integration of KM Models



## KM Proposed Model for the Tax Organization: KM Optimized Model

To eliminate the deficiencies and shortages of the previous models (such as lack of following-up the collected knowledge to the final implementation, lack of supervision mechanisms on the results of implementation, lack of utilizing the learning principles in transferring the knowledge in most of the models, ignoring the principles of auditing and evaluating the knowledge as well as lack of using enablers and incentives to encourage the staff to take advantage of and share their knowledge with the organization) and with the results of the first section of this study (effective factors on KM) providing a model to cover a comprehensive process of KM implementation which supports the outcome is essential. In the optimized model of KM, the seven stages are suggested as (Figure 5):

- 1- Organizing
- 2- Identification
- 3- Acquisition
- 4- Distribution & Sharing
- 5- Implementation
- 6- Revision
- 7- Auditing & Evaluation



Figure 5: Optimized Model for KM

As you see in figure 5, optimized model for KM consists of 7 stages and each stage has some subdivisions. They are as follows:

#### **First stage: Organizing**

- 1. Determining the strategy for KM: It includes determining sound and proper strategy, mission and vision by senior managers, and the staff's obligation to correct implementation of KM.
- 2. Building Culture: creating a true perception of KM for the staff and beneficiaries and applying strategies such as training, pertinent symposiums and seminars, presenting the experiences of other organizations in establishing KM, developing the existing library resources, etc.



3. Team Building: organizing KM teams of expert staffs for the purpose of setting up regular meetings and seminars about appropriate strategies in order to identify the problems and provide necessary suggestions to resolve the problems and barriers and to transfer the KM outcomes and share them with others.

## Second Stage – Identification

- 1. Looking for different work areas and analyzing them: analyzing different areas of the organization and looking for potentials to strengthen, developing and enriching knowledge and identifying week points and problems.
- 2. Recognizing existing gaps and administrative barriers: determining priorities and barriers facing optimization and enhancement of affairs for development.
- 3. Identifying the problems and determining their origins: determining the origin of the problems.

## **Third Stage: Acquisition**

- 1. Creation: examining the similar cases in the organization or in other organizations and benefiting from the comparative studies and creating suitable strategies to resolve the problems.
- 2. Embodiment: embodying ideal results and invention and creativity and discussion and the image of expected results.
- 3. Developing suggested strategies based on the existing reality.

#### Fourth Stage – Dissemination and Sharing

- 1. Refining: refining the suggested strategies and selecting the best one through collecting all the comments from different committees.
- 2. Integration: examining suggested strategies and the selected ones by the methods such as brainstorming, Delphi, etc. in order for final confirmation and the integration of comments
- 3. Training: training the acquired results and selected strategies to the staff for the purpose of implementation to resolve the problems and for development.
- 4. Sharing the Results: Sharing the acquired knowledge through proper methods in all the layers of organization and transferring the staffs' ideas to others.

#### Fifth Stage – Deployment and Implementation

- 1. Modeling and Planning (where, how, when, who): Preparing a suitable model and planning for implementation. Preparing Action Plan and determining each activity should be done how, where, by whom, or when
- 2. Implementation: implementing needed activities to obtain knowledge outcomes through organizing executive groups based on the planning.

#### Sixth Stage – Revision

- 1. Identifying and Compiling the Outcomes: compiling the outcomes in each period (based on the programs) after executing the activities
- 2. Determining the Expected Consequences: defining the KM expected outcomes in order to acquire better results
- 3. Revision of outcomes: total revision of outcomes after implementation in order to enter the auditing stage and re-implementation if necessary.

#### Seventh Stage- Auditing and Evaluation

- 1. Comparing the real with expected outcomes: comparing the expected outcomes with the real outputs.
- 2. Determining the differences: identifying the differences for re-implementation and planning to resolve the deficiencies.
- 3. Disseminating the results: disseminating the results of implementation and the defined outcomes in different layers of the organization and sharing them with the other staffs.
- 4. Providing a strategy for improvement: providing the suggested comments and strategies of staff to a special committee which is responsible.



5- Executing the strategies (repeating the third stage): examining the suggested comments of staff, expert & knowledge teams, and if appropriate, determining the best practice for implementation and going back to third stage.

#### The Status of Change Process in KM Deployment in the Tax Organization

For the people and the staff, to be accustomed to the status quo is something evident. Human being, during the years, has resisted and reacted against any change in his condition. The people in any organization think their position is threatened and weakened by any change. Thus, in order to establish the new condition in an organization, the resistance context should be identified and appropriate strategies be adopted. In other words, change management must be implemented simultaneously with the deployment and implementation of any new system in the organization. Change management in the organization has three phases including: preparation, admission, and obligation. Hence, these three phases should be achieved before making any change in the organization. It is certain that to deploy KM system in an organization, the conditions have to be prepared and the people to be informed desirably. It may be done through building the culture and organizing the thoughts as well as receiving the support of leadership. Accepting the new conditions such as: creating, sharing, and applying the knowledge is settled through making the people involved in the knowledge-based processes and activities. We may observe the third phase of change management, which is the obligation of the staff and managers against the changes, in the final phase of the KM optimized model. This is achievable through continuous evaluation and revision of what so ever done under the name of KM in the organization and is in need of the constant obligation of managers and the staff for the improvement of auditing results. The figure 6 shows the schema of change management schema versus the KM optimized model.



Figure 6: Change Management vs. KM Optimized Model

#### **Barriers of KM in the Organization**

The change has always faced the resistance of the human; the capacity of learning and discovering appropriate change and its deployment is an important ability and is considered a key component in the changing world for



being pioneer. Indeed, the learning capacity and making suitable change is the most important ability a human group may have in the modern competitive world (Mashayekhi, 2005, quoted by Gholami, 2007).

KM as a systematic approach is not successful in an organization unless there is a strong will to face the obstacles and resolving them. The most important barriers are as follows:

- 1. Human Barriers: knowledge, according to many people, is power. Therefore, that the people do not deliver their power to others is a dominant thought in the organizations. In other words, people do not share their knowledge. As a result, the important link of KM is eliminated and the knowledge is kept exclusively within the domain of each person. Such knowledge loses its social entity and does not enjoy the relation and interaction, which are necessary for its growth.
- 2. Organizational Barriers: these barriers, including non-flexible and hierarchical structures, lack of senior managers' support for the programs and strategies of KM, lack of sufficient motivation in the people, conflict of the role, etc., are the cause of resistance in the organization against the successful implementation of KM.
- 3. Cultural Barriers: the existence of trust among the staff is a significant factor to develop the objectives of KM. KM is not successful without the trust-based sharing culture. The culture of knowledge sharing and sharing the results has high impact on the efficiency of KM programs.
- 4. Political Barriers: this idea that the knowledge is power may be manifested as a political barrier. The people with power may exert over others and gain political power. The power of knowledge and the political power are two factors hindering the suitable knowledge distribution in the organization. In that case, KM faces serious challenge since it needs the vast distribution in the organization.
- 5. Technical and Technological Factors: utilizing the new science and technology for creating, distributing and applying the knowledge is an important issue in the organization. The entity of this technology should receive more attention, in a way that it does not act as a deterrent to hinder people have access to the knowledge in the organization or leads to the exclusivity of knowledge in a part of the organization.

## Practical and Applicable Suggestions in the Tax Organization

With regard to the results of the present study and highlighting the effective factors on knowledge management in the Tax Organization, it is suggested that this organization should try to resolve the existing barriers and to fortify the positive points through taking advantage of KM optimized model in defining the knowledge based mission, vision and strategies and identifying the factors affecting the knowledge creation (leadership, culture, processes, human resources, etc.). The Tax Organization may enjoy the following strategies:

- Identifying types of staff based on the Energy Investment Model in the organization and trying to change the negative and using positive approaches and energy of the staff in advancing the objectives of the organization based on the planned strategies in this study.
- Identifying and developing susceptible human capital capacities in proportion to their competencies (organizational empowerment).
- Updating the knowledge of the staff constantly in IT and applying it in economic affairs, customer satisfaction, etc. (organizational learning).
- Applying knowledge evaluation mechanisms for the staff of the organization.
- Organizing a knowledge center in the organization in order to prepare a platform to access the shared and new information of the current affairs of the organization.
- Using Sharing Information Systems (such as SharePoint), etc.

## CONCLUSION

At the present era, the organizations are facing information resources and new knowledge emanating from the intellectual capital. The existence of proper infrastructures and contexts to create knowledge, and identify the accelerators and the interaction among different layers of the organization leads to the creation of a cycle of driving force, called knowledge, in the organization. If this driving force is not managed properly, the knowledge is monopolized and cross points will be lost in the layers of the organization. Statistical tests (One Sample T Test, Freedman Test) introduce factors including: leadership, culture, processes, human resources,



education, technology and infrastructure as the accelerators for the knowledge creation in the Tax Organization. The survey results show that the leadership factor has the highest impact on knowledge creation since it highlights the mission and vision of a knowledge-based organization and has the ability to provide necessary incentives and support. Despite the increasing importance of KM among scholars, various models examining the different dimensions of KM have been proposed. Since KM is an integrated approach and system, and all the aspects should be surveyed from the earliest stages, eliminating the resistance of staff against the change and creating the sense of admission to knowledge sharing with others requires determining the strategies and building the culture in the organization. The continuous obligation of managers and the staff should be revised in the organization through knowledge management evaluating and auditing tools. Consequently, the knowledge management optimized model with its seven stages, beginning from the organization and ending to the evaluation, tries to discover, identify and create the knowledge by minimizing the barriers and resistances against the changes, and to disseminate and share the knowledge throughout the organization.

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## THE READINESS LEVELS OF SECONDARY SCHOOL ADMINISTRATORS TO THE INNOVATION MANAGEMENT

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#### ABSTRACT

The innovation management has great significance in the creation of future educational institutions. These institutions, which undertake important mission in converting the innovative activities to economic and social values, are also expected to be ready for the innovation management. The knowledge of the readiness levels of the administrators of these institutions to the innovation management is seen to be a significant factor in the innovation of educational institutions.

This research was seen to be necessary by the virtue of this importance. It was conducted with the aim of determining "the Readiness Levels of Secondary School Administrators to the Innovation Management" through their own opinions, and providing suggestions in the light of these opinions.

In order for the research, which was carried out by using the *General scan model*, to achieve the specified objectives, primarily the literature review was performed. For determining the opinions, the "School Administrators Innovation Attitude Scale" was used in order to determine opinions, which was developed by Top as a 24-item five-point likert scale, determined the Cronbach Alpha reliability parameter as 0,895, and adapted in 2012 to Nevşehir province. School principals and Vice-principals, working at secondary schools in Nevşehir province in the academic year of 2011-2012, constitute the population of this research.

As a result of the research, school administrators stated that they were ready for innovation management according to the overall arithmetic averages in the level of " $\overline{X}$ =4,33" with a degree of "completely." When analyzed in terms of duty variable, it was discovered that school principals, unlike vice-principals, were ready for innovation management at higher levels. It can be stated that after school administrators get promoted to the rank of school principal, then, their readiness levels to the innovation proposals increased. The following suggestions have been made by looking at the research results: assuring measures should be taken to enable vice-principals to get post-graduate level training which also includes innovative management in order to render them more sensitive on the subject of innovative management and efforts that would ensure innovative management to be the vision of schools should be concentrated upon. The reason behind the increase in the attitudes of school administrators towards innovation after getting promoted to the position of school principal should be treated as a separate subject of research.

Key Words: Education, School, Innovation, Administrator, Secondary School.

#### INTRODUCTION

This research was conducted with the aim of determining the "the Readiness Levels of Secondary School (High-School) Administrators to the Innovation Management" in line with their own opinions, and presenting suggestions to the implementers in the light of these opinions. When we consider the general purpose of education systems in accordance with the specified targets, the ability of the individuals living in society to see the problems by paying attention to the needs of the society and develop the ability to solve them, and to raise



the level of satisfaction, it will appear before us as a requirement that educational organizations, which will realize these purposes, reshape their management philosophies in accordance with the needs of the age as well as the future without standing idle against the changes and developments taking place in the world (Töremen, 2002: 185-202).

Based on Top's (2011: 6) quotation from Elçi (2006), innovation, which means "the introduction of new methods in social, cultural and administrative environment," includes factors such as the better satisfaction of human beings as stated-above which harbors innovations, changes and developments in its essence with its Turkish equivalence, the offering of more quality and productive services (Top, 2011: 6). This being the case, the adopted application of the management perception, which is open to innovations, comes to the forefront (Taş, 2007: 183-192; Top, 2011: 6). It appears before us as a requirement that educational organizations, in a rapidly changing world, should shape their management philosophies in accordance with the needs of the age and the future without standing idle against the changes and developments taking place in the world. In order to educate the human being of the 21<sup>st</sup> century, who has made continuous development as the philosophy of life, thinks analytically, possesses improved problem-solving and decision-making skills, is open to the concept of team-work and flexible, seeks information and has access to it, is eager to learn, has high personal qualities and a room with self-improvement, is a believer, is an entrepreneur, is self-confident, has national and universal values, it is necessary for every school to transform into a school of quality one by one. This necessitates the indication of change that will enable the improvement in education, and, the coordination of families in addition to teachers and students, school administrators, and the participation of all related members of society together with the efforts of continuous development (Gülşen, 2003: 68-69). The readiness levels of the administrators to this innovation become more important in achieving the purpose of these efforts.

It is widely accepted that the change and innovation concepts of the administrators of educational institutions highly affect the achievement of the specified objectives. From this point of view, since the management perceptions of the administrators will affect the realization levels of the specified objectives in the institutions, it becomes greatly important to discover whether these perceptions overlap with modern administrative conception or not. According to Özden's (1998: 44) quotation, Deming believes in the necessity of initiating change in the institutions by administrators. Since it is obvious that the school administrators will be effective in the application of these changes and innovations in educational institutions, priority should be given in convincing these people on the subject of innovation.

For this purpose, the emphasis was given to determine what "Possible Factors Affecting the Implementation of Innovation in the Education System" by conducting a prior field-scanning and the conceptual framework was established. Later on, for determining opinions, the "School Administrators Innovation Attitude Scale," which was developed by Top (2011) as a 24-item five-point likert scale, determined the Cronbach Alpha reliability parameter as 0,895, and adapted in 2012 to Nevşehir province, was implemented and evaluation was made as result of statistical analysis. In this part of the research, the conceptual framework of the research was primarily focused.

#### **Change and Innovation in Education**

In the world of today, when considering the idea that organizations existed for human beings began to shape the management philosophies in dizzying pace of change and developments happening almost in every area, educational institutions, whose raw material is humans, are required to adopt modern management approaches that place human at the center. Because it is a reality that must be accepted that educational institutions, like all other institutions, cannot remain indifferent in the face of these changes and developments. Starting from this reality, orientation towards human-centered modern management approaches in educational organizations is seen to be mandatory (Bursalioğlu, 1991: 1-57; Eren, 1989: 10-43; Güçlü, 2000: 23-29; Kozlu, 1986: 4-30; Özdemir, 1997: 2). In such circumstances, instead of blindly trying to manage institutions by strictly adhering to the management approaches of the past, the adoptive application of management approaches, which are open to innovation, comes to the forefront (Drucker, 1998: 228-229; Taş,



2007: 183-192; Töremen, 2002: 185-202). When it comes to the stage of implementation, implementers may encounter certain obstacles as described below.

#### **Factors Affecting Implementation of Innovations in Education**

In order to educate the human being of the 21<sup>st</sup> century, who has made the continuous development as the philosophy of life, thinks analytically, possesses improved problem-solving and decision-making skills, is open to the concept of team-work and flexible, seeks information and has access to it, is eager to learn, has high personal qualities and a room with self-improvement, is a believer, is an entrepreneur, is self-confident, has national and universal values, it is necessary for every school to transform into a school of quality one by one and school administrators should also be pioneers in this transformation. This necessitates the indication of change that will enable the improvement in education, and, the coordination of families in addition to teachers and students, school administrators, and the participation of all related members of society together with the efforts of continuous development (Gülşen, 2003: 68-69).

According to research conducted in the field of education, the desired results cannot be achieved from the innovation activities happening occurring in educational organization despite all the good intensions since the necessary co-ordination was not obtained due to mistakes made in all the stages of implementation from the planning of the innovations in education. During the process of innovation, a number factors, affecting the implementation of innovation either positively or negatively, has been encountered each time. Factors affecting the implementation of innovations in education can be classified as such: a) Political Factors, b) Environmental Factors, c) Intervention Factors and d) Resource Factors (Cemaloğlu, 1999: 17-25, Karip, 1997: 65-77).

#### a) Political Factors

Certain institutional policies are needed to be adopted in order to carry out the purposes and principles of administration. Institutional policies provide guidance to the actions of administration, and prepare the ground for the creation of institutional culture shaped by the vision and mission. Well-defined institutional policies will facilitate the smooth execution of institutional mechanism. While Rogers & Shaemaker (1971: 22-23) state that it would take a long time for innovation to find a large area of implementation after its full-adaptation, they also mention that certain characteristics of innovation implementations such as *relative advantage*, *compatibility, provability, and discernability*, affect this period of acceptance.

It is necessary to know the educational policy factors for the smooth execution of educational policies. Educational policy factors, either inside or outside of educational system, are supremacies that could have direct or indirect effect and inflict the desired impact upon themselves through education policy. (Hesapcioglu, 1994: 35; Karip, 1997: 65-68).

#### **b)** Environmental Factors

It is necessary to make changes in the institutional environment in addition to the physical elements in order to trigger behavioral change both in personnel and students of the educational institutions. Environments, which attempt to carry out institutional purposes with win-win approach, will facilitate innovation in education (Covey, 1998, p.218). It is expected that each of the top-level educational administrators should primarily be leaders with visions that focus on innovation and with mentality that is open to innovation (Munroe, 2010: 146-147).

#### c) Intervention Factors

In order to make the anticipated changes in innovation plans, it is necessary to have reliable information about education system as well as the related external environment, to use technological opportunities effectively and to ensure the participation of all parties (Gülşen, 2011: 170; Kavrakoglu, 1997: 45). The individual perceptions of innovation implementers on innovation are directly proportional to their dedication to innovation. The motivation levels and innovation perceptions of school administrators also have a decisive influence on the success of the implementation of innovation in education.



#### d) Resource Factors

It is expected the change to take place more easily in schools with an adequate level of financial resources. There is a need for staff that will use the financial resources well for the successful implementation of innovation. The success of the implementation depends upon the qualifications of the personnel who will carry out that particular implementation. In addition to the adequacy of staff, it is also necessary to adapt encouraging as well as discouraging implementation of sanctions as a policy in the institution about innovation when occasions require (Cemaloğlu, 1999: 17-25, Karip, 1997: 65-77).

The knowledge of the stages of the innovation is thought to be important when the above-mentioned factors are considered. Information in the process of innovation, collected from techniques and tools, is evaluated in an appropriate and systematic way. Later on, ideas are developed with these evaluations and, then, these ideas are transformed into the methods and tools of design and production (Eren, 1989: 29). The process of innovation can be analyzed in five stages, each of which should be developed by creativity. These stages are as follows (Top, 2011: 16):

- a. "At which field institution requires innovation should be determined at first.
- b. New ideas should be created in the areas institution feels the need for innovation.
- c. Ideas, which are decided to be implemented, are turned into conceptual states. The interaction of the idea of innovation with cost calculations is provided after making the task analysis.
- d. The tasks of developing innovation are materialized with the participation of all units of the institution.
- e. The implementation stage of ideas that turned into product is expected to positively affect the motivation of the institution."

When the above-stated factors and features are considered, it is also necessary to analyze the process of transforming innovation activities into the product by adapting them to a particular school in educational institutions. In this process, it was seen that administrator attitudes and the readiness levels to innovation management have great importance in leaving positive affect in the institutional motivation of that school. The knowledge of the attitudes of administrators, who work particularly at secondary schools that provide training prior to business life and higher education, towards the innovation management, was seen to be more important, and thus the need to conduct such a research and to learn opinions on "The Innovation Management of Secondary School Administrators" had been felt.

#### **METHOD**

#### **Research Model and Population and Sampling**

In order to execute this research, the *General scan model* has been used. The "School Administrators Innovation Attitude Scale" was used with the purpose of determining opinions.

School principals, chief vice-principals, vice-principals (instead of using expressions like chief vice-principals and vice-principals, only the expression of "vice-principal" will be used from now onwards), working at secondary schools (high schools) in Nevşehir province in the academic year of 2011-2012, constitute the population of this research. Since all school administrators that make up the research population were contacted, no extra sampling was taken. Data on the scale participation levels of the sample group are shown in Table 1.



	Scale		TOTAL			
Sampling Group	Responders				Non-responders	
	f	%	f	%	f	%
School Principal	35	74,47	12	25,53	47	100
Chief Vice-Principal/Vice-Principal	117	95,12	6	04,88	123	100
TOTAL	152	89,41	18	10,59	170	100

## Table 1:Scale Participation Frequencies (f) and Percentage (%)Distributions of the Sampling Group

As can be seen in Table 1, the total of 89.41% of the scales sent, in other words, 152 of them were returned. The weights assigned for the participation degrees to the statements in the scale and the limits of these weights are shown in Table 2. The weight degrees of the statements in the scale developed by five-point likert scale type, as seen in Table 2, followed a positive pattern from the option of "strongly disagree" to "totally agree" option.

WEIGHT	OPTION	LIMITS
1	Strongly Disagree	1.00–1.80
2	Disagree	1.81–2.60
3	Partially Agree	2.61-3.40
4	Mostly Agree	3.41-4.20
5	Totally Agree	4.21-5.00

Table 2:Weights Assigned for the Participation Degree to the Statements and Limits of These Weights

#### Data Collection Tool And Its Development And Interpretation

First of all, the literature review was conducted in order for the research to achieve the specified objectives. The "School Administrators Innovation Attitude Scale," developed by Top in 2011, prepared as a five-point likert scale type and consists of 24 items, was used in the evaluation of the opinions of administrators, working at secondary schools (high schools) in Nevşehir province, towards innovation management. Statistical programs were used in the interpretation of data obtained with the scale. All the reliability and validity analysis of the scale were done by Top (2011, p.56), and their factor loadings and reliability values were determined as a result of Cronbach alpha reliability analysis. The obtained results are shown in Table 3.

Table	3:	"School	Administrators	Innovation	Attitude Scale	" Value and	Indicators
TUDIC	<b>J</b> .	3011001	/ anningtrators	minovation	Attitude Scule	vulue ullu	maicutors

Factor Name	Number of Items	Factor loadings	Explained Variance %	Explained Variance cumulative %	Cronbach alpha
Readiness for Innovation Management	24	10,987	45,779	45,779	0,895



## FINDINGS AND COMMENTS

In this section of research, data, obtained by scale on "The Readiness Levels of Secondary School Administrators to the Innovation Management," was interpreted with the help of statistical processes and were placed in tables. The packaged programs in computer environment were made use of in the interpretation of data. Assessments have been made in the light of the information obtained as a result of interpretations. Tables that were created with the help of obtained data and assessments based on these data given in the tables are shown below.

## Table 4: General Results of School Administrators Innovation Attitude Scale

Duty Vari	able	f	x
1	School Principal	35	4,49
2	Chief Vice-Principal / Vice-Principal	117	4.18
General A	4.33		

When Table 4 is analyzed according to research data, school administrators showed their participation to the suggestions in innovation management scale with general arithmetic mean of " $\overline{X}$ =4,33" and with the degree of "totally agree." When data is analyzed separately according to duty variable, while school administrators stated their participation, according to general arithmetic mean, to suggestions in the scale with the level of " $\overline{X}$ =4,49," and with the degree of "totally agree," whereas vice-principals stated their participation with the level of " $\overline{X}$ =4,49," and with the degree of "mostly agree," This result overlaps with the research data conducted by Top (2011, p.60-64). With regard to School Administrators Innovation Attitude Scale, in the tests carried out in order to identify the difference in the readiness levels according to the duty variable, a significant difference in favor of school principals was discovered between school principals and vice-principals in the level of p<0,01. According to this result, it can be stated that school principals approach to innovation management more positive, and their readiness levels are at higher level than those of vice-principal. It was seen that the duty school administrators perform is a variable which affects their perceptions related to innovation and there has been an increase in the readiness levels of administrators to innovation statements after they got promoted to the position of school principal. When all of statements in the scale were analyzed and evaluated, the following data have been discovered. These data were described in Table 5.

Nie	Statements		Principal		Vice-Principal	
NO	statements	Ν	x	N	x	
1	I easily adapt to changes since we possess innovative organizational culture.	35	4,50	117	4,25	
2	In-service trainings and seminar works that I attended allow me to be innovative.	35	4,00	117	4,00	
3	I easily adapt to innovations because of the academic education I received.	35	4,75	117	4,00	
4	Innovation is among the long-term main objectives of our school.	35	4,50	117	3,50	
5	I work for the adaptation of the innovation concept as a vision at our school.	35	4,75	117	4,50	
6	Our school has an innovative culture (like being open to innovation)	35	4,25	117	4,00	
7	I provide opportunities for staff to show their creativity.	35	4,75	117	4,50	
8	l provide opportunity to staff for their individual development.	35	4,50	117	4,75	

Table 5: School Administrators Innovation Attitude Scale



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9	l support the staff to take risks in the work processes.	35	4,75	117	4,00
10	I provide environments that support and motivate innovation for those who want to make innovation.	35	4,50	117	4,50
11	I provide all tools such as authority, and source to group or individuals who want to make innovation at our school.	35	4,00	117	4,50
12	I ensure the use of all the resources of our school to carry out the objectives.	35	4,25	117	3,75
13	I ensure the use of all the resources of our school to carry out the objectives.	35	4,25	117	4,00
14	Staff easily expresses their opinions and suggestions in environments where administrators are present and propose suggestions to the administration about programs or activities.	35	4,75	117	4,00
15	I take criticism and objections of the staff seriously.	35	4,50	117	4,50
16	I inform staff about the results of innovation (innovative implementations).	35	4,25	117	4,24
17	I encourage teachers and staff to get information about educational activities.			117	4,75
18	I pay attention the perspectives of the staff towards innovation.	35	5,00	117	4,50
19	I bring an innovative structure to the human resources of the school I work.	35	4,75	117	3,75
20	I think it is necessary to establish a Research and Development Department in order to transform the developed new ideas into new implementations.	35	4,50	117	4,00
21	Innovation help us to recognize the internal and external environment, to adapt to our environment and to see the future better as school.	35	4,25	117	4,50
22	I believe that making innovation (innovative administration) puts us one step forward in external competition.		4,75	117	4,50
23	Our school has clear objectives for innovation.	35	4,50	117	3,75
24	I allowed the creation of autonomous units such as project groups, quality circle and development teams in our school.	35	4,25	117	3,75
GENE	RAL AVERAGE	35	4,49	117	4,18

When items in Table 5 are separately analyzed, the highest level of participation was shown by principals with the degree of "X=5.00" at the level "totally agree" to the statement of "I pay attention the perspectives of the staff towards innovation." The lowest level of participation was shown by vice-principals with the degree of "X =3.50" at the level of "mostly agree" to the statement of "Innovation is among the long-term main objectives of our school." When analyzed separately according to duty variable, while the highest level of participation was shown by school principals with the degree of " $\overline{X}$ =5.00" at the level of "totally agree" to statement number 18, which is "I pay attention the perspectives of the staff towards innovation," whereas the highest level of participation was shown by vice-principals with the degree of " $\overline{X}$ =4.75" at the level of "totally agree" to statement number 8, which is "I provide opportunity to staff for their individual development." The statements, for which the lowest level of participation was shown, were the statement number 2, which is "Inservice trainings and seminar works that I attended allow me to be innovative," and the statement number 11, which is "I provide all tools such as authority, and source to group or individuals who want to make innovation at our school." School principals showed participation to both of these statements with the degree of "X=4.00" and at the degree of "mostly agree." The statement, for which the lowest participation was shown by vice-principals, and the statement, for which the lowest participation was recorded throughout the scale, was the statement number 4, which is "Innovation is among the long-term main objectives of our school." Viceprincipals showed their participation to this statement with the degree of "X=3.50" at the level of "mostly agree" which is closer to the choice of "neutral."



#### **CONCLUSIONS AND SUGGESTIONS**

#### Conclusions

The following conclusions have been reached as a result of the research:

- 1. As a result of the research, school administrators stated their readiness to the innovation management with the degree of " $\overline{X}$ =4,33" at the level of "full" according to general arithmetic mean.
- 2. It was seen that there has been an increase in the readiness levels of administrators to the innovation statements after being promoted to the rank of school principal.
- 3. When analyzed in terms of duty variable, it was seen that school principals showed higher readiness levels with regard to vice-principals.
- 4. While principals stated their readiness to innovation management with the degree of "totally," viceprincipals expressed their readiness to it with the degree of "mostly."
- 5. The highest level of participation was shown by principals with the degree of " $\overline{X}$ =5.00" at the level of "totally" to statement of "I pay attention the perspectives of the staff towards innovation."
- 6. In the statement, where the lowest participation was seen, vice-principals showed their participation with the degree of " $\overline{X}$ =3.50" at the level of "mostly" to the statement of "I provide opportunity to staff for their individual development."

#### Suggestions

The following suggestions are deemed to be appropriate based on the research results.

- 1. In order to render vice-principals more sensitive in the subject of innovation management by looking at the results, necessary measures should be taken to ensure that they receive graduate education.
- 2. In order to ensure the inclusion of innovation management among the long-term objectives of schools, the periodical enlightenment of all stakeholders on innovation management should be realized.
- 3. It is also necessary to consult to the opinions of other stakeholders in order to obtain more comprehensive results.
- 4. It is a necessity to make a better planning in order to free innovation movements from political policies, to ensure required coordination by overcoming bureaucratic obstacles, to obtain adequate level of financial support, to take expectations into account and to keep differences in mind.
- 5. The reason behind the increase in the attitudes of school administrators towards innovation after getting promoted to the position of school principal should be treated as a separate subject of research.

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## THE IMPORTANCE OF MEN'S ROLE IN HEALTH CARE EDUCATION

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#### ABSTRACT

Changes in social roles and changes in social thinking in the post-modern society have led to changes in gender structure in certain occupations. Some former exclusively male occupations have now become also available to women - and vice versa. This state has been observed focusing in the field of health care which until recently, has been specifically understood as a women's professional field, in which more and more men are integrated nowadays. Notably, the share of men in nursing has been increasing recently, but an increased enrolment of men in nursing studies can be noted as well. By increasing the proportion of men in typically female profession, it logically comes to a slowdown of drastic changes and the perception of men in nursing. The issue of men in nursing is associated with stereotypes of nurses and stereotypes about male nurses. The widespread stereotype of the nurse - an angel of mercy - is deeply present in our society, as a nurse is seen as the one who first or last offers a caring and gentle hand to the sick, the baby, the injured and the dying. In the history of social relations this role has been understood and practised for a long time as exclusively female. The character of a nurse in the contemporary Slovenian post-modern society no longer coincides with the traditional idea of the roles of men and therefore poses a problem for patients, doctors and even the employees in health care. Patients who are in contact with men employed in health care develop a different relationship towards them with a woman who is a nurse. The relationship is more imbued with humour, based on camaraderie and the physical contact is reduced to an absolute minimum. Doctors prefer to ask them and do not expect (and require even less!) them to cook coffee or open the door for them. In the nursing team male colleagues are treated differently than female colleagues. Most of the differences are observed in the task distribution and the duties, as men are assigned to work where the need for greater physical strength and / or greater technical complexity is evident. For all the reasons above, male nursing is distributed at psychiatry, in emergency rooms and emergency services, while it is less noticeable at the pre-natal department of gynecology and paediatrics.

In a study in which we wanted to clarify some misconceptions rooted in the Slovenian society, especially regarding the "typical female profession of nursing," we analysed the presence of men in nursing – in the field of health care. The study was based on a quantitative methodology from May to the end of June 2012 involving respondents, regular (39%) and part-time (61%) undergraduate students of nursing. Based on empirical data, we found how the respondents, students of the Faculty of Health Sciences, University of Maribor, regardless of the study mode, did not detect differences in treatment of students during the study. Nevertheless, the respondents highlighted the notion of a typical feminine trait of nurses' (e.g., kindness, care, tenderness, empathy, warmth) and men's properties (e.g. strength, determination and authoritativeness). Although they estimated, how the respondents, i.e. the study part-time students expressed more devotion and concern towards more masculine features. Such expectations also reflect the perceptions of employees in health care based on gender in the Slovenian post - modern society. The respondents also highlighted high requirements for a good nurse. Her personal qualities are important: highly stressed due diligence, empathy, assertiveness and independence. These properties are the preconditions for the exercising her professional competence. And, last but not least, they are expected- from patients to relatives and members of the nursing and medical



team as well. According to how gender has been surveyed, we can conclude that it does not affect the quality of a good nurse. But at the same time we noted how, in the choice of work conditions, the gender does affect some fields of health care areas, as the respondents marked the emergency room, medical care and psychiatry to be the most masculine while they attributed nursing care in paediatrics, administrative work and gynecology more as a female workforce. This is also confirmed by Evans (2004), who states how the presence of women in psychiatric wards and emergency rooms has been more noticeable than in other areas of health care.

Key Words: Education, health care, men's role, nurse, stereotypes, mass media.

## INTRODUCTION

According to the interpretation of the concept of gender in the DZS Big General Lexicon (2012), we get the following description: sex and sexus in biology means all the properties that are in the body associated with reproduction for which you have two individuals of the same species different. Between the sexes there are also differences in the morphology which are not directly related to the reproduction. Gender is a phenotypic (a phenotype) and it reflects in the external genital signs, glands, which depends on the development of the glands (male / female) and genetic signs, which depends on the sex chromosomes (XX for female, XY for men). The most common and the most grave definition of sex is the definition of sex as a biological and gender as a social gender. The biological and social gender seem to be self-evident. They are applied, rightly or wrongly, to define us, our relationships with others and our position in society.

In the early theories of sex, gender roles and the division of labour by sex the biological difference between the sexes was emphasized. Thus, the anthropologist Murdock understands biological differences as the basis for the division of labour in societies based on gender. A man with greater physical strength better performed heavy work, because unlike women he was not limited by the physiological burden of pregnancy and lactation, he may hunt, fish, and trade livestock. Women can perform light work in or around the home (Murdock in Haralambos and Holborn, 1999, 595)

Further theories of gender were focused on the terms masculinity and feminility and explored gender as personality traits. They should reflect the so-called psychological differences between men and women. Those typical for men are described as masculine and feminine for women. Numerous studies have focused on emotion as a typically female personality characteristic and aggression as a typically male trait. They include a hormonal theory interpretation of gender differences. In 1968, dr. Robert Stoller, an early researcher of the difference between biological (sex) and social gender (gender) stated that, whatever the biological differences between men and women are, it is the culture which most influences the behaviour of boys and girls in early childhood and makes them how to learn and behave as men and women: long hair for girls, short hair for boys and further differences occur by focusing on a variety of subjects: girls play with dolls, boys play with cars, guns etc. The most used verbal appeals are: good girl, naughty boy, guided in a variety of activities: girls are encouraged for household chores, boys for male jobs (Haralambos and Holborn, 1999, 589-599).

Social gender is not something we are born with or something from the very beginning we have, but what we are doing, we present and slowly becoming (West and Zimmerman in Furlan, 2006, 27-28). If we understand some of the differences between men and women as central, this is in itself a cultural fact and has its consequences, although this is a result of complex interactions between biological and cultural, not primarily biological findings (Morgan in Haralambos and Holborn, 1999, 599). With the above perspective, the socially constructed gender in the sense that the social behaviour of men and women is to be learnt and it is not an inevitable result of biological resources. The theory of expectations and gender roles emphasizes the influence of the environment and the impact of the difference between the sexes. Oakley (in Haralambos, 1999, 596) believes that people learn expected behaviour. Cultural factors determinate what the appropriate role of women and men is. Although there are some differences between female and male gender, Zupančič (2001) points out that such differences are indeed very small and fragile in time. Biological factors contribute significantly to gender differences in certain conduct, but the actual expression of these behaviours are



subjected by the impact of the environment. Also variations between people of the same-sex are greater than average differences between the sexes and thus the psychological differences between the sexes cannot be explained on the level of biological effects (Zupančič, 2001, 17).

Binary distribution, be it a product of nature or society, is resulting in uneven distribution of power. Highlighting the advantages and disadvantages of a particular sex encourages priority hierarchical orientation. In the Sociology of Gender such an arrangement is determined as sexism and according to Jogan (in Furlan, 2006, 54) referred to as " total belief, attitudes, patterns of influence and practical everyday operations, based on the strict separation of sex with individuals having specific unequal characteristics in terms of sex ".

For Parsons the biological difference between the sexes provides the basis for the division of labour and gender hierarchy, which is particularly reflected in the family. It indicates the women's role as expressive, as a woman creates warmth, care and emotional support. The man is the one who has the instrumental role as facilitator of the family, as he spends his working day outside the home and is, mainly due to the importance of his professional role, the instrumental leader of the family - patres familias (Haralambos and Holborn, 1999). Parsons' theory of the biological hierarchy between the sexes is opposed by Oakley, as she understands it as an artificially created myth, supported by the assumption that biology provides an essential role of women in society. Oakley has demonstrated that the maternal role is a cultural construction. Evidence from different societies demonstrate that children do not require continuous close intimate relationship with a female figure of the mother. Even Jogan (2001, 124) points out that the mere differentiation patterns of behaviour by gender is not an issue if it is not related to the sexual hierarchy. Hierarchy between men and women is not seen as a natural endowment, as a component of traditions that works because of tradition, but rather as a continuous historical process of integrated social re - / structuring process.

#### **GENDER AND HEALTH CARE**

Nursing is based on knowledge and techniques derived from humanic and natural sciences. It is a discipline the primary and fundamental task of which is to care for people and this task is different from other disciplines. Nursing is a science of how to help and care for people in a state of health and disease at the time of independence and when assistance in carrying out basic life activities is needed (Filej, 2001, 72). In English language, care is easily defined and derives from the noun *nurse*, who is a person who keeps, brings up and protects the other and is ready to care for sick, injured and elderly people. The nominal form of the word *nurse* comes from the Latin word nutrix which means mother who feeds. When the nurse is used as a verb, the latter describes a person who teaches, breastfeeds, cares for a child. The original use of the word nursing is associated with woman. Furthermore, the word nurse means a person who is caring for the sick (Urbančič, 1996, 21).

The history of nursing is mainly associated with the "natural" givenness and commitment of women to nurture. Even if men were involved in the care from the outset, the history of nursing is exclusively the history of achievements in the field of nursing (Evans, 2004, 321). The authors of various definitions of nursing were mainly nurses - scholars in the field of health care as well as a groups of experts of the World Health Organization and sociologists. Although it appears that treatment is exclusively in the domain of women, men were present in health care throughout history as well. As well, not only as a "senior" in the process, but as equal partners in care. Needs for a better organized health care emerged with the increase of the population in cities, because of infectious diseases due to poor sanitation, military marches and aid for the wounded. Thus, in the 4th century, during the Crusades, various male and female religious orders began to establish, which provided care for the wounded, sick and dying patients. Although the 16th century led to the dissolution of the majority of orders, some survived up to now: Sisters of Mercy, the Maltese Knight Order, the Augustinians. In the Middle Ages, poorly organized and unprofessional care was performed in various "institutions". Hospitals – asylums for the aged were established according to the needs of the cities when infectious diseases, many dying, psychiatric patients occured. In these hospitals most of the work was performed by laymans: men and women. Men mainly cared for alcoholics, mentally ill and aggressive patients. The presence of men in



psychiatric departments is evident today. The percentage of men in health care is considerably is higher than in other areas of health care (Evans, 2004, 327).

A major shift in health care was emerged in the 19<sup>th</sup> century at the time of Florence Nightingale's activities, which consequently led to the feminisation of the nursing profession and the decline of men's presence in nursing. The most drastic decline of men in nursing was noticed in the United States in the 60<sup>s</sup> of the 20th century, where only 1% of them was registered (Evans, 2004, 324). In the 90's of the last century, men who choose a career in health care faced a variety of prejudices. Although men left a great mark in the history of nursing, they still are a subject of different prejudices.

The entry of men into nursing is still not fully elucidated, as due to the association of nursing care with women the health workers – man's position has kept a degree of uncertainty. In this profession, male professionals assume certain women's properties .It is obvious that women, like men, are entering education and training programs, but in society there still are prejudices about men in nursing. It is understood that due to biological differences and the specific requirements of certain works in nursing, some jobs more dependent on men's physical strength and others more on women's tenderness. Whether the profession is seen as "female" or "male" depends on socially desired and expected gender roles, which have evolved over time and still depend on the respective social space, defined by the norms of people.

Due to the specific work with the sick, the infirm, the dying, children nursing care promotes typical female qualities: gentleness, empathy, care and belongs to female occupations. However, among the factors in the grip of the complexity of changing values, which affect the formation of values of nursing work, the following exceed:

- work environment (e.g. comp. noise, extreme sources of heat, cold, air pollution, vibration, improper lighting, chronic threat to life);
- the structure of nursing work (which includes work in shifts because of too much work in the time available, too heavy work due to lack of knowledge and skills );
- the role of the performer as an individual (when the assigned job or role is not clear enough or perceived as a lack of information on the objectives and responsibilities of work and expectations of employees, or when the performer finds himself between the competing requirements of the working environment);
- personal reasons (mostly as a result of occupational risks of the individual, experiencing stress or his ability to handle the situation) and
- other factors (depending on the threshold of personal tolerance level of self-confidence, self-esteem, etc.) (Goriup, 2012,48).

The study "Careful caregivers: gender stereotypes and the issue of a man touching the care, "by Evans (2002), focused on the problems and stereotypes which men face in their work in health care, pointed out that the men's and women's reasons for their decision to study nursing did not particularly vary (both stated the desire to help others). Also the evaluations of the necessary qualities for work in health care were the same: care, compassion, empathy, sincerity etc. However, research has pointed out a difference in performing care according to sex. While nurses carried out their work "more warmly and showed tenderness with a lot of touch, "men performed the same work" with a lot of conversation of tenderness using humour and camaraderie" as an expression of tenderness. The physical contact between the nursing stuff and the patient can be understood in different ways. There is always the possibility that the touch could be misunderstond. Therefore men in nursing have developed specific strategies to avoid potentially dangerous misunderstandings in advance by:

- taking their time to build trust before touching, which is especially important with female patients;
- maintaining a sense of formality through handshake and simultaneously assessing the level of the patient's discomfort;
- wearing a uniform and thus representing a professional healthcare worker;
- when estimating that the work and the associated touch could be potentially dangerous, they carry it together with female colleagues;



- delegating work; especially when dealing with touching female patients' private zones, the work is done by their female colleagues and
- adapting techniques of procedures to ensure the greatest possible protection of the patient's intimacy (Evans, 2002, 444).

The use of touch in health care has a functional and diagnostic role and a therapeutic effect as well. Touching in healthcare cannot be avoided. However, the staff has to be especially careful with adolescents and children. These (expected) properties have led to an accumulated employment of men in psychiatry, emergency technical demanding jobs, administration and health care management. However, they are negligible in gynecology and paediatrics. Nevertheless, gender inequalities remain and often lead to frustration and discomfort. Gender roles are developed, maintained and consolidated through time and space with the help of gender stereotypes. According to the Slovene Statistical Register data (Statistics Office, 2012) at the end of 2011 in Slovenia nearly 18,300 employed people worked as nurses, 12.4% of which were men. The interest in this profession among men is increasing, as in 2000, there were only 7.8% of male nurses, however, their number has been increasing steadily since then (Table 1). Therefore it is not surprising that the majority of male health technicians (70.4%) are aged 20 to 39 years, while the majority of female nurses are aged 30 to 49 years. At the end of 2011, there were nearly 6,750 physicians and dentists employed – this means 2.7 nurses were employed per physician.

There is also a noticeable increase in the number of graduates at health care higher education institutions.

Year	Total	Women	Men	Men's proportion
2000	15.624	14.410	1.214	7,8
2001	15.607	14.373	1.234	7,9
2002	15.505	14.253	1.252	8,1
2003	15.35 3	14.072	1.281	8,3
2004	16.672	15.069	1.603	9,6
2005	16.347	14.845	1.502	9,2
2006	16.437	14.745	1.692	10,3
2007	16.658	14.879	1.779	10,7
2008	16.936	15.073	1.863	11,0
2009	16.928	15.032	1.896	11,2
2010	16.947	14.960	1.987	11,7
2011	18.300	16.031	2.269	12,4

Table 1: Number and sex of employees in health care

Source: (Statistics office of the Republic of Slovenia, 2012)

#### SOCIAL AND BIOLOGICAL GENDER

Anthropological research has shown and drew attention to cultural variability in gender. Nature and society distinguish two basic genders, i.e. the biological (English: sex) and the social (English: gender). The first is constant and can not be replaced, whereas the latter is culturally constructed and does not derive from the biological gender in a single mode (Prijon, 2008, 19). Social gender denotes psychological and emotional characteristics of a particular individual and also includes various beliefs, values, individual characteristics, sexual orientation and gender identity. Here, culture is powerful, as it affects the perception of gender because of all the rules, expectations and habits of the individual. Švab (2002, 202-204) states that biological gender is an anatomical difference between the sexes and until recently has practised only two options: male and female. Femininity and masculinity are not universal and unchanging categories, but discursive constructures which vary according to time and space. However, the understanding of sexual relationships creates problems, as both genders are constructed (social and biological), although it applies to the biological gender that it is



natural. Ivy and Backlund (2004, 32-33) say that there is more choice of social gender, because here it is a question of femininity or masculinity.

Prijon (2008, 20) notes that social gender develops in the first three years of the child. Imperato – McGuineley says the contrary claiming that this category remains flexible throughout childhood and finally forms in puberty, when our hormones settle (Pearson and Davilla, 1993, 3). Due to the difference between biological and social gender men and women, in terms of biological gender, can develop characteristics of both, women (tenderness) and men (masculinity), or characteristics of both sexes (Pearson and Davilla, 1993, 3). Prijon (2008, 20) concludes that therefore it is not possible to know the biological truth which would be outside the cultural discourses, that is why there is no biological gender which would not be social. This ambiguity and complex obscurity between the genders is additionally intensified by double and ambiguous sexuality, such as bisexuality (Švab, 2002, 204). There are also other elements that reject this distinction, such as medicine and technology. Butler (2009, 21) says that some feminist theorists believe social gender is only a set of relations and not a single attribute. For a long time, sociological research has been blind to the social inequality between the sexes. Analysing inequalities in power, prestige and wealth was not the subject of their research. Only man or family were important for the survey. The social status of women derived from the status of men (Prijon, 2008, 24). The author states this is not possible today because:

- women's income contribute significantly to the economic status of the family. Women's paid work can define the class status of the family;
- employment of women can determine the position of men;
- husband and wife may belong to a different class. We can not claim that only the position of the man is determining;
- the share of families where the wife is the only family provider is increasing. She determines her own social status, and because
- gender is one of the most distinct factors that influence the individual's social position.

Haralambos and Holborn (1999, 589) remind that, for a long time, people were convinced that the distinction between men and women according to their body structure, behavioural characteristics and roles was based on biological differences. However, with developments in technology and medicine that allow the replacement of gender this argument is void. As already mentioned, both genders are socially constructed, and their characteristics culturally determined. Prijon (2008, 22) says that through socialization and moral development men develop their sexual and personal identity by separating from their mother and further individualization, whereas women do this through convergence. Men are believed to be capable, efficient, skilled, strong , etc., as they prove themselves in front of other men and women. Their self-esteem easily intensifies and thus grows when it provides assistance or support to the female gender. Women differ from men in values, emotions, friendship, genuine relationships etc. are more important for women (Gray, 1994, 6-9).

#### GENDER STRUCTURE OF STUDENTS AT THE FACULTY OF HEALTH SCIENCES, UNIVERSITY OF MARIBOR

The faculty of Health Sciences, University of Maribor is a modern, fast-growing institution that educates students by most modern pedagogical approaches and support of information and communication technology. It is the first faculty in Slovenia with an undergraduate study programme adjusted to the European directives for regulated profession. Currently, the undergraduate study programme Nursing level I, which is adjusted to the Bologna Declaration, as well as post - gratuate study programmes i.e. the post – gratuated study programme in Nursing, the post – graduate study programme in Bioinformatics and the higher education study programme Nursing – level I (Bologna programme) and the post – graduate study programme Management in health and social care in collaboration with the Faculty of Organizational Sciences, at the University of Maribor. Faculty graduates distinguish themselves in their professional attitude towards work, interdisciplinary knowledge, ability to communicate effectively, broad education, self- reflection, the ability of quick and correct decision-making, heart and culture and their sentient and ethical attitude towards the patient as well as other users of their services, the ability of teamwork and work in international teams and projects. Thus, in their professional work, students and especially graduates are guided by the following principles, that:



- people are always the most important;
- relationships are based on honesty;
- the diversity of people and ideas are welcome;
- conflicts are a creative source of new ideas;
- discussions are hold on an academic level;
- excellence is realized through teamwork;
- commitment to intellectual achievement is highly valued.

The study offers education and qualification for the planning and implementation of nursing, health counselling for patients and their relatives, education of community members for healthy life –style, participation in planning and implementing of medical and medical - technical interventions, successful communication with patients/clients, with collaborators in nursing and health care teams, and constructive work in given environment, coordination of nursing procedures with relevant legislation, self - study and self - improvement, as well as assessment of work results and proper work of the nursing team. Great attention is given to practical training. It is carried out through clinical exercises in school educational bases (hospitals, welfare centres, health centres, homes for the elderly, schools, kindergartens, etc.), supervised by skilled professionals, all habilitated Higher Educated Collaborators.

Due to the rapid development of the health sector and the requirements and needs of the society for knowledge in the medical field an adequately qualified and trained practitioner of nursing is expected, who during tertiary education obtains relevant competencies for an effective implementation of health care (Bezenšek, 2007, 217), irrespective of the graduate's gender. According to the Statistics Office (2012), in 2010 there were 657 students who graduated, including 18% men. As shown in Table 3, an upward trend in enrolment of men / students at the Faculty of Health Sciences, University of Maribor is being noticed as well. A A difference is noticable especially in part-time study, which also confirms that men are more stimulated for further education.

Year of study	Women/R	Men/R	Women/PT	Men/PT
2001	88,4	11,6		
2002	87,1	12,9	87,1	12,9
2003	89,9	10,1	85,8	14,2
2004	91,4	8,6	81,9	18,1
2005	89,2	10,8	77,9	22,1
2006	83,3	16,7	71,7	28,3
2007	86,9	13,1	75,6	24,4
2008	88,8	11,2	67,7	32,3
2009	89,6	10,4	71,8	28,2
2010	81,7	18,3	64,2	35,8
2011	83,3	16,7	77,3	22,7

Table 3: Proportion of students according to gender from 2001 to 2011



Year of study Mode of study		Men	Women
2000/2010	Regular	10,2	89,8
2009/2010	Part-time	37,8	62,2
2010/2011	Regular	13,6	86,4
2010/2011	Part-time	34,3	65,7
2011/2012	Regular	15,0	85,0
2011/2012	Irregular	31,9	68,1

## Table 4: Student's structure according to mode of study and gender

#### **NURSING LEVEL – II**

Table 5 : Student's structure according to gender (%)

Year of study	Mode of study	Men	Women
2009/2010	Regular	8,8	91,2
2009/2010	Part-time	8,0	92,0
2010/2011	Regular	8,9	91,1
2010/2011	Part-time	6,9	93,1
2011/2012	Regular	6,6	93,4
2011/2012	Part-time	/	100,0

#### **BIOINFORMATICS - LEVEL II**

Table 6: Structure of students according to gender (%)

Year of study	Mode of study	Men	Women
2009/2010	Regular	60	40
2009/2010	Part-time	-	-
2010/2011	Regular	44,8	55,2
2010/2011	Part-time	-	-
2011/2012	Regular	48,6	51,4
2011/2012	Part-time	/	/

## MANAGEMENT IN HEALTH AND SOCIAL PROTETCTION - LEVEL II

#### Table No. 7: The structure of students according to gender (%)

Year of study	Mode of study	Men	Women
2009/2010	Regular	13,3	86,7
	Part-time	12,8	87,2
2010/2011	Regular	12,5	87,5
	Part-time	12,2	87,8
2011/2012	Regular	18,2	81,8
	Part-time	12,0	88,0

Source : FZV, University of Maribor (2012)

Although it is still noticeable that the majority of both, regular and part-time students are women, there is a noticeable proportion of male students. This only confirms the fact, that changes in social roles and social thinking have led to a change in the gender structure of employees in health care. Notably, the share of men in nursing is increasing and there is an increased enrolment of men in nursing studies. The increase in the proportion of men in (former) typically female fields of study causes slow, indispensable changes of the perception of men in nursing.



The principles propagated by the staff of the Faculty of Health Sciences confirm the fact that students are considered as personalities, not numbers. They will be guided along their education path to exploit their personal qualities and obtain their Bachelor and Master degrees in order to become successful independent professionals. The Faculty of Health Sciences is a place where views are shared, knowledge and understanding are gained and the spirit of a lifelong friendship and comradeship is felt.

## **EMPIRICAL PART**

#### The methods of collecting data

Recognizing the diversity of gender is one of the basic characteristics of interpersonal relationships among employees in health care. This means that everybody is recognized his rights to his own opinion, personal commitment and to confess his sexual immanence. We assumed that part-time students who (already) originate (mostly) from the profession working environment, would have a realistic picture of men in nursing like regular students who are just used about to acquire practical experience working in clinical situations.

#### The Substantive - Methodological characteristics of instruments

We sent questionnaires by mail to regular and part-time students to their common address. The questionnaires included socio-demographic questions about objective facts, such as age, year and mode of study.

#### Measurement characteristics of the questionnaire

The validity of the questionnaire was substantiated by the review of relevant literature. The reliability f data was checked by precise and unambiguous instructions in specific issues. The objectivity was checked mostly by closed types of issues, that's why we could not change the information with of subjective judgments.

#### **Data processing**

The data were collected by closed questions and tabularly displayed indicating the absolute (f) and relative frequency (f%). The results were processed in the SPSS statistical programme. We tested associations between the variables. The answers to open-ended questions were categorized. The categories ranked according to the frequency of their repetition and were arranged in a tabular display.

The research hypotheses were implicitly expressed by research questions of dependent relationships or differences. The variable was mode of study. We wanted the following research questions to be answered:

- which factors are essential in the decision to study nursing?
- are mostly female or predominantly male characteristics needed for qualitative work of nurses?
- are there work areas within the profession of nursing that are more "man like or woman like"?

The research was based on quantitative methodology. The questionnaire included 11 closed and open-ended questions. The collected data were statistically analysed using the statistical IBM SPSS version 20 programme. An "On-line" questionnaire was used for data collection which was active for 30 days in May and June 2013. The questionnaire was a non-random pattern and properly filled in by 312 respondents.

#### **METHODOLOGY**

The research was based on the initial hypothesis that:

H0: the quality of work in nursing is not conditioned by the gender of the care provider.

The empirical research was carried out basing on the following 3 hypotheses. Thus, we supposed:

•H 1: that the nursing students chose their study in their own interest regardless of gender;

•H 2: that predominantly "female qualities" are required for qualitative work in nursing and •H 3: that there are work fields within health care that are more "men-like" or "woman-like".



#### **Results Of Data And Their Interpretation**

The obtained empirical data show that according to the importance, the desire to help others is in first place in the respondents' decision to study, which was termed by 300 (85%) of the respondents *as very important*. 40 (14 %) of the respondents considered the same reason for their decision as *medium important*. For 214 (81%) respondents, studying nursing was interesting and represented a very important factor in their decision to study it. 172 (66%) of the respondents saw a varied and interesting work as very important in their decision to study nursing. 130 (52%) respondents stated a good salary as a central importance in their decision to study nursing, which 104 (42%) of the respondents deemed to be very important in their decision to study nursing. 118 (47%) respondents considered job security in nursing (in the public sector) as a medium priority and 88 (35%) respondents as very important. 122 (50%) respondents termed the closeness to home as a central importance, at the same time 48 (20%) respondents deemed the decision to study nursing as very important. 176 (74%) of the respondents chose nursing studies on their own initiative; for 22 (9 %) respondents the need for social status was very important.

The question "Did you get the feeling that male students had an advantage at college while studying?" was answered by 58 (21%) of respondents the question in an affirmative mode, 224 (79%) did not perceive such feelings. All those who answered affirmatively were able to justify their answers. Among the obtained answers the following are highlighted: in health care there are mostly nurses, so every male-student is more welcome than a female-student, as they enrich the working environment; men are physically stronger and therefore they are supported in their study by all; and encouraged because they lack in this profession; they are better accepted b nurses; since they are in the minority, they are better remembered by the professors; in a clinical setting men had priorities as well; due to a minor number of men in health care men in health care are better accepted; men get employed faster either in a permanent or part-time job; nurses in hospital are more friendlier with them, they accept them in the team because they love to be close to young male collegues; men lift things easier; to employ than women, e.g. as paramedics in first aid etc.

We wanted to find out which areas of nursing are more "male" or more "feminine". 79 % of the respondents believe that emergency is rather a male than a feminine area. 80 % of the respondents stated gynecology as a more woman – oriented field of nursing. 65% assessed administrative work as such and for 60% of the respondents it the field of paediatrics. As for the field in which both, men and women operate, 85% of the respondents considered that this referred to the field of education and in geriatrics. 83 % believed that equal presence is in nursing in oncology, 70% estimated such proportion to be in psychiatry, while 63 % saw it in surgery.

The question "Which of the following characteristics do you assess as more "woman-like" or more "man-like" according to gender was answered as follows: 72% of the respondents considered tenderness as a feminine feature, 71% chose empathy, 56% said it was warmth and kindness, 54% thought it was care and 51% considered concern about patients as a woman-like feature. Highlighted features of men were as follows: 57% of the respondents indicated power, 43% considered authoritativeness as a man-like feature, 35% chose courage and 34% said it was determination. The respondents quoted independence (82%), empathy (70%), insensitivity (69%), courage (63%), determination (60%), loyalty (54%), also competition and authoritativeness (53%) as a common characteristics.

The question "Which of the following characteristics do you consider a good nurse should have" 250 (94%) respondents chose care, 248 (93%) empathy, 246 (91%) determination and independence in the same proportion. 218 (84%) of the respondents expose warmth as a very important property for 204 (87%) respondents it was courage, empathy for 194 (74%) and in same kindness proportion. The respondents considered the following features of nurses as very important: devotion (164 or 62%), tenderness (160 or 61%), power (152 or 58%) and authoritativeness (136 or 53%). 126 (49%) respondents estimated apprehension as a medium strong feature. 182 (74%) respondents quoted insensitivity as an irrelevant feature of a good nurse and for 126 (50%) respondents it was competition.



We noted that 250 (94%) respondents disagreed with the statement that female teams in health care are better than mixed teams. 236 (88%) respondents disagreed with the statement that women are less conflicting. It is also interesting that 184 (69%) respondents disagreed with the statement that women are better nurses in relation to the patient; on this basis we can conclude that the provision that gender does not play any role in qualitative nursing.

The argument that the profession of nurses is a more female - than men work was not acceptable for 152 (57%) respondents. 172 (66%) agreed or partially agreed with the statement that men progressed more rapidly in the profession of nurses, while 90 (34%) respondents disagreed and 82 (31%) respondents partially agreed that men got a job in health care faster than women.

#### **Checking the set hypotheses**

On the basis of the obtained empirical data we find:

H 0 - in which we assumed that the quality of nursing work is **not** subject to the gender of the health care provider - is confirmed, because 125 (94%) respondents disagreed with the statement that female teams in health care are better at work than mixed teams; also 118 (88%) respondents disagreed with the statement that women are less conflicting. It is also interesting that 92 (69%) respondents disagreed with the statement that gender is no decisive factor in estimating the quality of nursing work.

We also checked three research hypotheses and found:

• H 1- in which we assumed that the nursing students chose the study in their own interest regardless of gender - is confirmed. According to the importance the desire to help others was in the first place, estimated by 115 (85%) respondents as very important, regardless of gender.

• H 2 - in which we assumed that the quality of nurse's work needs predominantly "female qualities" - is partly confirmed, as 94% of the respondents chose care, 93% empathy, 91% determination and independence in the same proportion. Very important properties were as follows: warmth for 84%, courage for 87%, sympathy for 74 % and kindness in the same proportion, all of which were also characteristics of men. Very important features of nurses are also devotion (62%), tenderness (61%), power (58%) and authoritativeness (53%). Irrelevant characteristics of good nurses are: 74% of the respondents stated insensitivity and 50% decided for competition, and

• H 3- in which we predicted that in nursing, there are areas of work which are more man-like or woman-like - is confirmed. Thus, 79% of the surveyed recognized the emergency department as a more masculine than feminine area, gynecology as a for more female-oriented field of nursing was stated by 80%, 65% quoted administrative work and 60% chose paediatrics. As for nursing in which both men and women operate, 85% of the respondents considered education as such area, 85% stated nursing in geriatrics, 83% believed that this is in the field of oncology, 70% also estimated nursing in psychiatry and 63% in surgery.

## CONCLUSION

The main finding of our study was, despite differences and stereotypes about men in nursing, students regardless of the study field, estimated that there was a wide range of possibilities for high-quality professional care, which could be equally performed by both, men and women. The analysis of the empirical data showed that there were no discrepancies between regular and part-time students in their statements, including male and female gender as important in deciding to study nursing. Also, men had no advantage in the study, which was rejected by 79% respondents. The comparison of responses according to gender showed that, 86 % of all respondents believed that differences based on gender did not exist, even though it was believed by 8% of the respondents. Among the respondents, as well as regular and part-time students there were no significant differences in justifying the reasons why men had an advantage while studying nursing. Most of the arguments were based on the stereotypes that women are friendlier to men than to women. The difference in the



answers were recorded only as a method of the study, since 75 % of the surveyed students attending higher education perceived advantages for men in the study process, while the share of their counterparts in part-time study increased by 13%.

The respondents selected tenderness, empathy, warmth, kindness and care as typically female traits. In order to highlight the characteristics of men they exposed power, authoritativeness, courage and determination. Other characteristics such as autonomy, empathy, concern, ruthlessness, dedication and competition were characteristics that the respondents attached to both, men and women. Taking into account gender, we perceived small differences in the properties, because the respondents attributed dedication, concern and independence as more masculine features, but female respondents identified them as a less men's property. In terms of the mode of the study, part-time students attributed dedication and concern as more masculine features. Within the nursing profession, there are areas of work that are more male or female. However, we find that there are areas of work that were surveyed as more male or more female. For all other areas of health care, the respondents estimated no observed differences for successful work, regardless of gender. However, we observed a variation of the answers rated in the field of psychiatry as a more masculine field. In terms of the mode of the study we did not see any difference between regular and part-time surveyed students.

Different understandings as well as evaluation and, which is not entirely negligible, the evaluation of the experience and the quality of nursing work regardless of gender depends on the degree of (non)power and marginality of certain categories in nursing. When in society women are mentioned they are constantly placed in family duties as well as outside, placed in the field of nursing, care and support. Fact is, that one side the society sees a woman as a sexual category, so she is also attached traditional female roles (Oakley, 2000, 95). Her primary role is the role of the housewife, then the wife and as mother to the children. These values are part of the tradition and were passed on from generation to generation, and thus, through the generations, gender is discriminated. On the other side, the society sees a woman as a human being that is able to perfectionalise personally proving that liberal- democratic values apply to all, regardless of gender. All this points out the duality and complexity of the situation of women. It's no secret that nowadays, professional active women are faced with the dilemma how to successfully reconcile their professional role to that of a private.

In most Western societies a woman through the process of socialization internalises senses of duty and concerns for increased warmth and emotional stability in her family, as she feels responsible for the training and care of children (Bezenšek, 1996, 10). That is why women devote more to this role than men. The enumerated problems in nowadays "turbo capitalism" also occur in health care, but they are sometimes expressed more, in some places less. Fact is that women in nursing are more often absent from work than men because of coordinating work and family life due to the care for family members. Therefore, they work less overtime and make slower progress in the workplace or in their whole career (Vertot et al., 2007).

As conclusion we can add that by this survey, we have substantiated the thesis that female qualities are expected and desired in nursing care, but the role of men in nursing is desired as well. In addition, we have to mention that the principle of equal opportunities is becoming an increasingly important component of awareness of responsible persons in key positions of institutions (Jogan, 2006, 165). We also highlighted these facts, because they are the ones that determine everyday working conditions in health care and nursing, and (indirectly) affect the organization of families and family life of employees. In post-modern society, a majority of the characters of a nurse are still associated with prejudice by cramped accommodation and this reduces their motivation. Especially, because there are certain activities that seem self-evident for the woman and her female qualities as something that is itself intelligible. However, in the contemporary Slovenian post-modern society the character of the profession in nursing and nurse's role no longer coincide with the traditional notion of nursing, which is a problem for patients, doctors and even the employees in health care.

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# THE EFFECTS OF SPECIAL EDUCATION COURSES ON THE ATTITUDES OF PRE-SERVICE PRIMARY MATHEMATICS TEACHERS TOWARDS MAINSTREAMING

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#### ABSTRACT

The purpose of the study is to analyze the attitudes of pre-service teachers towards mainstreaming before and after the informative studies about mainstreaming within the scope of special education courses carried out with primary mathematics pre-service teachers. The problem sentence of the study was determined as "What are the effects of informative studies regarding mainstreaming within the scope of special education courses carried out with primary mathematics pre-service teachers on the attitudes of pre-service teachers towards mainstreaming?" The design of 'pretest-posttest with single group' was used among quantitative data collection tools in the present research. This study was carried out with 38 pre-service teachers, 18 female and 20 male who are senior students in Marmara University, Educational Faculty, Teaching Primary School Mathematics Department in 2010-2011 academic years during fall semester. 'Attitude Scale for Individuals who are affected by inabilities' was used for the solution of the problems which was dealt with during the study. It was concluded that initially, people with disabilities were perceived as different from others by pre-service teachers. With this result, it is seen that the study which was carried out within the scope of special education course have a major role. It is concluded that the study increases the awareness level of students and change their point of views positively.

Key Words: Special education, mainstreaming, attitude.

## INTRODUCTION

Recently, together with the importance provided for special education, the subject of mainstreaming "children who need special education" together with normally developing children started to gain importance. Formerly, while the idea that children who need special education should live in isolation from society and should receive a separate education was advocated, this idea was put aside later on and then the idea of teaching children who need special education to live in the society and to socialize with other children in the society took place instead of that idea. Garrison and Hamill stated in their research which was carried out in 1971 that there was no difference between isolating mentally disabled children from society and teaching them in special education classrooms which were prepared only for those children (Metin, 1972).

According to the law no.2916 for Children who need special education, children who need special education are specified as children who cannot benefit of normal education services in the age group between 4-18 because of their extra-ordinary differences in body, mind, sprit, social and health features and statues. The education provided for those children is defined as special education. According to the definition stated in the



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law, special education is a teaching which is carried out in a suitable environment for the needs and disabilities of children with educational programs that are particularly prepared for those children and with teachers who are especially trained for the education of children who need special education (http://www.ogretmenimiz.com/kanunlar/2916.htm).

In our country, three types of teaching methods are used for children who need special education in primary. They are; mainstreaming, special education schools and special education classrooms (Sanioğlu, Büyükkaragöz, Duman and Sarı, 2008). Mainstreaming education is defined as integrating especially appropriate children who need special education with their educationally and socially normal peers under the responsibility of normal and special education personnel within the framework of individual educational programs (Balaban, Yılmaz and Yıldızbaş, 2009).

The main objective of mainstreaming education is to provide social acceptance continually starting from childhood period for children who need special education and reintegrate them to the society (Metin, 1997). It is advocated that the friends of children with social disabilities are positive models in mainstreaming environments for those children so children acquire social behaviors and this also increase the probability of their acceptance by their friends (Merrel and Gimpel, 1998), in addition to that mainstreaming education help them to acquire many skills on the other fields other than social development (Balaban and others, 2009, Öncül and Batu, 2005).

Although the basic principles of mainstream practice is stated clearly at the codes, this model still cannot be implemented as it should be in our country; mainstreaming is generally accepted as only "placing those children into the classrooms where their peers exist" and the whole responsibility of the implementation is assigned to only class teachers. Yet, what is meant by mainstreaming is not only "placing students into regular classrooms" but also it is a complex and ongoing teaching and learning process with a philosophy behind (Sucuoğlu, 2006).

The basic problem for students who need special education is to adopt themselves to the society and being a productive person. However, for achieving this objective, the society should accept children who need special education and they need to show positive reactions towards them (Balaban and others, 2009 cited from Kayaoğlu, 1999). In this sense, most of the responsibility is on teachers in the education of children who need special education and in their adaptation to the society (Balaban and others, 2009 cited from Rizzo, 1985). The success of special education and the future practice depends on determining the attitudes of teachers towards mainstreaming education as primary and the most important factor. Because, the thesis of "the success of mainstreaming programs can be in danger with the attitudes of teachers" preserves its validity today (Sargin and Sünbül, 2002, cited from Atay, 1995).

A successful integration mostly depends on teachers' positive reactions to their professions and their attitudes towards mainstreamed students (<u>http://erinlindsay.com/STOME1.rtf</u>, Sünbül and Sarıgın (2002), Parasuram, 2006). The attitudes of teachers not only determine the relationship between the teacher and mainstreamed student but also it has an important role in creating an expectancy for the success of mainstreamed students and in the attitudes of other students towards them (Horne, 1985). As the development of students with disabilities is getting better, the teaching will be more enjoyable for the teacher who sees the development of his/her student with disabilities better (Çelik and Eratay, 2007).

For a mainstreaming environment as well as the physical structure of the classroom and the school, number of students per classroom, curriculum, the skills and capacities of the personnel who will work, equipment and tools, the attitudes of the people who exist in this environment and how much they are ready to implement such a program should also be evaluated.

The positive attitudes towards students who need special education is extremely important in adopting the view that the individuals with inabilities should receive education together with their normal peers at the same



environment as much as possible and in the success of these kind of programs (Şenel, 1996, cited in Johnson and Johnson, 1984).

Training pre-service teachers about the teaching of mainstreamed students in regular classrooms takes an important part in teacher training programs. Reynold and Bitch (1977) state that teachers want to take training before they receive mainstreamed students in their classrooms and they also advocate that training pre-service teachers about this subject is a necessity (Cited in: Hoover & Cessna, 1984). Reed and Hill (1981) point out that the attitudes of pre-service teachers will change according to their experiences that they will have with mainstreamed students (cited in: Hoover & Cessna, 1984). It is stated that it is effective for regular classroom teachers to study with students who need special education as much as possible for gaining confidence since they feel insecure as they have difficulties in understanding the methods used by special education teachers (Hoover & Cessna, 1984, cited in, Clark, 1976; Harasymiw &Horne, 1976).

For the reasons stated above, developing positive attitudes towards children who need special education should be an important part of pre-service teachers' training. The teacher training which realizes insufficiencies and appropriate strategies for students with inabilities has a positive effect on success. It is probable to be unsuccessful for teachers who have negative attitudes towards children who need special education or who did not trained with appropriate strategies (Sze, 2009). The studies carried out about this subject within our country and abroad summarized below.

It is concluded that having mainstreaming courses or having mainstreamed students in the classroom cause positive changes and provide more positive point of views on the attitudes of teachers and pre-service teacher regarding mainstreaming (Orel, Zerey and Töret (2004); Gözün and Yıkmış (2004); Alat and Alat (2007); Güven and Çevik (2011); Diken and Sucuoğlu (1999); McLeskey, Waldron So, Swanson and Loveland (2001); Akman and Okyay (2004); Elhoweris and Alsheikh (2006); Rakap and Kaczmarek (2010); Ünal (2010); Bilen (2007); Sze (2009); Stone and Brown (1986)).

There is not a significant statistical difference between the gender and attitudes of pre-service teachers who take special education courses towards mainstreaming (Alat and Alat (2007); Diken and Sucuoğlu (1999); Bek, Gülveren and Başer (2009); Şahbaz and Kalay (2010); Stone and Brown (1986), Rakap and Kaczmarek (2010), Akman and Okyay (2004), McLeskey, Waldron So, Swanson and Loveland (2001)). The situation is completely opposite in the studies of Güven and Çevik (2011).

When we consider the studies carried out about this subject, a study which examines the attitudes of primary mathematics pre-service teachers towards mainstreaming and the effect of special education course towards attitudes cannot be found. Generally, it can be found similar studies with departments such as classroom teachers and pre-school teachers but not too much. This study was carried out in order to fulfill such necessity.

The attitudes of teachers towards children who need special education is the basic subject of education and rehabilitation studies and it is defined as the unseen barriers of education (Balaban and others.., 2009, cited in Altman, 1981). The problem sentence of the study was determined as "What are the effects of informative studies regarding mainstreaming within the scope of special education courses carried out with primary mathematics pre-service teachers on the attitudes of pre-service teachers towards mainstreaming?" by moving from the point of view that it is necessary to train pre-service teachers before teachers so that they can be ready for their professions about mainstreaming and in the first place to determine the attitudes and point of views of pre-service teachers towards mainstreaming and to increase their awareness about the subject.

The purpose of the study is to analyze the attitudes of pre-service teachers towards mainstreaming before and after the informative studies about mainstreaming within the scope of special education courses carried out with primary mathematics pre-service teachers.

According to this purpose the answers of the following questions are sought: Is there a significant difference between primary mathematics pre-service teachers' pre-test and post-test scores of Attitude Scale regarding



individuals who are effected by inabilities? Is there a significant difference between primary mathematics preservice teachers' pre-test and post-test scores of Attitude Scale regarding individuals who are effected by inabilities by Gender?

The special education course added to curriculum in 2009-2010 academic years for the first time for different departments of educational faculties and this course is being taught to senior students of primary mathematics teaching department. Nowadays, mainstreaming applications in the field of special education is getting much more importance. Many studies were carried out about this subject. However, it is seen that there are not plenty of studies which provide solution strategies about what to do for making mainstreaming studies more effective and successful. This study is important in terms of informing pre-service teachers about mainstreaming within the scope of special education course carried out with primary mathematics pre-service teachers and determining the reflections of this course on the attitudes of pre-service teachers regarding the subject.

It is thought that the study is important since it was carried out with primary mathematics pre-service teachers in relation with special education course which is recently added to curriculum of primary mathematics teaching department and it is expected from the study to offer an insight to pre-service teachers for the future. The study which can be evaluated as an in-service teacher training to pre-service teachers can provide a guidance for preparing them to the future, a resource when they face with mainstreamed students, a change in their point of views by raising awareness, a guidance for them about finding something positive even from negative situations and something which does not let them to be insensitive. Teachers have great roles in successful mainstreaming practices. For this, teachers need to be informed about mainstreaming. Especially, teachers who started their professions with fully equipped about this subject are needed. This can be possible, when you make pre-service teachers ready for their professions by informing them about this subject.

It is thought that one of the researchers who participated to the study has a mainstreamed child and at the same time the researchers are working in the Primary Mathematics Teaching Department are important factors in terms of the study. With this, the study is important in terms of seeing the efforts, difficulties and troubles of someone who experienced closely things about mainstreaming subject and especially determining the things that can be done for mainstreamed students and it is thought that this study can make major contributions to the literature.

# **METHOD**

In this part, the research model of the study is explained, the information about data collection instruments of the study, sample group participated to the study, data analysis techniques and the implementation process is provided.

## **The Research Model**

In this study, it was aimed to analyze the attitudes of pre-service teachers towards mainstreaming before and after the informative studies about mainstreaming within the scope of special education courses carried out with primary mathematics pre-service teachers. With this purpose, the design of 'pretest-posttest with single group' was used among quantitative data collection tools. In this design, the effect of experimental procedure is tested with a study on a single group. The measurements regarding the dependent variable of experimental subjects are collected by using pre-test before the study, after as a post-test with the same subjects and by using the same testing instruments (Büyüköztürk, Çakmak, Akgün, Karadeniz and Demirel, 2011).

## The Sample of The Study

This study was carried out with 38 pre-service teachers, 18 (47%) female and 20 (53%) male who are senior students in Marmara University, Educational Faculty, Teaching Primary School Mathematics Department in 2010-2011 academic years during fall semester. **Data Collection Instruments** 



'Attitude Scale for Individuals who are affected by inabilities' was used for the solution of the problems which was dealt with during the study. The attitude scale for the people who are affected by inabilities was developed by Yuker, Block and Young (1970). The form of the scale composed of 20 items was translated to Turkish by Özyürek (1988). The test-re-test reliability of this form was found as 0.76 and it was determined that its content validity was quite high. The high point from the scale means that people with disabilities are not perceived differently from people with no disabilities and the low point means that they are perceived differently (Girli, Yurdakul, Sarısoy and Özekes, 1999, cited in Yuker and others, 1970). It is stated that the scale can be used for searching both people with inabilities and without inabilities (Senel, 1996). The purpose of the scale, without particularly discriminating disability groups, is to test the attitudes towards people who are affected by inabilities generally. The scale was prepared according to 6 point likert type as +3 Totally Agree, +2 Agree, +1 Slightly Agree, -1 Slightly Disagree, -2 Disagree, -3 Totally Disagree. The, 2<sup>nd</sup>, 5th, 6th, 11th and 12<sup>th</sup> items of the scale are scored in the opposite way. After all the items are summed by paying attention to their marks, the total score is found by adding +60 in order to remove negative values. The maximum score that one can get from scale is 120 (Sarı, Bektaş and Altıparmak, 2010). This scale is used for learning the attitudes of students towards individuals with disabilities. The scale was used as pre-test and post-test so that the effect of special education courses on students' attitudes towards disabled people was sought.

#### **The Implementation Process**

Research applications were carried out during 14 weeks in the fall semester of 2010-2011 academic years within the scope of special education course. Special education course is taught theoretically 2 hours in a week. 'Attitude Scale for Individuals who are affected by inabilities was conducted as pre-test for students and same scale was conducted for the students as post-test at the end of the semester. Within scope of special education course, during the first 3 weeks (6 hours) researchers provided general information as a part of the course and later on students presented the subjects which were assigned to them by forming groups and finally submitted their reports. The students were asked to form groups with their friends as they wish and to name their groups. In this sense, 9 groups were created and the subjects were distributed. While distributing subjects, instead of student wishes, the subjects were distributed by drawing lots and the presentation days were decided according to the weeks.

While students were preparing their reports, they made observations, audio and video recordings, interviews with the institutions that they visited and document analysis about their subjects. It was paid attention for all groups that the content of their presentations were rich in this sense.

Each group was asked to visit schools and special education centers which were matched to their subjects and to express their observations from there. Besides, they were asked to observe disabled individuals according to their subjects, to get information from experts about this subject, to make video recordings, to prepare their presentations by collecting detailed information about their subjects and to submit a report at the end of the semester. Evaluations of the presentations were made depending on a certain criteria set by the researchers by following the presentations prepared by students.

The reason for asking students to search their subjects and to prepare presentations about them is to provide them to receive first hand information and from authorized people about children who have special needs, to observe these kinds of children on site, to breathe the same air by coming together with these children, to think about the education and situation of these children, to raise awareness, to be able to put themselves in their places. Besides, with the presentation of each group, it was aimed to get the opportunities such as increasing knowledge about special education, seeing the realities of life, feeling empathy with others, preparing himself or herself to the future as pre-service teacher, thinking about what to do when encountering with these children, thinking about how to give hope to these children and their families, seeing the mistakes and not repeating theme, being able to look at future with hope and seeing the light when there is no hope. In addition to that, one of the researchers shared his/her personal experiences about this subject with the classroom since he/she has a mainstreamed child during this process.



# **Data Analysis**

In the study, first, the Attitude Scale for Individuals who are affected by inabilities' was conducted to the Primary school mathematics pre-service teachers. For the data analysis, statistical analysis method was used. While analyzing attitude scale data, dependent group t-test and one way variance analysis were used. The results were evaluated on (0.05) significance level.

# RESULTS

Before analyzing the data obtained from the Attitude Scale for Individuals who are affected by inabilities, for making statistical analysis, Kolmogorov-Smirnov (KS) test (as the number of data is more than 29) was conducted in order to determine whether the data showed normal distribution or not. According to this test results, it was obtained in pre-test (p=.200) and in post-test (p=.200). Since the significance value of both pre-test and post-test was bigger than 0.05, it was understood that the data obtained from both tests showed normal distribution and was suitable for statistical analysis.

Before analyzing the data obtained from the Attitude Scale for Individuals who are affected by inabilities by primary school mathematics pre-service teachers' gender, for making statistical analysis, Shapiro-Wilk test (as the number of data is less than 29) was conducted in order to determine whether the data had normal distribution or not. According to this test results, it was obtained in pre-test for females and males (p=.486, p=.982) and in post-test for females and males (p=.612, p=.477). Since the significance value of both pre-test and post-test was bigger than 0.05, it was understood that the data obtained from both tests showed normal distribution and was suitable for statistical analysis. Besides, ANOVA's basic assumption of homogeneity of variances requirement is provided for the pre-test (sig. = 0.666> 0.05) and post-test (sig. = 0.383> 0.05).

The analysis of the data obtained from the Attitude Scale for Individuals who are affected by inabilities is showed in Table 1, Table 2, and Table 3.

In Table 1, there is dependent group t-test comparison regarding the pre-test and post-test scores of primary school mathematics pre-service teachers from the Attitude Scale for Individuals who are affected by inabilities.

Attitudes	N	Average	SS	sd	t	р
Pre-Attitude	38	63.148	9.498	39	2.203	0.033
Post-Attitude	38	65.893	7.783			

According to Table 1( $t(\exists \theta) = 2.203$ , p=0.033<0.050) there is a significant difference between pre-test and posttest scores of primary school mathematics pre-service teachers from the Attitude scale for individuals who are affected by inabilities. In order to determine the direction of this difference, it is necessary to look at the average scores of both tests. While the average score of the pre-test was 63.148, the average score of the posttest increased to 65.893. These values are in the direction of showing a significant increase between attitude scale scores of pre-service teachers. According to this result, initially, disabled people are perceived as different from people without disabilities by pre-service teachers, but later on it is seen that pre-service teachers do not see disabled people different from others. It is thought that informative studies carried out within the scope of special education courses and having a chance to observe disabled people closely by coming together with them have an important effect about this subject.

In Table 2, there are results of one way variance analysis for Attitude Scale pre-test scores of primary school mathematics pre-service teachers by gender.



mathematics pre-service teache	is by genuer					
The Source of the Variance	Sum of Squares	sd	Average of Squares	F	р	
Between Groups	189.120	1	189.120			
In Groups	3960.837	37	88.019	2.149	0.150	
Total	4149.957	38				

Table 2: Results of one way analysis of variance for Attitude Scale pre-test scores of primary school mathematics pre-service teachers by gender

According to Table 2, p significance value was found as 0.150, since this value is bigger than  $\alpha$ =0.05, there is not a significant difference between genders in terms of pre-attitude scores. According to this result, it is seen that both female and male primary school mathematics pre-service teachers have same point of views about individuals affected by inabilities before the implementation.

In Table 3, there are results of one way variance analysis for Attitude Scale post-test scores of primary school mathematics pre-service teachers by gender.

Table 3: Results of one way analysis of variance for Attitude Scale post-test scores of primary school mathematics pre-service teachers by gender

The Source of the Variance	Sum of Squares	sd	Average of Squares	F	р
Between Groups	42.554	1	42.554		
In Groups	2743.914	37	60.976	0.698	0.408
Total	2786.468	38			

According to Table 3, p significance value was found as 0.408, since this value is bigger than  $\alpha$ =0.05, there is not a significant difference between genders in terms of post-test scores. According to this result, it is seen that both female and male primary school mathematics pre-service teachers have same point of views about individuals affected by inabilities after the implementation.

## **DISCUSSION AND CONCLUSION**

In this study, it was aimed to analyze the attitudes of pre-service teachers towards mainstreaming before and after the informative studies about mainstreaming within the scope of special education courses carried out with primary mathematics pre-service teachers.

With this purpose, it was studied with senior students from primary school mathematics teachers department within the scope of special education course. It was planned for pre-service teachers to do research about the subjects within the scope of the course so that they would have information about the features and education of individuals who need special education by observing them. With the help of this, it was aimed for them to have information before starting teaching about the issues that they could experience in the future and to improve themselves according to these situations and to increase their information and experiences.

The following results were obtained within the scope of this research:

It was concluded that initially, people with disabilities were perceived as different from others by pre-service teachers, but then people with disabilities were not perceived as different from others by pre-service teachers. With this result, it is seen that the study which was carried out within the scope of special education course have a major role. It is concluded that the study increases the awareness level of students and change their point of views positively. The study with this aspect shows parallelism with the studies of Stone and Brown (1986), Diken and Sucuoğlu (1999), McLeskey, Waldron So, Swanson and Loveland (2001), Gözün and Yıkmış (2004), Orel, Zerey and Töret (2004), Akman and Okyay (2004), Elhoweris and Alsheikh (2006), Alat and Alat (2007), Ünal (2010), Bilen (2007), Sze (2009), Rakap and Kaczmarek (2010), Güven and Çevik (2011).

There is no a difference between genders in terms of pre-attitude and post-attitude scores. The study with this aspect shows parallelism with the studies Stone and Brown (1986), Diken and Sucuoğlu (1999), McLeskey,



Waldron So, Swanson ve Loveland (2001), Akman and Okyay (2004), Alat and Alat (2007), Bek, Gülveren and Başer (2009), Şahbaz ve Kalay (2010), Rakap and Kaczmarek (2010). It does show any parallelism with the studies of Güven ve Çevik (2011).

The following suggestions can be made as a result of the study:

It is thought that carrying out a similar study with other subjects can contribute all graduates' professional life about mainstreaming education.

It is thought that having special education courses in both semesters instead of limiting this course into one term will help pre-service teachers to be more effective about mainstreaming.

It is thought that it is important to have subject teachers in special education courses in universities together with experts on this subject in terms of learning what can be done in mainstreaming education for other subjects.

It is thought that enriching pre-service trainings with in-service trainings about mainstreaming will be helpful for teachers.

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# LECTURERS' PERCEPTIONS OF THEIR ENGLISH ABILITIES AND LANGUAGE USE IN ENGLISH-MEDIUM UNIVERSITIES

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#### ABSTRACT

This study reports part of the initial findings of my PhD research project, the primary objective of which is to explore lecturers' and students' perceptions towards their English abilities and practices in English-medium instruction universities located in two provinces of Turkey. This paper only reports the perceptions obtained from the lecturers based on the following themes: their personal and language background, views on their own and students' English proficiency, and finally on their language use particularly in academic contexts. The participants include a small number of lecturers based in the following universities: Boğaziçi, Fatih and Middle East Technical Universities. The participants are from the faculties of Economic and Administrative Sciences, and Engineering. The data were collected through online questionnaires. The findings revealed that overall they held a positive view of their English skills, and attached more importance to being intelligible users, though their goals slightly differed for speaking and writing.

Key Words: English-Medium Instruction, English skills, English use, Turkish lecturers.

### INTRODUCTION

The era we are in now is unanimously associated with globalization in which the need for a common language is deeply and strongly felt more than ever before. Needless to say, this language is none but English, with an unprecedented spread all around the world and in many domains. Therefore, it is a truism that English fulfils the task of bridging people who have nothing in common. One of the domains where English widely prevails, beyond doubt, is Higher Education (HE) sector. In this context, Brumfit (2004, see Coleman 2007 as well) rightly points out that English has long been the language of HE, particularly in those universities that are outward looking for establishing international ties. Naturally, many HE institutions, also through the effects of rapid process of internationalization, have adopted plenty of strategies to be able to meet the demands of internationalization of HE, which is described as "the process of integrating an international/intercultural dimension into the teaching, research and service functions of the institution" (Knight, 1993, p. 21). The most remarkable strategy pursued by universities to achieve 'internationalization' is to switch to English as the language of instruction, either wholly or partly on campus. The increased use of English as the medium of instruction (EMI) has been well-documented by Wächter and Maiworm (2008) who conducted a large survey of EMI programs across European countries and revealed how an increasing number universities have adopted EMI by replacing the national language of respective countries. This has been shown to be particularly the case at the postgraduate level.

In Turkey, a similar picture can be found in parallel to what happens in European countries with reference to the increased use of English in HE. A number of factors have accelerated the process of Turkish universities' turning their face into English for educational but particularly financial purposes. Although Turkey lags far behind many European countries in respect of offering English-medium courses in Wächter and Maiworm's (2008) list, it is an inevitable fact that the number of degree programs that offer English-medium courses is constantly on the rise, and this trend towards EMI is spearheaded by especially private or what is called in Turkey 'vakif' (foundation) universities. While these so-called foundation universities tend to adopt English in full, which is termed by Alexander (2008) as the replacement type of English use, in state universities, despite a small number of universities that offers EMI wholly, the majority of them cannot afford to provide education totally in English. Instead, the new vogue is to propagate themselves by offering English courses only in some



faculties, usually faculties like Business and Administration and Engineering as observed in previous research (e.g. Byun et al., 2010; Kirkpatrick, 2011; Wächter & Maiworm 2008; Tange, 2010). It is even voiced by some Turkish universities run in Turkish-medium instruction that they offer certain percentages of particular courses in English, for instance, by offering 30% of the courses through English in engineering faculty. However, such a policy leaves a question mark over our minds as regards to what extent faculty members can satisfy the determined percentages of English use. Or, is it just a way of competing with other universities in attracting more and usually talented students?

The question that has the paramount importance is why HE institutions are switching to English at an unheardof numbers. This question finds its answers in the relevant literature of globalization of HE. Among many reasons, tuition revenue and gaining prestige are cited as the ones striking the eyes outstandingly (Alberts, 2010). Other benefits of offering EMI includes cultural diplomacy, brain drain, recruitment of international students, training of a more educated and qualified workforce that can string along with the current work conditions in which a working knowledge is sine qua non (Çetiner, Gündoğan & Özgüven, 2011; OECD, 2004). Adopting EMI, moreover, adds to the international face of the universities by promoting its globalization by having an international mix on its campus through bilateral agreements, namely having visiting or permanent international staff to a lesser extent, and students at a larger degree (Cho, 2012). Whatever the reason for transforming the medium of instruction into English is in HE institutions, there is one thing that almost all EMI universities desire which is that students should commence their degree programs after proving their proficiency of English. That is, students are expected to certify that their level of English skills would suffice to be able to follow their departmental courses in English. To ensure this, universities adopt and implement gatekeeping policies and practices, such as mandating students to take English language proficiency tests (e.g. TOEFL, IELTS, or universities own language tests). It might be thus concluded that a deficit approach prevails among universities towards student candidates' English abilities, and thus they feel the need of testing their English prior to their entry to degree programs.

Well and good, universities may sound right in their concerns over students' English capabilities. But, what about faculty members' English skills? Do universities ask them to evidence their English so as to decide whether they are capable of teaching through English? Neither such a policy nor practice seems to be a matter of question in HE at the moment, or at least in the form of written or official statement in white papers. Insomuch as there are no clear-cut stated or unstated policies as regards lecturers' English skills for employment, very little information is available in the literature on lecturers' orientations to their English skills and practices. This is the gap this research aims to narrow down by researching lecturers' self-perceptions of their English language skills and language use. This will consequently help illuminate to what extent lecturers are confident about their English skills in the teaching of subject matters in their particular disciplines.

The increase in EMI has grabbed the attention of many language researchers in recent years, and a large number of studies have been conducted on issues surrounding the use of English as the language of instruction. The studies carried out so far fall into three categories in general: culturally-, pedagogically-, linguistically-oriented studies. Studies having been conducted from a cultural perspective have focused on the potential damages of the use of English to the culture and national language of the concerned countries, for example a case of "language attrition and cultural identity loss" at worst (Byun et al., 2010, p. 433). On the other hand, on the agenda of the researchers who are pedagogically concerned about EMI have been learning experiences of students (Airey & Linder, 2006), impacts of EMI on students 'learning outcomes' (Klaassen, 2001), faculty members' experiences and teaching practices through English (Vinke et al., 1998), among many others.

Linguistically, only a handful of researchers have been involved in research into the exploration of perceived English language proficiency of the stakeholders of HE (e.g. students and faculty members) and use in EMI institutions. To illustrate, Kırkgöz (2005), a well-known Turkish linguist, in her research on students' perception of studying through English found that a vast majority of students positively evaluated their own English skills whereas they were less positive as to speaking. Byun et al. (2010), examining the effectiveness of EMI policy in the Korean context, observed that students and lecturers were not satisfactory with their English language



skills. Both groups accused each other of lacking English capability required for EMI. Various problems concerning lecturers' language use and skills were reported by a group of non-native English lecturers in Klaassen and Graaff's (2001) study which primarily covers problems relating to oral language production, including pronunciation, accent, fluency and intonation-related complaints. Similarly, Ball and Lindsay (2013) pointed out the same problem among 44 lecturers who were found to live through the biggest trouble in pronunciation in the course of teaching content courses. In another study carried out by Cots (2013), while exploring the students and lecturers' opinions about EMI, it was revealed that students regarded their English skills in a more positive way that lecturers did. It was, however, further found that students and lecturers shared a common concern over their language competence: falling short of coping with EMI linguistically at a satisfactory and desired level. Finally, as distinct from the findings of the studies mentioned above, Jensen et al. (2011) obtained results indicating that both students and lecturers expressed contentment with their English skills, with a positive self-evaluation. In light of the summary of the above studies, it might be concluded that two prevailing views are in the main seen among lecturers: (i) deficit (low regards for their English) and (ii) sufficiency (high regards for their English) views. As a follow-up to the works cited above, this study with a view to addressing the gap regarding lecturers' self-evaluation of their English skills and practices, specifically sets out to answer the following research questions:

- 1. How do lecturers view their own English skills and practices?
- a. Do they differ in their perceptions according to their background variables (e.g. gender, age, university, title)?
- 2. What are their goals in terms of academic writing and speaking?
- a. Do they differ in their goals according to writing and speaking skills?
- 3. How do they view their students' English skills?
- a. Do they differ in their views based on students' being Turkish and non-Turkish?

# METHOD

## **Research Design**

The present study employs a quantitative survey approach on the perceptions of Turkish lecturers' English skills and practices. As the study is descriptive, no pre-set hypotheses were set beforehand. As the data was seen to be not normally distributed, the study made use of non-parametric tests.

# **Setting and Participants**

The data were collected in the setting of Turkish higher education by surveying lecturers based in three longestablished prominent EMI universities: Fatih and Boğaziçi universities in the province of İstanbul, and Middle East Technical University (METU) in the capital of Turkey, Ankara. The participants were recruited from the following faculties: the Faculty of Economics and Administrative Sciences and the Faculty of Engineering. The sampling of the research was comprised of a total 33 lecturers from the following disciplines: international relations, economics, electrical and electronics engineering, computer engineering and mechanical engineering.

## **Data collection and Analysis**

The survey on language perception was conducted through online questionnaires which were sent to each individual lecturer's email address personally during the period of November-December 2013. The questionnaire consisted of 32 questions addressing lecturers' demographic information, perceptions of their English skills and some aspects of their language use, their views on their students' (i.e. Turkish and non-Turkish) English skills, and their views on the use of English by others.

SPSS, a statistical software package for social sciences, was used for the analysis of the collected data. Firstly, the data were entered into SPSS, and then relevant tests were run. Statistical procedures applied during the analysis included descriptive statistics (e.g. central tendency and dispersion [frequency, mean, standard deviation scores]), Mann-Whitney U tests, Kruskal-Wallis and Wilcoxon signed ranked tests.



### **FINDINGS**

## **Background of participants**

As Table 1 shows below, the overwhelming majority of participants were male (72,7 %), while female lecturers only constituted a small ratio (27,3 %) among all participants. When their ages were considered, it was seen that most of the participants' age ranged from 30 to 39 (33,3 %) and from 40 to 49 (36,4 %), and that the number of participants whose age is over 60 was quite small (12,1 %). Participation in the study from METU was quite high (54,5 %), yet it was fairly low as for Fatih university (15,5 %). It appears that there is not much difference in the number of participants according to the faculty of lecturers: 45,5 % from the faculty of economics and administrative sciences and 54,5 % from the faculty of engineering. Another observation was that the great majority of participants held the title of 'professor' (36,4 %) and 'associate professor' (30,3). In regards to lecturers' teaching experience in English, more than 60% of the lecturers have been teaching content courses less than 20 years (63,6 %); in contrast, only 36,4 % of them have being lecturing through English over 20 years. As far as their being abroad is concerned, almost all lecturers (97%) have been abroad for a wide range of reasons, except only one (3%).

		Frequency (f)	Percentage (%)
Gender	Male	24	72,7
	Female	9	27,3
Age	30-39	11	33,3
	40-49	12	36,4
	50-59	6	18,2
	60+	4	12,1
University	Fatih	5	15,5
	Boğaziçi	10	30,3
	METU	18	54,5
Faculty	Economics and Administrative Sciences	15	45,5
	Engineering	18	54,5
Title	Professor	12	36,4
	Associate professor	10	30,3
	Assistant professor	6	18,2
	Doctor	5	15,2
Years of teaching	0-10	10	30,3
	11-20	11	33,3
	21-30	8	24,2
	31+	4	12,1
Being abroad	Yes	32	97,0
	No	1	3,0

Table 1: Demographic Characteristics of Participants (N=33)

#### **Research Question 1: Lecturers' self-evaluation of their English proficiency**

Lecturers rated their English proficiency on a labelled 4-point Likert scale. They were asked to assess both their four skills (productive and receptive) and overall academic English proficiency. Table 2 below shows the distribution of lecturers' self-assessments of their proficiency in English.

	Table 2: Self-evaluation	on the Four Skills and	<b>General Proficiency</b>
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	Writing		Liste	ening	Voca	abulary	Spea	iking	Overall pro	ficiency % -	
	f	%	f	%	f	%	f	%	f	%	
Poor	-	-	-	-	1	3,0	1	3,0	-	-	
Satisfactory	1	3,0	3	9,1	2	6,1	1	3,0	2	6,1	
Good	16	48,5	10	30,3	16	48,5	17	51,5	15	45,5	
Excellent	16	48,5	20	60,6	14	42,4	14	42,4	16	48,5	

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The general picture painted by their ratings indicated that they had a rather positive view of their English skills. In none of the skill areas except vocabulary and speaking, participants labelled their English skills as 'poor', and those who perceived their speaking and vocabulary as 'poor' were rather small in number (3%). A closer examination of the data also revealed that for each individual skill, 30 (90,9%) and more lecturers (97%) rated their skills either as 'good' or 'excellent'. The label 'excellent' was rated by lecturers most for the listening skill (60,6 %) and least for vocabulary and speaking (42,4 %). Their self-evaluation scores, however, did not appear to vary from each other for different skills at all. The number of participants who labelled their skills as 'poor' and 'satisfactory' is fairly low in comparison to those rating their skills as 'good' and 'excellent'. In short, the data revealed that lecturers were considerably confident of their English skills, as this was also confirmed in their ratings of their overall proficiency in which only two lecturers (6,1 %) considered their skills satisfactory while the rest almost equally perceived their skills as 'good' (45,5 %) and 'excellent' (48,5 %).

## The relationship between English Proficiency and other variables

## **Gender and Proficiency**

In order to assess the degree of difference between lecturers' perceptions of English skills and gender, a Mann-Whitney U test was applied. The test results for each individual skill are given in Table 3.

English skills	Gender	n	Х	SD	$\Sigma_{\text{rank}}$	X <sub>rank</sub>	U	Z	Р
1. Writing	Male	24	3.41	.58	16.48	395.5	05 5	57	610
	Female	9	3.55	.52	18.39	165.5	93.3	57	.019
2. Listening	Male	24	3.41	.71	15.81	379.5	79.5	1 22	254
	Female	9	3.77	.44	20.17	181.5		-1.33	.234
3.Vocabulary	Male	24	3.12	.74	14.69	352.5	E 2 E	2 40	072*
	Female	9	3.77	.44	23.17	208.5	52.5	-2.49	.025
Speaking	Male	24	3.29	.75	16.67	400.0	100	26	<b>1</b> 20
	Female	9	3.44	.52	17.89	161.0	100	30	.230

Table 3: Male and Female Lecturers' Perceptions of English Skills

From this data, it can be concluded that male and female lecturers only differed in their perceptions of 'vocabulary' skill. Using the Mann-Whitney U test, it was found that female lecturers had a higher rating for their vocabulary skills than male lecturers (U=52.5, p= 0.023). On the other hand, no significant difference emerged between male and female lecturers in other skills (e.g. writing, speaking, and listening). In conclusion, it can be inferred that gender has a significant impact only on the perception of vocabulary skill among this small group of EMI lecturers.

## **Age and Proficiency**

In order to assess the degree of difference between lecturers' perceptions of English skills and their age range, the Kruskal-Wallis test, a non-parametric test, was applied. According to the results of the Kruskal-Wallis test, the difference among lecturers' age group, that is, being at the age range of 30-39, 40-49, 50-59 and 60+ and their perceptions of English skills is statistically insignificant because of P value being above the cut-off point 0.05 (p>0.05) for each skill area. As a result, it can be concluded that lecturers' age group has a non-significant effect on their perceptions of their four skills and general academic English proficiency.

## **University and Proficiency**

In order to assess the degree of difference between lecturers' perceptions of English skills and their universities, Kruskal-Wallis H test was run for all of the three universities. The Kruskal-Wallis test results indicated that the difference between lecturers' universities and perceptions is not statistically significant for any skills except 'speaking' (H(2)= 6.07, p= 0.048), with a mean rank of 9 for Fatih university, 16.3 for Bogazici University and 19.61 for METU. Based on these results, we can report that lecturers only differed in their perceptions of 'speaking' according to the universities they worked at. Please, see Table 4 below for further details.



Skills	Universities	Ν	X <sub>rank</sub>	X <sup>2</sup>	SD	Sig.
	Fatih University	5	9.50			
Writing	Bogazici University	10	16.65	5.20	.56	.074
	METU	18	19.28			
	Fatih University	5	13.20			
Listening	Bogazici University	10	18.35	1.31	.66	.518
	METU	18	17.31			
	Fatih University	5	12.40			
Vocabulary	Bogazici University	10	15.70	2.57	.72	.277
	METU	18	19.00			
	Fatih University	5	9			
Speaking	Bogazici University	10	16.3	6.07	.69	.048
	METU	METU 18 19.6				
	Total	33				

Table 4: Kruskal-Wallis H Test Results for the Difference Between University and English Skills

To be able to see which groups significantly differed from others in respect to 'speaking', separate Mann-Whitney U tests were done. According to the test results, it was found that lecturers from Fatih university and METU significantly differed from each other in their perceptions of the 'speaking' skill (U=16, p= 0.030). Lecturers working at METU (mean: 3,55) perceived their speaking significantly at a higher level than lecturers at Fatih university (mean: 2,60). Relying on the results obtained through Mann-Whitney U tests, it is concluded that only lecturers based in Fatih university and METU self-evaluated their speaking differently. Yet, none of the lecturers from three universities showed significant difference in relation to their self-evaluations of other skills (i.e. writing, listening and vocabulary). Mann-Whitney U test results are provided in table 5.

#### Table 5: The Degree of Difference between Universities relating to Speaking

dole 5. The Degree of Difference between onwersities relating to speaking									
	Universities	n	Х	SD	$\Sigma_{rank}$	X <sub>rank</sub>	U	Z	Р
Speaking	Fatih Uni	5	2.60	.89	6.20	31.00	16.00	-2.45	030
	METU	18	3.55	.51	13.61	245.00	10.00	-2.45	.050

# **Lecturers' Ranking Positions and Proficiency**

The distribution of lecturers based on their ranks in their universities is as follows: 12 professors, 10 associate professors, 6 assistant professors and 6 PhD holders. Kruskal-Wallis H test was computed on four groups of ranks for the purpose of examining whether there is a statistically significant difference between lecturers' current ranks and perceptions of English skills. Test results show that there is no significant difference between them at the 0.05 level, all values for each skill being higher than the 0.05 level (p>0.05). Consequently, it can be understood that the lecturers' ranking positions in their respective universities did not affect the way they perceived their English skills.

#### **Use of Skills in Practice**

Lecturers rated their certain aspects of English skills (e.g. pronunciation, accent, fluency, grammar, etc.) on a four-point Likert scale (strongly agree to strongly disagree). The results indicated that lecturers verbalised a fairly positive orientation to the related aspects of their English skills. A vast majority reported to have enough knowledge of vocabulary required for academic writing (94%). Yet, concerning grammatical mistakes in speaking, they were almost equally separated into two poles, one group rejecting making mistakes (52%), the other admitting committing mistakes in speaking (48%). As far as speaking is concerned, more than one-third of lecturers stated their English sounds like native English (39%), while the rest did not indicate agreement to this statement (61%). Data revealed that writing was not perceived as problematic by most lecturers (82%), and all of them were capable of communicating through the medium of English (100%). Almost all lecturers denied lacking fluency in English (97%), with a majority claiming to have good pronunciation (91%). Despite having



good pronunciation, more than half of them labelled their accent as foreign-accented (69%), yet virtually none, with one exception, concurred that their English was unintelligible to their interlocutors (97%).

Table 6: Lecturers' Views on Their Use of Skills in Practice.

Statements (N=33)	S	SA A		D		5	5D	
	F	%	f	%	f	%	f	%
1. I have adequate vocabulary to write in English.	21	64	10	30	1	3	1	3
2. I make basic grammatical errors in speaking.	4	12	12	36	17	52	-	-
3. My English sounds like native English.	3	9	10	30	18	55	2	6
4. I experience some difficulties in writing for publication.	-	-	6	18	15	46	12	36
5. I can communicate successfully in English.	22	67	11	33	-	-	-	-
6. I lack fluency in English.	1	3	-	-	15	46	17	52
7. I have good English pronunciation.	11	33	19	58	3	9	-	-
8. I have a foreign (i.e. Turkish) accent.	3	9	20	60	5	15	5	15
9. My English is difficult to understand.	-	-	1	3	11	33	21	64

## **Research Question 2: Goals in Academic Writing and Speaking**

Lecturers were asked about their goals as regards academic writing and speaking. Four pre-determined options were given to them to make a choice. Also, a fifth option labelled as 'other' was provided in case these five options did not match their goals satisfactorily. It was indicated that more than half of the lecturers (n=21) aspired to speak in a competent way with minor mistakes and a foreign accent on condition that their English is understood. Surprisingly, not so many lecturers (n=9) shot for speaking English like native English speakers (American, British and other native speakers).



#### Figure 1: Lecturers' goals in speaking

Similarly, lecturers marked their preference for writing again on a five-option goal statements. According to the descriptive statistics, less than one-third of the lecturers (n=10) defined being a competent writer with minor mistakes as their desire for writing. Slightly less than half of the participants (n=16) exhibited a desire to write like native English speakers, namely American (n=12) and British (n=4) speakers. Only a small number of them (n=7) circled the option 'other'.



## Figure 2: Lecturers' goal in writing

As may be clearly understood, lecturers differed from each other in terms of their goal in speaking and writing in that although they attached prime importance to being a competent speaker, their goal for writing was more native English speaker oriented, particularly towards American speakers. It is also noteworthy that none of them expressed a desire to write like other native speakers (e.g. Australians, Canadians) while for speaking this was a choice for one lecturer. Those who pursued the option 'other' commonly underscored that they would like to write in a competent way but without making any grammatical or semantic mistakes, and clearly but not in a complex style.

As noted previously, the figures suggest that their orientation to speaking and writing is distinct, yet it is not clear from these figures whether the difference in their orientation is statistically significant. For that reason, the Wilcoxon signed-rank test was run with the aim of identifying the significance level, if there is at all. The Wilcoxon signed-rank test substantiated the existence of a significant difference between lecturers' orientations to written and spoken English (z= -2.679, p= 0.007). As a result, it would be feasible to conclude that for spoken English, lecturers were found to be more communication-oriented despite acknowledging making some mistakes, whilst they were more inclined towards native English models, especially American English in written English. The Wilcoxon signed-rank tests results are given in Table 7.

Table 7. The Degree of Difference		Ters Orientations	to speaking and v	VIIIIIg	
Groups	n	X <sub>rank</sub>	$\Sigma_{rank}$	Z.	Р
Goal in speaking	33	10.23	20.50	2 670	0.007
Goal in writing	33	8.83	132.50	-2.079	0,007

Table 7: The Degree of Difference between Lecturers' Orientations to Speaking and Writing

## **Research Question 3: Lecturers' Views on Students' English Skills**

In order to learn about how lecturers evaluate their students' English skills in EMI, a four-point Likert scale was used, with the options ranging from 'poor' to 'excellent'. The descriptive results demonstrated that lecturers' perceptions of non-Turkish students' English skills were comparatively higher than that of Turkish students. None of them thought both groups' English was excellent. While more than one third (n=13) of them rated non-Turkish students' English as 'good', this number was four times smaller (n=4) for rating Turkish students' English as 'good'. An equal number of lecturers (n=18) viewed their students' English as 'satisfactory'. Yet, lecturers had different views regarding whose English is poorer, majority (n=11) evaluating Turkish students' English more often as 'poor' than they (n=2) did that of non-Turkish students. The following figure illustrates the results on lecturers' evaluations.



Figure 3: Lecturers' Perceptions of Turkish and non-Turkish Students' English Proficiency

The descriptive results clearly marked a difference between lecturers' perceptions of Turkish students' and non-Turkish students' English skills. It is not, yet, clear if this difference occurred randomly or it bears a statistical significance, namely it really reveals a difference. To be able to make this out, a Wilcoxon signed-rank test was administered in SPSS. The results point to a statistically significant difference in lecturers' perceptions of Turkish and non-Turkish students' English (z=-3.819, p= 0.000). Accordingly, non-Turkish students' English is perceived as far better than that of Turkish students studying through English. The statistical results are illustrated in Table 8 below.

Table 8: The Difference between Lecturers' Rating of Turkish and non-Turkish Students' English

				-	
Groups	n	X <sub>rank</sub>	Σ <sub>rank</sub>	Z.	Р
Turkish students' English	33	.00	.00	2 910	0.000
Non-Turkish students' English	33	8.50	136.00	-5.619	0,000

## **DISCUSSION AND CONCLUSION**

This section presents the discussion of the results and conclusions in concert with each research question asked. Drawing on the results obtained, it can be safely put that the lecturers in this study generally assessed their English skills to be of a high level; more than 90% of them identified their overall academic English as either 'good' or 'excellent' (RQ1). This finding provides counter evidence against what Byun et al. (2010) observed among students and lecturers who levelled criticisms at their English, with a deficit view of their English. Regarding the micro-skills (e.g. pronunciation, accent, grammar, fluency), lecturers' ratings and markings on attitude scales indicate that they feel or experience no problems in using these skills efficiently while teaching in English. Once again, this finding does not resonate with earlier findings that show lecturers suffered from a wide range of linguistic troubles, including pronunciation, accent and fluency related worries (e.g. Klassen & Graaff, 2001; Ball & Lindsay, 2013). The findings, however, substantially mirrored Kırkgöz's (2005) observation in which a great number of EMI students rated their English positively except their speaking, which was positively assessed by lecturers in this study, though. All in all, when the findings considered holistically and in comparison to one other, it seems clearly that Turkish lectures in my study felt capable of lecturing through EMI, without any obvious language-related obstruction. As to the sub-research question (RQ1a) which seeks to find out which variables have an influence on lecturers' perception; two variables stood out: gender and the university they work at. The other variables, i.e. lecturers' age and ranking positions, did not impact lecturers' ratings of their English. According to the results, male and female lecturers only indicated difference in their vocabulary knowledge, and this disparity was in favour for female lecturers' having higher vocabulary knowledge than their male colleagues.



The descriptive statistics on lecturers' aspirations in terms of written and spoken English revealed that more than half of the lecturers (64%) set the target of becoming a competent speaker regardless of making basic mistakes in their speech (RQ2). Those aspiring to achieve a native-like speaking competency were considerably small in numbers (27%). What is remarkable among them is the articulation of a hierarchy of kinds of native English they desire to have; most (15%) expressed a wish to speak as American speakers do, following this was British speakers set as a target by a small group of academics (9%), and the least aspired kind of English appeared to be other kinds of native English (e.g. Australian English, Canadian English), only by 3% of the all lecturers. However, a different picture was painted with respect to lecturers' aspirations to written English. Almost half of the lecturers (49%) put an emphasis on having a native-like writing competency, with a majority seeking for American English (37%) and with a minority aiming at British English (12%, RQ2a). The reason why lecturers are inclined to a native English model for their written English can be related to pressure of publishing houses and journal editors that largely require academics to submit their manuscripts with standards of either British and American English, and this prerequisite is generally set in their author guidelines either covertly or overtly, as was also confirmed by Kirkman's (2001) research on author guidelines over 500 science journals. Thus, it is my conviction that due to the non-appearance of such an academic pressure on lecturers' 'speaking', many lecturers felt more leeway to attempt at being a competent speaker rather than mimicking native English speakers.

In the eyes of lecturers, Turkish students' English was not rated as positively as that of their non-Turkish peers (RQ3). This can be interpreted as an indication of lecturers' two-pronged approach to students' English, thus observing nationality contrasts between their Turkish and non-Turkish students. In a similar line with Doiz, Lasagabaster and Sierra's research (2011) in which teachers compared and contrasted students' English on the basis of their nationalities, concluding that European students' English had a better command of English than that of non-European students, Turkish students' English was in this study associated with lower level of proficiency than non-Turkish students' English. This finding calls for further examination in order to fully understand and spell out the true reasoning behind this sort of tendency to students' English, and this will be achieved in the second round of data collection through one-to-one interviews. For the present, it might be ventured that the difference between Turkish and non-Turkish students' English possibly stems from their earlier experiences with learning English. In other words, non-Turkish students might have had a far better English language education than Turkish students, who were in the main taught through traditional ways of language teaching (e.g. grammar translation and audio-lingual methods), usually focusing on linguistic competence at the expense of communicative competence.

In conclusion, there is no denying that lecturers see themselves linguistically as capable as to be able to deliver their subject matter courses through English. This enlightens the doubt cast on lecturers' English skills for the reason that there is no formally stated or implemented course of action to evaluate lecturers' English, wishing to work in EMI universities, whereas students have to certify their English proficiency with a test score. However, one should not downplay the fact that a vast majority of these lecturers are graduates of EMI universities located mostly in the UK and USA. Their avowed goals towards speaking and writing also warrant further exploration, as it has largely remained unanswered as regards what factors have driven them to different goals for writing and speaking, apart from the top-down imposition of native English production in writing by journals. It turned out that nationality contrasts emerged among lecturers in relation to their evaluation of Turkish and non-Turkish students' English. Current data do not suffice to give complete answers to the remaining questions, and thus the rest of the study will set out to conduct further follow-up and complementary research via interviews and focus group discussions to draw a broader picture.

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# COMPARISON OF SCIENCE TEACHER CANDIDATES' METACOGNITIVE AND SCIENTIFIC STORY WRITING SKILLS

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## ABSTRACT

In this research, it is aimed to investigate the metacognitive skills and scientific story writing skills of science teacher candidates. For this reason, the research was conducted with 80 science teacher candidates studying their 3<sup>rd</sup> year in one of the governmental universities in Turkey. The participants were expected to display a number of metacognitive skills and to make an interesting introduction to the lesson to capture students' interest as a result of their science and technology laboratory applications. Hence, the participants were asked to write a scientific story concerning heat concept which can be used in the beginning of the lesson. In addition, their metacognitive skills were measured with a Likert type scale. In the analysis, a rubric will be used to evaluate individual scientific stories. Also, metacognitive skill scales will be analyzed via SPSS. The correlation between the scores of metacognitive scale and scientific stories will be determined and recommendations will be given upon the findings.

Key Words: Teacher candidates, scientific story, metacognitive skills.

# **INTRODUCTION**

The significance of the education is perceived in every part of daily life nowadays with rapid changes. The societies which cannot follow up those changes are poorly influenced from them. As a consequence of those poor effects, individuals who cannot reply even very simple questions are encountered frequently in TV programs (Açıkgöz, 2002: 5). Hence, development of the quality of the education is a major issue.

When we deal with the education in more specific and consider science education, in Turkey, teacher centered science education was given as a tradition for long periods. In this frame, transferring of scientific phenomena, concepts, theories and laws from teachers to students constitute the focal point of science education. However, in 2004, the education system was modified and inquiry based and constructivist science education was adopted. In this context, the targets of the science education can be summarized as follows:

- 1. To know and comprehend the scientific information
- 2. To research and discover (scientific processes)
- 3. To imagine and develop
- 4. To be affected and value
- 5. To utilize and apply (Ayas et al., 2010; 8).

With this science program, the students are expected to embrace scientific process skills, possess imagination and creativity, and develop positive attitudes and values and being aware of science in daily life in addition to scientific facts. In another words, with the provided science education, students' curiosity to know should be triggered and it should be aimed to develop individuals who are respectful to themselves and to the environment, who are qualified, who investigate, question, reflect his/her learning to the daily life.

To actualize the above mentioned aims, critical thinking, reflective thinking, creative thinking and metacognitive skills are expected to be in advanced levels especially for the individuals who will give science



education in the future. Because a person can accomplish his/her own learning when his/her thinking skills are improved (Doğan, 2013). For this reason, metacognitive level should move to the upper levels as possible from knowledge and comprehension levels. From these properties, metacognition is a concept which was firstly used by Flavell in 1976 (Bağ, Uşak & Caner, 2006: 250). According to Flavell, metacognition is the total of one's own cognitive process, products or one's information about them (Flavell, 1979).

In order to make the function of metacognition more concrete, a number of questions are listed below. Metacognition gives chance to individual to answer those questions (Senemoğlu, 2009: 336):

- What do I know about this subject?
- What length of time do I need to learn this topic?
- What kind of a plan should I make in order to teach this topic effectively?
- How should I revise and edit the limitations of the plan in order to edit them?
- How should I find the mistake when I make a mistake?
- Is the product as a result of all those steps compatible to my expectations? If not, how do I change my plan?

An individual who asks those questions to himself possesses the responsibility from his learning and he can organize his learning with his needs. With the help of metacognition, he perceives science as a part of daily life and can make connections among science concepts in different areas (Bağ, Uşak & Caner, 2006: 262). So, metacognition has a significant place in science instruction.

In our schools, unfortunately, the relationships between scientific concepts and daily life events are not mentioned satisfactorily (Demircioğlu, Demircioğlu & Ayas, 2006). However, scientific stories can be good instruments in order to trigger the imagination and thinking skills of the students. Stories can be used in the instruction of the related concepts by producing stories intended to the solution of the problems encountered in scientific manner (Demircioğlu, Demircioğlu & Ayas, 2006). Relately, scientific stories take place recently in science education research (Demircioğlu, Demircioğlu & Çalık, 2009; Demircioğlu, Dinç & Çalık, 2013). In these studies, several science concepts are intended to teach primary, secondary and high school level students. The number of research related to the training of teachers and teacher candidates about scientific stories should be well qualified about scientific stories. Çelik, Yılmaz, Şen and Sarı (2013) investigated scenario construction skills of science teacher candidates and found that despite being successful in general, they were not sufficient in problem solution, creative thinking and relating concepts with daily life.

Qualification of teacher candidates in terms of the utilization of scientific stories is also significant for making their students love science. However, sufficient research has not been encountered related to the instruction of specific science concepts. From this thinking, the problem of the study has been identified.

## The Aim and Significance of the Study

The purpose of this study is to investigate the relationship between metacognitive and creativity levels of science teacher candidates used to write scientific stories for the instruction of heat concept.

With this study, metacognitive levels and scientific story writing skills of teacher candidates will be examined. In addition, the correlation between metacognitive level and story writing skills will be found out. It will be discussed in what level, those two variables can be correlated and how this correlation could be improved.

# **METHOD**

#### **Study Design**

Correlational survey study method was utilized in this study. Correlational survey studies aim to specify the level of change among two or more variables (Karasar, 2013). In this research, the correlation between scientific story writing skills and metacognition was found out.



# **Participants**

This study was conducted with 80 third year science teacher candidates who were studying in the education faculty of one of the governmental universities in Turkey. 17 of the participants (21.2%) were male whereas 63 (78.8%) of them were females. All of the participants had prepared lesson plans related to the heat concept during the semester in terms of the "Science Instruction and Laboratory Instruction I" course. For this reason, the participants possess pre-knowledge related to the instruction of this concept. In this research, the participants were asked to write a scientific story related to the heat concept which will trigger the curiosity of the students.

## **Data Gathering Instruments**

In data collection, the scientific stories written by the teacher candidates and metacognition scale which involve 27 items were utilized. The scientific stories related to the instruction of the heat concept in elementary level were written by the participants in 40 minutes period (see appendix 1). Metacognition scale is a Likert type scale and it was developed by Tüysüz, Karakuyu and Bilgin (2008) to determine the metacognitive levels of teacher candidates. Its alpha reliability coefficient was calculated to be .783. This reliability coefficient shows us that it can be utilized in the study. Hence, the scale was applied to the participants without making any changes on it.

#### **Data Analyses**

Content analyses were utilized in the analyses of the scientific stories written by the teacher candidates. Content analyses aims to collect similar data under particular concepts and themes by organizing and interpreting them (Yıldırım & Şimşek, 2011). In this content analyses, the content of the scientific stories were assayed with the themes related to creative thinking. To determine the creativity level of teacher candidates while writing scientific stories, a rubric which consists of ten themes was developed by the researcher by considering the steps utilized by Doğan (2013). In Table 1, the details of the rubric are presented with the themes and their explanations.

Theme	Explanation
Purpose compatibility	Is it compatible for the purpose of the question?
Cognitive level compatibility	Is it compatible for the grade level of the student?
Fluency	While solving the problems, can s/he produce valid ideas and construct the relations between them easily?
Analogical Thinking	Can s/he think via analogies?
Theoretical thinking	Can s/he combine the ideas in a focus point while constructing new solutions?
Inference- Prediction	Can s/he think by modeling? Can s/he anticipate for the future?
Planning	Can s/he construct the steps for the solution by considering the issue before beginning to solve the problem?
Hypotheses Construction	Can s/he produce alternative solutions related to the problem?
Application	Can s/he apply the plans to convenient cases?
Summarizing	Can s/he summarize the findings?

Table 1: Scientific Story Analyses Rubric with its Explanation

The scientific stories written by the teacher candidates were analyzed according to ten themes mentioned in Table 1. The themes were scored during this procedure. Scoring of the themes was mentioned below:

1 point: The theme and its explanation were not encountered in the scientific story.

2 points: The theme was present in the scientific story however it was not sufficient.

3 points: The theme and its explanation were completely present in the scientific story.



To raise the reliability of the research results, ten scientific stories were randomly selected from all the scientific stories written by the teacher candidates. Those selected stories were analyzed by the researcher and by an external researcher independently. The reliability of the analysis is accepted to be high when the correlation between two analyzers is more than 70 % (Yıldırım & Şimşek, 2011). In this process, the correlation between two analyzers was found to be 80 % and this value indicates that the content analyses conducted with the rubric have a high reliability. The scores obtained from the content analyses of the scientific stories were transferred to SPSS. Teacher candidates could obtain ten points as a minimum score whereas they could obtain thirty points as a maximum from these analyses.

Metacognition scales which were Likert 5 type scales were scored from 1 to 5 points to each category (5 for absolutely agree, 4 for agree, 3 for uncertain, 2 for disagree, 1 for absolutely disagree). The score of each participant were transferred to SPSS. 19 items of the scale were positive items whereas 8 of them were negative items. The negative items' scores were reversed during the analyses. The minimum score that can be obtained from this scale corresponds to 27 whereas the maximum score corresponds to 135. The reliability analyses showed  $\alpha$  alpha reliability coefficient of .854 from this research.

The relationship between teacher candidates' scientific story writing skills and metacognitive skills were investigated via simple correlation. It is researched that in what level metacognition explains teacher candidates' scientific story writing skills.

# RESULTS

# The Analyses of the Scientific Stories

The details of content analyses of the scientific stories are shown in Table 2 with the frequencies for each theme.

Thoma	f			
	1 point	2 points	3 points	
Purpose compatibility	11	7	62	
Cognitive level compatibility	11	4	65	
Fluency	16	26	38	
Analogical Thinking	61	17	2	
Theoretical thinking	36	34	10	
Inference-Prediction	25	40	15	
Planning	41	31	8	
Hypotheses Construction	48	20	12	
Application	48	22	10	
Summarizing	39	31	10	

Table 2: The Results of the Analyzes of the Scientific Stories according to the Rubric Developed

As it is seen on Table 2, the theme which teacher candidates show the most accomplishment is "cognitive level compatibility". On the other hand, the theme which teacher candidates show the least accomplishment is the "analogical thinking". Teacher candidates were determined to be successful at the themes "purpose compatibility" and "cognitive level compatibility". Also it was seen that their scientific stories are appropriate for their purpose as well as the grade level. In addition, teacher candidates got high scores from the theme "fluency". The participants had difficulty in generating different ideas for problem solving and establishing relationships between these ideas. They were found to be in low level success for the "inference-prediction" theme. The themes "analogical thinking", "theoretical thinking", "planning", "hypotheses construction", "application" and "summarizing" were determined to be received low points by the participants as a result of



the analyzes. Most of the teacher candidates do not utilize analogies and cannot collect their ideas under their own solution proposals. They do not produce satisfactory steps for the solution of the problem mentioned in their scientific story. Additionally, they cannot make the application of it to different areas since they do not make any planning according to the solution of the problem. It is clear that teacher candidates have problems with producing alternative solutions for the problem they constructed and summarizing the consequences they collected.

As a result of these analyzes, it is seen that teacher candidates are not successful enough in writing scientific stories.

An example from the scientific stories written by the participants is provided in the appendix (see appendix 2).

# The Analyses of the Metacognition Scales

The analyses of the metacognitive scales indicated that the participants (N= 80) had an average score of 104.68 points with a standard deviation of 12.86.

## The Correlation between Scientific Story Writing and Metacognition Skills

It can be interpreted that the distribution is normal as p value is less than .05, z statistics is less than 1.96 and skewness coefficient is between  $\pm$  1 at  $\alpha$ =.05 significance level according to the results of Kolmogorov-Smirnov test (Büyüköztürk, 2010: 40-42). When the distribution of scientific story writing skills scores are investigated, it is seen that p= .05, z statistics is -.11 and skewness is -.10. When the metacognition scores are considered, p=.20; z statistics is .05 and skewness is -.95. According to those results, it can be concluded that the distributions are normal. So, the correlation between those two variables can be checked.

#### Table 3: The Correlation between Metacognition Scores and Scientific Story Writing Scores

		Metacognition Scores	Story Writing Scores
Story Writing Scores	Pearson Correlation	.282*	1
	Sig. (2-tailed)	.011	
	<u> </u>	80	80

\* Correlation is significant at the 0.05 level (2-tailed).

As can be seen from Table 3, there is a positive and significant relationship between scientific story writing and metacognitive skills (p=.01<.05). As metacognition score increase, scientific story writing skills increase however this relationship is in low level (r=.282). Metacognition level explains 7.9 % of the variance of scientific story writing skills. According to those findings, as metacognitive level increases, scientific story writing skills increase, too. However, metacognition is not the leading factor that drives scientific story writing. 92 % of the variance is affected by other various factors.

## **DISCUSSION AND CONCLUSION**

According to the results of this study, teacher candidates were seen to not successful at scientific story writing. The reason of this situation might be due to the fact that they do not use creative thinking skills sufficiently and as a result of this, they cannot write a creative story related to the solution of a problem. Teacher candidates have difficulty in suggesting solutions for the problems from daily life. They are not competent for solving their problem analytically. We can say that teacher candidates lack creative thinking skills and skills to solve problems from daily life.

The mean of the metacognition scores of the participants were specified to be 104.68 out of 135.00. According to this score, it can be said that they have high metacognitive levels. Their cognitive awareness is also high.

As a result of this study, the relationship between scientific story writing and metacognitive skills indicate that metacognition explains only 8 % of the scientific story writing skill. This ratio is very low. Despite having high scores from metacognition, their scores are not so satisfactory for scientific story writing. 92 % of scientific



story writing skills can be explained by other various factors. Those factors were not addressed in the present study. However, it can be the research question of other future studies. Determination and development of the factors that influence the creativity of teacher candidates from this aspect can be dealt in such future studies. There might be a number of reasons of teacher candidates for not utilizing creativity in writing scientific stories. This situation is also can be researched further. What factors influence the creativity of teacher candidates can be determined via studies regarding the improvement of scientific story writing skills of them.

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# **APPENDIX**

# **Appendix 1. Scientific Story Writing**

Write <u>a scientific story</u> which can be use in the instruction of "**heat**" concept in elementary level (grades 4-8) in order to arouse curiosity among students in the beginning of the lesson.

## Appendix 2. Sections from Teacher Candidates' Scientific Stories

# **Teacher Candidate 9**

"As you all saw, last week it had snowed. Before it snowed, the weather was so cold. We all were ill. However, after it had snowed, the weather got warmer. Even, it was very warm a few days ago. You didn't get cold. Have you ever thought about the reason of this situation? When it had snowed, you got ot of the house, you played with your friends and had fun. When it began to melt, it again got cold. Have you ever thought about the reason of this situation?

## **Teacher Candidate 37**

.....

Ezgi: Today it is so sweltering. When I saw that the temperature would be 40  $^{\circ}$ C in the morning news, I got mad.

Mine: Yes, I also saw that news on TV but you are wrong at one point.

Ezgi: What was that?

Mine: It is not the temperature, it is the heat that would be 40  $^{\circ}$ C.

Ezgi: Oh no. You are drooling now.

Mine (a bit unhappy): One of us is telling the truth but which one? If only we had listened the lesson well that day. Also, one thing that the teacher mentioned made me think.

Ezgi: I also such things in my head. What was yours?

Mine: They say that it is better to wear thin but dense clothes to keep warm than those of thick clothes. I do not understand this. How? Isn't it foolish? What do you think Ezgi?



Ezgi: Yes, I agree. I have one more thing confusing in my mind. The teacher said that there will be no dealing between the cold and the hot. So, can't the cold turn into the hot?

# **Teacher Candidate 79**

The researcher, Ayşe observes her mother cooking. Ayşe, being so carefully, notices that the meal in the small saucepan requires less fire from the stove. After the meals are cooked, she measures the temperature of the sucepans and observes that they are the same. And she wonders the reason of this situation. She immediately constructs an experimental set up. She places a glass of and a bottle of water on the stove inside two pots. She frequently measures the temperature of them. And she realizes that the glass of water gets warmer faster than the other despite being on the same type of fire on the oven. Ayşe discovers that the heat and temperature are different concepts. The heat depends on the amount. Because despite the fact that two different amounts of water are at the same temperature, different amount of heat was given.....



# EXPLORATION OF TRANSFORMATIVE PARADIGM WITH PRAGMATIC TWIST TO CONTRIBUTE TO EDUCATIONAL CHANGE

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#### ABSTRACT

In this paper I consider the contours of a transformative research paradigm with pragmatic twist. I offer an account of various ways of activating transformative paradigmatic intentions to contribute to social justice. I propose that situating one's research work within a social justice agenda in the field of education requires taking cognisance of the necessary impact of all research on the way in which people envisage and activate possibilities for enhancing educational quality. I also show how this links up with a particular way of seeing pragmatism as an epistemological stance, where "validity" is closely tied to furthering equitable social outcomes. I refer to an instance of embracing such a paradigmatic orientation in (inclusive) educational research, by focusing on the principles and practice of a research project undertaken in South Africa (Nel, Romm, and Tlale), where we re-tuned the remit of a larger international project.

Key Words: Transformative paradigm, pragmatic twist, educational change.

#### INTRODUCTION

In the field of education, as in other fields, there have been calls for researchers to render more explicit their paradigmatic orientations underlying their research (cf. Burrell & Morgan, 1979; Hassard, 1991; Guba & Lincoln, 1994; Flood & Romm, 1996a,b; Ladson-Billings, 2003; Romm, 2001, Lincoln & Guba, 2003; Johnson, 2009; Mertens, 2010). As Mertens (2010a: 7) indicates, a paradigm can be seen as composed of "certain philosophical assumptions that guide and direct thinking and action". These include: ontological assumptions about the nature of (social) reality; epistemological definitions of "valid" knowing; methodological assumptions concerning how knowers can go about obtaining enriched insight/understanding; and the (axiological) link – if any – between research and value-concerns.

In the literature across all disciplines and between disciplines (that is, in interdisciplinary research) there has been contention around whether it is possible to "mix" paradigmatic orientations in a single study, as they could be argued to be mutually exclusive – thus creating cognitive difficulties when mixing them (Dohmen, 2003; Bryman, 2006, 2007). However, certain authors have suggested that indeed the process of "mixing" both paradigms and methods, can provide an opportunity for researchers to reflect more fully upon the ontological, epistemological, methodological and axiological assumptions that otherwise would be invoked more or less unconsciously (Brocklesby, 1997; Romm, 1998; Midgley, 2000; Torlak, 2001; Jackson, 2003; McKay & Romm, 2008; Naidoo, 2008; Johnson, 2009; McIntyre, 2006, 2014).

Johnson, Onwuegbuzie, and Turner (2007: 118) make the point that mixed-method designs can become an opportunity for researchers to think explicitly about philosophical questions because they have to consider the different paradigmatic stances associated with the use of alternative methods. And Majumdar and Sowa (2010,: 1) point out that even in artificial intelligence, if one builds in different styles of reasoning, one can provide for the possibility of different agents working together (in society) with what they call "flexible methods of reasoning, learning, and language processing (analysis and interpretation).



Others, including myself, have argued that even when multiple paradigms are *not* brought to bear in a single study, researchers should still be cognisant of, and make transparent to others, how they are conceptualizing their research (Collins, 2000; Romm, 2001, 2010; Pollack, 2006). This, at least, allows them to recognize that however they define the import of the research processes and the results, this is not the only way that these can be seen; and it allows audiences also to reflect on the research in terms of an awareness of its paradigmatic character (as bringing to bear a world view). This also implies that researchers leave openings for other researchers as well as lay persons – with perhaps alternative orientations – to write into their "stories" (Collins, 2000; Romm, 2013).

## THE QUESTION OF VALUE-NEUTRALITY

In the debate around paradigms, some authors have argued that the choice of paradigm itself is not politically neutral. For example, the choice of, say a "post-positivist" paradigm may imply a more status quo orientation (as in Burrell and Morgan's functionalist paradigm, which has been criticized in these terms – Oliga, 1996: 74). This is because it assumes firstly, that the "regular" connections between social phenomena as discerned by scientists should be worked with rather than transformed (Romm, 2011) and secondly, it does not allow sufficient openings for audience participation in defining how to interpret the (presumed) connections (Acquah, 2007; De Souza, 2007; Midgely & Shen, 2007; Mertens, 2010a,b; Romm, 2013).

Regarding the links between positivism and post-positivism as epistemological stances, Denzin and Lincoln (2003) indicate that post-positivism is a refinement of positivism as developed in the 19th century (pp. 12–13). Within a post-positivist stance, it is conceded that scientists should not claim to verify statements about reality; that is, it is understood that the quest is to get *closer to the truth* and that only *approximations to reality* can be sought. Nevertheless, the quest is still to strive for "objectivity" in the knowing process and proponents argue that doing science requires such a stance. The argument is that it is this stance that renders the results of (scientific) inquiries more sound and informative than can be achieved using everyday modes of inquiry. Johnson (2009) explains this by pitting the (positivist/postpositivist) position against an alternative one which appreciates that, as he puts it, "raw data, especially social science data, cannot be interpreted in the absence of values. Human beings cannot fully reason on or about 'facts' without concurrently reasoning and relying on values" (p. 452).

Those who query the post-positivist striving for value-freedom thus argue that unwittingly values are invoked when "doing science". The suggestion here is that when one is employing "quantitative" and/or "qualitative" approaches to investigate the operation of social reality (including patterns of meaning making) with a view to getting closer to "the truth", one is not providing for sufficient consideration of how the research process and the interpretation of results already are imbued with (oft-unrecognized) values.

Ladson-Billings avers that an epistemological and associated axiological orientation that insists on striving for value-free inquiry and that provides no place for value-concerns in defining valid/credible knowing, in effect excludes consideration of what she calls "ethnic epistemologies" (2003, p. 398). Within such epistemological positions, knowing (as a more collective process, than in Western-oriented thinking), at the same time implies recognizing the way in which our "understandings" relate to a hoped-for addressal of social concerns – identified as issues of concern (2003). Ladson-Billings argues that these positions have been discredited within dominant epistemologies that govern social inquiry in academia.

Although Ladson-Billings does not wish to totally disregard what she calls (Western-oriented) dominant epistemologies, she feels that the choice to commit to them should be recognized as itself a value-commitment (2003: 421). The values that are invoked favour researchers making statements in a less-than-dialogical fashion, as they believe that "knowledge" is best achieved through following the protocols of science. Also, what is valued here is "rational" (supposedly emotionless) thinking, thus excluding ways of knowing where knowing is recognized to be filled with emotion. This itself also serves to render less credible the styles of knowing which rely on "storytelling" as evoking insights as well as feelings, where stories offer openings for inviting co-



reflection with others on values and critical themes (Collins, 2000; Kenny, 2002; Nyamnjoh, 2004; Archibald, 2008; McIntyre & de Vries, 2011).

For instance, certain "scientifically-oriented" authors would not wish to place in the genre of science the storytelling of Quan-Baffour, where Quan-Baffour and Romm together – via dialogical reflection – consider the import of his attempts to further Ubuntu as a value in his adult literacy classes in South Africa (as detailed in Quan-Baffour & Romm, 2014). The storytelling as provided in our write-up of our reflections was meant to evoke insights by also touching readers affectively, that is on the level of emotions. The idea was to offer an understanding of possibilities for incorporating Ubuntu in adult learning settings where learners could (and did) "apply" this in their community settings. The stories that we offer present this as a valued way of orienting the adult education classes, which provides an option for adult education to contribute to a more relational way of interacting in classes as well as in communities (for readers also to consider as a valued option). However, within a paradigmatic framework that favours scientific "analysis", the storywork approach might be considered as not sufficiently analytical and as too value-imbued (Delamont, 2012: 350-351).

Nonetheless, within a stance which embraces a range of criteria of validity, the storywork approach could be seen as, say, offering options for readers to imagine alternative ways of social being (by being presented with a discussion of some possible exemplars, which they can in turn engage with). In terms of Kvale's (2002) conception of "communicative validity", validity "involves testing the validity of knowledge claims in a dialogue ... valid knowledge is not merely obtained by approximations to a given social reality; it involves a conversation about the social reality" (p. 15). One could argue that as long as the "storytellers" invite different interpretations – while evoking people's imagination to consider new (more equitable) ways of organising social as well as knowledge relationships – the storywork approach fulfils criteria of communicative as well as (potentially) transformative validity.

# **EXPLICITLY SHIFTING HIERARCHIES IN THE PRODUCTION OF KNOWLEDGE**

Some authors contend that unless one is explicitly aware of nurturing social goals such as involvement of participants and/or audiences in structuring research and interpreting results (so as to invite dialogue in whatever ways possible), etc. these becomes sidelined (Midgley, 2000, Christakis and Bausch, 2006, Tsolidis, 2006; Flanagan & Christakis, 2010; Chilisa, 2012). It is argued that *research itself should be a process of creating more equitable human relationships, where particular "knowers" do not pose as authorities by virtue of their using "scientific methods"*.

Hence, the attempt is to seek a shift towards transforming social relationships towards a more relational style of human relating (as discussed in Romm, 2010: 9-10). It is with this "transformative agenda" in mind that the focus group research of Nel, Romm, and Tlale (as explained, for instance, in Romm, Nel and Tlale, 2013 and in Nel's paper, 2014), was undertaken. We conceived the "research" as at the same time intentionally geared to social transformation in the sense of *transforming "traditional" research relationships* (see also Truman, 2003; Mertens, 2010a), while also *facilitating more collaborative relationships between, in this case, teachers, as well as between teachers and the district support officers from the South African Department of Education.* This, as one reviewer of our article noted, implied the adoption of a "transformative paradigm with pragmatic twist".

Briefly put (as this is explained more fully in Nel, 2014 and in the concluding section of this paper), the focus group research that we undertook was part of a broader international project exploring the role of teachers in inclusive education contexts in five different countries: China, Finland, Lithuania, Slovenia, South Africa and the United Kingdom. This research was conceived (in 2011) in terms of a sequential mixed-methods design, where questionnaires were to be used prior to the organization of focus groups with groups of teachers involved in school-level institutional teams to support inclusive education.

With respect to the focus group component in which I was involved, in 2012 we (the South African team) set up focus groups with teachers in three different schools, and indicated to them that we were seeing the "research" as a process of us all re-looking together at the implementation of inclusive education. The ideas that



were generated via these focus group encounters were not intended to be "analysed" by the researchers with a view to providing (more or less) value-free "information" regarding the participants' understandings of inclusive education and challenges of implementation.

Rather, within the research process itself we hoped that we all could learn from one another via the dialogue around attempts to implement inclusive education, including learning about options for possible actions to increase the chances of effective implementation. This, as it turned out, meant learning amongst the researchers and teachers, amongst the teachers of the schools in their school settings, and amongst the teachers and the district support officers (when we arranged a meeting to discuss the "results"). The research had a pragmatic twist in two senses: in the sense that we were not aiming to develop "knowledge" *divorced from a considerations how the research process could contribute to the quality of life of the teachers and the communities that they serve; and we took some responsibility for finding "practical" ways of facilitating collaborative encounters where understandings as well as options for action could be discussed amongst those concerned.* By incorporating the "pragmatic twist" we extended the remit of the international project as a whole, which was more analytically focused.

In the subsequent sections of this paper I shall discuss more fully the meaning of an epistemological pragmatism and also of "transformative research" and how it might be seen as connected with "other" research paradigms.

# EPISTEMOLOGICAL PRAGMATISM (AND POSSIBLE LINKS WITH THE "TRANSFORMATIVE PARADIGM")

Writing about the field of education, Johnson advocates that "educational research needs multiple thoughtful perspectives" (2009: 449). He believes that this "thoughtfulness" is best achieved by using mixed methods research, which he sees as offering the most possibilities for developing what he calls a "syncretic philosophy and set of approaches or possibilities for merging insights from diverse perspectives" (2009: 449). Johnson argues that the working goal of such a research orientation is to "provide pragmatic, ethical solutions to local and societal problems".

For Johnson, then "pragmatism" implies looking for practical solutions to issues of concern (raised as of concern within society); but it also implies an approach to knowing where it is recognized that multiple perspectives need to be taken on board in looking at any social "situation". However, it is still unclear from his discussion how the alternative perspectives can indeed be integrated, and what the role of research participants and wider audiences is in finding "pragmatic ethical solutions".

"Pragmatism" in mixed methods research is normally associated with the idea that researchers can match methods to specific purposes of research and work back and forth between approaches as supposedly required by the research context. Researchers can define what seems to be appropriate in terms of how to mix methods (and philosophical assumptions) and how to integrate the findings. It is admitted furthermore that there is no single reality to be "seen" (interpreted) and that individuals (including researchers as individuals) will bring different interpretations to bear. Hence it is admitted that the way in which researchers might interpret "results" will be influenced by their particular concerns and values (Mertens, 2010a: 11).

But how are different concerns and values then to be brought on board within the research process and the interpretation of results in a "pragmatic" position"? Romm (2001, 2010) suggests that a constructivist-oriented epistemological pragmatism can make provision for the development of "negotiated" knowledge by positing the need for inquirers (professional researchers and others) to be discursively accountable in the knowing process. As I put it (2010: 23):

Inquirers can be considered as *discursively accountable* insofar as they can be seen (by those concerned) to embrace an orientation of being *sensitive to a range of considerations springing from engagement with alternative perspectives and values* (Romm, 2002). Such an orientation in turn implies that one nurtures the capacity to take *seriously into account differences of viewpoint as the basis for developing one's sensitivities*.



This is consistent with Collins's suggestion that the ethic of caring at the same time implies an openness to others' expressions of emotion and to recognizing "the appropriateness of emotions in dialogues" – rather than seeing "emotion" as separate from "intellect". (2000: 263)

This means that inquirers need to adopt a stance of reflexivity, by being prepared to look back on the way in which their perspectives may be rooted in questionable assumptions, and by being open to engage seriously with the perspectives (including emotions and value-concerns) presented by "other positions". They earn trust in their research endeavors insofar as they can signal to others that they are thus open. Again citing myself, I suggest that:

A discursive orientation on the part of researchers implies that they need to show how they are engaging with concerns that might be raised by others (or that might already have been raised when similar approaches have been employed in other research settings). In this process, they need to bear in mind a relationship not only with colleagues (taking into account different criteria that may be invoked to evaluate their work), but also with others (in the wider society). (Romm, 2010: 24)

As indicated earlier, this does not necessarily mean that in any particular research project researchers have to employ a mix of methods to help them to recognize that social reality is subject to multiple interpretations (as implied in Johnson's position, 2009). More importantly, they need to nurture the capacity to earn trust by being discursively accountable both to colleagues and to others in what ever way they choose to proceed.

Mertens (2010a: 11) argues that one of the tenets of a transformative paradigm is indeed that the "interactive link between researchers and participants" is provided for. She states that within this paradigm it is recognized that "knowledge is socially and historically situated" and that there is a "need to address issues of power and trust".

Mertens defines the transformative paradigm as incorporating the following research traditions which have hitherto been associated with valuing change towards more equitable social relationships:

- Critical theory
- Neo-Marxism
- Feminist theories
- Critical race theory
- Freirean
- Participatory
- Emancipatory
- Postcolonial Indigneous
- Queer theory
- Disability theories
- Action research

All of these traditions as bulleted above provide options for researchers to use the" research space" as a forum for instituting change towards more just, more democratic, and more equitable social relationships, including knowledge relationships.

Mertens (2010a: 21) recognizes that this orientation does not exclude the so-called *constructivist paradigm* – as long as "constructivism" is associated with a recognition that social constructions developed by participants, together with (professional) researchers can be shifted via the research process (see also Romm, 2013: 657). And Mertens indicates that those researchers embracing a transformative orientation also can incorporate a *pragmatic* mixed methods and mixed models approach (as well as a participatory outlook), where pragmatism is defined in in terms of *looking for pragmatic ways for research to make a positive difference to the unfolding of social outcomes*.


In other words, Mertens sees that both constructivism and pragmatism have some affinity with the transformative paradigm, or rather can be used so that they do have some affinity. She argues in this regard that the borders between paradigms can be seen as permeable – rather than being closed to the extent that they make no provisions for the inclusion of "other" paradigms (Mertens, 2010a: 21).

Indeed one could assert that a transformative paradigm does not necessary exclude post-positivist conceptions of research as "finding out" exercise – as long as those upholding a form of post-positivism are, as Majumdar and Sowa (2010) would put it, flexible enough to appreciate that there are a variety of ways of offering images of social realities, and that the quest is not to authorize any particular claims on the grounds that they are "scientifically derived" and therefore more "informative". Although Mertens does not discuss this possibility, it is implied by her suggestion that the borders between paradigms can be regarded as somewhat permeable. So although she herself advocates a transformative paradigm, her position provides scope for discussion across paradigms as part of the process of doing research which is aimed at serving goals of social justice (in what ever way this is defined in specific situations).

# RECONSIDERATION OF THE TRANSFORMATIVE PARADIGM WITH PRAGMATIC TWIST IN THE RESEARCH BY NEL, ROMM, AND TLALE (2012).

Having discussed these "alternative" paradigmatic positions and shown how discussion can take place across their "borders" (insofar as researchers are willing to treat their borders as permeable), I now am in a position to explain more fully in what sense the research undertaken by Nel, Romm, and Tlale can be classed as "transformative with a pragmatic twist".

Mertens considers that one of the defining features of a transformative paradigmatic outlook, is that it is recognized that it is part of the researcher's responsibility to *consider the uses that will be made of their work,* and to take into consideration the way in which research outcomes can be linked to social justice (2010b:12). Below I explain how this outlook was instantiated in our approach to the inclusive educational research in South Africa.

Within the international project exploring the roles of teachers in inclusive education, questionnaires were administered in the first phase of the project and focus group discussions undertaken in a second phase. The survey conducted during the first phase had been geared towards comparing (across the countries) teacher profiles of attitudes towards implementing inclusive practices as well as perceived self-efficacy. Perceived self-efficacy was measured in terms of scales relating to participant teachers' instructional competencies in an inclusive education context, their competencies in behavior management in the classroom, and their efficacy in collaborating with others. In the second phase of the project, focus groups within the international project were conceived as exploring in more depth how teachers perceived their roles.

In the South African research, in line with our "transformative" orientation, when conducting the focus groups we tried already to "make use of" the questionnaires in a way that would be conducive to *furthering valued outcomes (as seen by the participants)*. During the focus group sessions we referred to some "results" which suggested that teachers in South Africa were less collaborative than in some of the other countries: we used this as a springboard to raise issues of collaboration with focus group participants and to discuss with them possibilities for creating greater collaboration – amongst themselves already in the focus group sessions, after these sessions, and with officials from the department of education.

The feedback that we received from the focus group participants indicated that the learning process during the focus group encounters provided an exemplar of what could be gained from interacting/collaborating with one another. After the focus group sessions we ourselves took some responsibility for arranging (on their request) a meeting with the district officials from the Department of Education, where we tried to shift "usual" hierarchical relationships wherein district officials normally are given a higher status from which they pronounce their "knowledge" about ways of implementing inclusive education (Romm, Nel, & Tlale, 2013).



In this further meeting we thus tried to lay the groundwork for an alternative "knowing" relationship via setting up a seminar forum where all the players were *on a more level playing field* – so as to shift the dynamic where district officials usually visit the schools to pronounce their views and request implementation accordingly.

In short, in various ways we tried to cater for our recognition that *our manner of doing the research would itself make a difference to the educational field in which we were operating*; and we hoped to create positive differences in forming more dialogical social relationships amongst the concerned players. What was *"transformative"* was our explicit recognition that we were seeking more participatory styles of knowledge construction in both the research process and in social and educational life; and what was *"pragmatic"* was our practical intention to direct the research along these lines. (The details of how we proceeded along these lines can be found in Nel, 2014.)

What was *constructivist* was our appreciation that the views/insights as developed during the focus group sessions *were constructions that were indeed created in this collective context*, and were a function of this context (see also Farnsworth & Boon, 2010.) We accepted that the constructions developed in the group need to be treated as having been generated as a result of our questions and as a result of the group dynamic that emerged (Romm, Nel, & Tlale, 2013: 10).

Furthermore, we also could be said to have appreciated the worth of (post-positivist inspired) "scientifically" developed questionnaires and ways of analyzing them. But we considered that the results were to be treated as springboards for further discussion and further considerations of what they might mean on the level of action. That is, we did not assume that scientists should make recommendations based on "informed" scientific analysis. Rather we considered that the information should be treated as constructions for participants and other concerned stakeholders to engage with. (See Romm, 2013: 663-665 – where I discuss ways of employing questionnaires that transcend usual positivist and post-positivist underpinnings.) Hence our use of the questionnaire method (or rather, of the results as developed in the earlier phase of the project) too had a "pragmatic twist" in that it was related to the quest to develop more dialogical relationships with a range of stakeholders.

#### CONCLUSION

In this paper I have provided an overview of some of the debates in the literature on paradigms and the paradigmatic character of research. I indicated in what sense one can regard the borders between paradigms as somewhat permeable. I illustrated this largely with reference to the research by Nel, Romm, and Tlale exploring as well as activating possibilities for implementing inclusive education in South Africa. I indicated how this research in South Africa can be classed as "transformative with a pragmatic twist", while not excluding "other" paradigmatic positions. I indicated that if we define the transformative paradigm as highlighting the need to *recognize our responsibilities as researchers for the possible consequences of our ways of conducting research*, then indeed its borders with other paradigms are rendered more open, as researchers can work creatively across paradigms to incorporate such an outlook. I indicated implications hereof for researchers wishing to contribute to (valued) social and educational change.

While the example of Nel, Romm, and Tlale's research was a mixed-method design, I argued that opportunities for social researchers to consider the manner in which research might contribute to engendering goals of social justice arise whether one is using a mono- or mixed-research designs. I emphasized that what is important is that researchers invite others (who may advance other possibilities for seeing social realities and processes of "knowing") to write into any "stories" that are being forwarded, so that options for both seeing and acting in the social and educational arena can become extended. (The decision to regard researchers' accounts as *stories*, of course already implies that they are treated less authoritatively than is normally associated with scientific reports. This again opens more possibilities for "lay" persons to engage with them and to reconsider action implications.)



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# AN INVESTIGATION OF THE RELATIONSHIP BETWEEN SELF-COMPASSION, HUMOR AND ALEXITHYMIC CHARACTERISTICS OF PARENTS WITH AUTISTIC CHILDREN

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#### ABSTRACT

Parents' individual characteristics have an important role on children's development and their acquisition of fundamental skills. This study aims to investigate the self-compassion, humor styles and alexithymia levels of parents with autistic children. The sample of the study consists of the parents of children diagnosed with autism who were also attending private special education centers in İstanbul. In the study, the Self-compassion Scale, the Humor Styles Scale and the Toronto Alexithymia Scales were used and hierarchical regression analyses were conducted to evaluate the causal relationship between the scales. The results revealed that over-identification subscale of the Self-compassion Scale and the aggressive humor subscale of the Humor Styles Scale are positive predictors, and the mindfulness subscale of the Self-compassion Scale is a negative predictor of the Toronto Alexithymia Scale total scores, the difficulty identifying feelings subscale and the difficulty describing feelings subscale scores. In addition, it is also revealed that self-enhancing humor variable is a positive predictor of the Toronto Alexithymia Scale total scores and the externally-oriented thinking subscale.

Key Words: Autism, parents, self-compassion, humor, alexithymia.

## INTRODUCTION

Parents play a vital role in enabling children to learn the most basic skills. It is known that children have their first communication with their parents who are around themselves and want their needs and desires met by their parents. Parents establish a mutual relationship with their children as people who know their children very well by responding to their needs. However, in cases of children who have not had a normal developmental process or for those lacking basic communication skills, the mutual process between the parents and their children does not come naturally. One of the most pressing problems resulting in the difficulty of communication between the child and the parent is autism. Autism, which appears in the first three years of the childhood period, is a neurologic disorder affecting the brain functions (Sicile-Kira, 2004). It is a neurodevelopmental (Dawson et al., 2002, Toth, Dawson, Meltzoff, Greenson, Fein, 2007, Schechtman, 2007), and one of the most complex genetic disorders (Vanderweele and Cook, 2003). Parents can realize that their children have this disease when they observe their children with the following symptoms: Their children's joint attention development has not improved since babyhood (Bernier and Gerdts, 2010), poor eye-contact and the mimicking skills (Dodd, 2005 and Wing, 2012), the lack of development in their gestures and pointing skills, their extra-ordinary or limited interest and the existence of repetition in the children's behavior (Baron-Cohen, 2008; Korkmaz, 2010; Ingersoll and Lalonde, 2010). It could be stated that parents have difficulty in having communication with their children because of the disorders in their autistic children's social interaction skills, verbal and non-verbal interaction skills (Lubetsky, Handen and Mcgonigle, 2011) and their social as well as communication skills (Baron-Cohen, 2008). Besides, their lack of symbolic game skills (Bailey, Phillips and Rutter, 1996; Aydın, 2008) and the appearance of these symptoms due to different variables (Bernier, Gerdts, Munson, Dawson and Estes, 2012) make the communication between parents and their autistic children even more difficult. The hardships these parents encounter in social life and the problems they come across in educating their children might cause parents have the feeling of desperateness. In other words, the autism,



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which is a life-long developmental disease, (Turkington and Anan, 2007) not only affects the children with this syndrome but also their parents. This is because establishing a parent-child relationship with a child lacking the competence as well as the willingness to have basic communication with his/her parents, sharing common moments with the child and teaching something in an entertaining way become rather challenging for the parents. In addition, the communication, behavior and learning characteristics of the children diagnosed with autism might negatively influence their parents' teaching them the basic commination and daily life skills and may lead to the feeling of hopelessness and many other negative emotional status for the parents. For instance, it has been reported that mothers of the autistic children are not different from the general population in having close relationship with their children and in bringing them up, but although the social skills of their children improve to a certain extent, these mothers feel more stressed out and are more vulnerable to psychological problems when compared to the general population (Montes and Halterman, 2007). They also become more introverted, aggressive, weary, oversensitive and stricter than the other mothers (De Sousa, 2010). Furthermore, it was revealed by research studies that mothers of autistic children are stricter than their fathers, and the fathers were found to be more distant from their children than their mothers (Seidman, <u>Yirmiya</u>, <u>Milshtein</u>, <u>Ebstein</u> and Levi, 2011). The reason behind the emotional status of the parents might be their autistic child's lack of desire to initiate communication and the repetitive failure in the communication endeavors between the parent and the child. Despite all their attempts, parent cannot get response from their children and even have difficulty in meeting their basic needs, such as eating and sleeping. In some cases, autistic children might even display aggressive behavior to their parents and keep away from them. In such cases, it is crucial that parents should be understanding and sensitive to their children and continue their attempts to have communication with them. The compassion for these children is considered to be helpful in helping parents to understand them and to find appropriate ways to have communication with them. Compassion emerges when one is open to the pains of another person and is affected by these pains rather than ignoring or avoiding these pains (Neff, 2004). The feeling of compassion requires understanding the person who has certain problems or makes mistakes without judging them and approaching this person's attitudes and behavior in a patient, understanding, affectionate and tolerant manner to show them that nobody is perfect and making mistakes is only natural (Öveç, 2007). Self-compassion also means being open to an individual's own pains and sufferings, approaching him/herself in an affectionate way, being understanding in the case of failure and accepting his/her negative experiences as part of life experience (Neff, 2003b). Selfcompassion reminds people of the need to think that pains are common to all people. Having a curing effect on the problems, self-compassion also teaches people how to be patient (Hollis-Walker and Collosimo, 2011), helps them to be aware of their own feelings and enables them to use the knowledge, thoughts and actions they acquire in time in a an effective and functional way (Salovey and Mayer, 1990). Self-compassion can be defined as the individuals' acceptance of themselves and the evaluation of the self-kindness they display for themselves (Werner, Jazaieri, Goldin, Ziv, Heimberg and Gross, 2012), and it paves the way for the compassion people display for others (Goldstein, 2005). Besides, self-compassion facilitates individuals' felexibility in their behavior by moderating their reactions towards adverse events and negative situations (Germer and Neff, 2013) and helps not only the intrapersonal communication but also the interpersonal communication with other people (Neff and Beretvas, 2012). Additionally, self-compassion is an important indication of psychological health and life quality (Van Dam, Sheppard, Forsyth and Earleywine, 2011). Taking the parents of autistic children into consideration, it can be indicated that the frequency of psychological problems of these parents, such as the major depressive disorders and social phobias is higher than other parents (Demir, Motavalli-Mukaddes, Eralp-Demir and Bilge, 2000). Similarly, social difficulties, emotional status disorders and anxiety problems are reasonably higher for these parents (Gousse et al., 2002). According to the research, 55,7% of the parents with autistic children have depression while 85% of them are known to experience parental stress (Ingersol and Hambrick, 2011). Considering the research findings, it can be suggested that the level of self-compassion held by parents who have autistic children has an important impact on their psychological health and their ability to deal with these problems. This is because of the fact that the selfcompassion gives people the ability to communicate with themselves, to develop empathy, to be sympathetic and sensitive and to be tolerant of the problems (Gilbert and Procter, 2006), and it can be an important means of coping with negative life experiences (Allen and Leary, 2010). It has been found that when individuals have high levels of self-compassion, they can more easily handle negative situations and respond more appropriately in the case of unpleasant events (Neff and Vonk, 2009). Therefore, carrying out research studies pertaining to



the identification of self-compassion levels of parents with autistic children and seeking ways to help them improve their self-compassion levels will give them the opportunity to feel better and handle problems more effectively. Besides, it is thought that it is essential for these parents to relieve themselves and to forgive both themselves and the others despite all the challenges they encounter while bringing up their children. Humor is one of the ways with which individuals can tackle their negative life experiences and alleviate their distress. The type of stress generating factors and the way individuals handle the effects of stress have an influence on the abilities of the individuals to deal with stress.

For the parents of autistic children, many factors that affect one another and increase with the passage of time are available (Marshall and Long , 2010). On the other hand, there are many ways of dealing with stress, and humor is one of the most effective among all these ways. According to Chinery (2007), humor enables individuals to develop mindfulness to positively modify behavior in response to problems and to fight against depression and stress. It is known that humor and smiling have positive influences on human health (e.g., resistance to stress, immune system) (Martin, 2002). Humor and smiling can also be considered to be universal concepts emerging as a result of the evolution of the development of the human beings and their psychological experiences (Mireault, Poutre, Sargent-Hier, Dias, Perdue and Myrick, 2012). Humor generally used to realize one's intention, to back down from a given promise, to ingratiate someone or to invite somebody to the communication (Semrud-Clikeman and Glass, 2008) is also a social building block to be shared with others (Hoicka and Akhtar, 2012). Therefore, humor can best be achieved in the case of a mutual relationship between people. By means of the humor, individuals can have the chance to share their experiences, to explain themselves and to be accepted by the others. In addition, the way humor is used plays a decisive role in the interpersonal relationship among people. While humor can be used by individuals as a means of selfacceptance or a way of establishing positive relationships with other people, it can also be used in such a way (e.g., humiliating) that can harm themselves or others (Martin, Puhlik- Doris, Larsen, Gray and Weir, 2003). The use of humor to harm others can affect people's relationship with others and can put their relationship both with their intimate and distant community into jeopardy. On the other hand, when used properly, it would be fair to state that humor has a role in strengthening their relationship with other people. It is believed that humor, which is one of the most important instruments in social communication, has many adaptive functions (Dowling and Fain, 1999). Moreover, humor contributes to the interpersonal communication, the expression of stress in a reasonable way and to reducing the tension (Semrud-Clikeman and Glass, 2010). Determining how a person is perceived by his/her friends or family members, humor is also important for the existence of an individual in certain places and in his/her interpersonal communication (Zeigler-Hill, Besser, and Jett, 2013). In brief, using humor about one's negative-positive characteristics and good-bad experiences without humiliating the others can both relieve themselves and help them to be accepted by the people around themselves. Especially, when people have unwanted experiences, they feel the need to be accepted without being pitied; thus, humor plays a constructive role in interpersonal communication as a means of accepting these people in a tolerant way. The use of humor by parents with autistic children can enable them to overcome the challenges they experience when they are with their children. Additionally, humor can encourage these parents to be resistant not only to the negative experiences in the environments where their children spend time to adapt to the society but also to the prejudice of the social community. Through humor, individuals can reflect their personality traits. In other words, the differences in the personality traits of individuals affect the way they use the humor (Schermer et al., 2013). It can also be pointed out that while the personality traits of parents have an influence on the type of humor they use, the way they describe and express their feelings affects the type of humor they use and their level of self-compassion.

One of the cases in which individuals have difficulty in describing and expressing their feelings is known to be alexithymia. In alexithymia, individuals have difficulty in describing and expressing their feelings (Roedema and Simons, 1999), cannot understand other people's feelings (Taylor, 1987) and use fewer words to explain their emotional status (Roedema and Simons, 1999). Encountering emotional situations which cause them to have difficulty in perceiving others, individuals with alexithymia cannot externalize their feelings or explain their feelings appropriately as they cannot make connections among their feelings (Taylor, 1987 and Thompson, 2009). In other words, individuals with alexithymia do not realize their emotional status, cannot understand them or explain these feelings properly. Individuals with a higher degree of alexithymia are incompetent in



identifying feelings, such as happiness, sorrow, anger, fear, surprise or hatred (Lane, Sechrest, Riedel, Shapiro and Kaszniak, 2000). Alexithymia is regarded as a personality trait independent from the daily stress generating situations; however, it directly affects the reaction of the individuals to the stress generating situation (De Sousa, 2010). According to some researchers, alexithymia arises from genetic factors and other factors, such as physical or psychological diseases, traumatic experiences, over depression, anxiety or stress in general (Way, et.al., 2007 and Thompson, 2009). On the other hand, some other researchers indicate that among reasons triggering and increasing the frequency of alexithymia are the feelings of emotional exhaustion, depersonalization and the lack of family support (Bratis, et. al., 2009). It has also been emphasized that individuals with alexithymia have lower levels of emotional density than other individuals and they attach a higher level of emotional density to words or expressions used to refer to negative emotional state (Sallıoğlu, 2002). Besides, it was concluded by some researchers that alexithymia is related to different mental disorders such as anxiety and depression (Pandey and Choubey, 2010). As a result of another research study, it was found that when compared to the general population or to parents with developmental disorders other than autism, parents with autistic children are observed to have alexithymia more frequently (Szatmari et.al., 2008). Considering the similarities between autism and the behavior of parents with autistic children, the relevant literature suggests that these patents have more social hardships, communication problems, problem in the use of the language and stereotypical behavior (Piven, Palmer, Jacobi, Childress and Arndt, 1997; Piven, 1999; Bishop et al., 2004; Volkmar et al., 2005; Skuse et al., 2011), which are common to autism. Especially, the hardships in the definition and the expression of the feelings can be associated with alexithymia. In autism causing communication problems, it is vital for parents to understand both their own feelings and their children's feelings, to express these feelings and to deal with the negative experiences they encounter while bringing up their children. There is a need for the investigation of the characteristics of alexithymia as well as the self-compassion and the humor styles of the parents with autistic children to help them to establish relationships with their children and to cope with these characteristics of alexithymia.

#### Aim

The aim of this study is to identify the relationship between self-compassion, humor styles and the characteristics of alexithymia of the parents who have autistic children.

#### **METHOD**

#### **Research Design**

Hierarchical regression analysis was used in this study to identify the relationship between self-compassion, humor styles and the characteristics of alexithymia. In hierarchical regression analysis used a method of Multiple Regression Analysis, predictive variables are analyzed in accordance with the order predetermined by the researcher and each variable is assessed in terms of its contribution to the variance of the dependent variable (Büyüköztürk, 2005).

#### Participants

The participants are autistic children attending the private rehabilitation centers in the Istanbul province and the parents whose children were attending autistic children education centers. Parents taking part in the current study were chosen among those whose children were studying at centers that could be reached more easily. Out of 200 autistic children, 160 (80%) were males while the remaining 40 (20%) were female. Among these children, 73 (36,5%) were under the age of 6, 105 (52,5%) were between the ages of 6-12 and the remaining were between the ages of 12-18. On the other hand, among the parents, 115 (57,5%) were mother while 85 (42,5%) were fathers. 78 (39%) of the parents were graduates of primary school while 47 (23%) of them were graduates of high school. The remaining parents had BA or MA. While 26 (13%) of them had low income, 142 (71%) of them had middle income, and the remaining participants had high income.

#### **Data Collection Instruments**

**Self-compassion Scale:** Developed by Neff (2003), the Self-compassion Scale assess the qualities related to the sub-dimension of self-compassion and is a self-assessment instrument based on the individual's giving information about his/her own self. Including 26 items, the Self-compassion scale was found to have 6 sub-



dimensions making up the concept of self-compassion by means of the confirmatory factor analysis: selfjudgment against self-kindness, isolation against common humanity and over-identification against mindfulness. The adaptation of the Self-compassion Scale and the reliability as well as the validity of the study was done by Akın, Akın and Abacı in 2007. 633 students at the Education Faculty of Sakarya University took part in their study. The confirmatory factor analysis in the study revealed that the scale was compatible with the original form (x2= 779.01, sd= 264, p= 0.00, RMSEA= .056, NFI= .95, CFI= .97, IFI= .97, RFI= .94, GFI= .91 and RMR= .059). The internal consistency coefficients were found to be between .72 and .80, and the test-retest reliability coefficients were found to be between .56 and .69. Also, the corrected item-total correlations of the scale were found to be between .48 and .71, and it was revealed that all the differences between the 27% of the means of the high-low groups were significant (Akın, Akın and Abacı, 2007).

**Humor Styles Questionnaire (Scale)**: The scale developed by Martin, Puhlik-Doris, Larsen, Gray and Weir (2003) aims to assess four different dimensions through seven likert-type 32 items pertaining to the individual differences affecting the humor styles. The Humor Styles Scale was adapted into Turkish by Yerlikaya (2003) who carried out the study with 1363 students attending different faculties at Çukurova University. With a sample of 530 students, the piloting of the scale was done while the construct validity of the scale was tested with a sample of 495 students. The criterion-related validity studies were carried out through the involvement of two different sample groups consisting of 137 and 138 students, and the test-retest reliability studies were conducted in a fifteen-day interval with the involvement of a sample of 63 participants. The findings of the study revealed that the scale was comprised of four factors as determined in its original form, and each factor was found to be equivalent to four sub-scales including eight items. The percentage variance explanation of the obtained four factors is 36,88%. Core values of the factors are respectively as follows: Self-enhancing humor (SEH): 5.22, Affiliative Humor (PH): 2.97, Aggressive Humor (OH): 1.90 and Self-defeating Humor (SDH): 1.70. The variance description percentages are respectively as follows: 16.34, 9.28, 5.97 and 5.30. The Cronbach alpha internal consistency coefficients of the sub-scales were found to be between 67 and .78, and the test-retest correlation coefficients were found to be between .83 and .88.

**Toronto Alexithymia Scale (TAS-20):** The scale developed by Bagby, Parker and Taylor in 1993 is a selfassessment scale. Compatible with the structure of alexithymia in theory, the scale originally including 26 items has been developed by improving its psychometric features. The scale used for the study has 20 items and is scored between 1-5. It has three sub-scales, such as difficulty identifying feelings (TAS-1), difficulty describing feelings (TAS-2) and externally-oriented thinking (TAS-3). High scores show high levels of alexithymia. The Toronto Alexithymia Scale was adapted into Turkish by Güleç and the colleagues in 2009, and it was found that the adapted version was in line with the 3 factor structure of the original version. After the investigation of the scale's and its sub-scales internal consistency, it was revealed that the alpha value was alpha=0.78 for the total scale and the following alpha values were found for the 3 factors respectively: 1.factor alpha=0.80, 2. factor alpha=0.57 and 3. factor alpha=0.63. The correlation between the 1. and the 2. factors was found to be 0.53 while the correlation between 1. and 3. factors. The corrected item-total correlation was found to be between 0.22-0.48, and thus considered to be statistically meaningful. Except for the 18. and 20.items, sufficiently correlation was found for the scale and the Turkish adaptation of the TAS-20 was regarded as reliable and valid for the Turkish sample (Güleç et al., 2009).

#### **Data Collection and Analysis**

In the beginning of the study, the centers where the autistic children were studying and the teachers working in these centers were informed about the study. Then, the scales were delivered to the teachers in the centers by the researcher, and the teachers delivered the scales to the parents who have autistic children. Finally, the scales were collected back. During the data collection procedures, a total of 800 forms were delivered and among 328 forms that were filed out by the participants, 200 forms were taken into account as they were filled out appropriately in line with the purpose of the study. The obtained data was first subjected to Pearson Correlation analysis to identify the relationship between the dependent and the independent variables, and then, the hierarchical regression analysis, which is one of the multiple regression analysis methods, was used.



### FINDINGS

Table1: The Co	rrelatio	n of th	e Varial	oles in t	the Stu	dy and	Descrip	otive Sta	atistics					
Measurements	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.alexithymia														
total														
2. TAS1	,89													
3. TAS2	<i>,</i> 82 <sup>***</sup>	<i>,</i> 62 <sup>***</sup>												
4. TAS3	,66***	,32***	,40 <sup>**</sup>											
5. Self kindness	-	-	-,23 <sup>**</sup>	,01										
	,27	,34												
6. Self judgment	-,01	,03	,08	-,14	,07									
7. Common	-	-	-	-,01	,53	,02								
hum.	,31	,38	,27	40**	aa**		a a**							
8. Isolation	,41	,45	,28	,19 **	-,22	,09	-,22							
9. Mindfulness	-	-	-,21	-,19	,67	,04	,59	-						
10 Overidentifie	,38 E1 <sup>***</sup>	,44 50 <sup>***</sup>	20***	15*		02		,29 61 <sup>***</sup>						
d	,51	,59	,50	,15	- 39 <sup>***</sup>	-,05	- 30***	,01	- 35 <sup>***</sup>					
11.Affiliative	-,12	-,12	-,07	-,09	,07	,33 <sup>***</sup>	,03	-,02	,09	-,17 <sup>*</sup>				
12.Self-	-	-,26 <sup>**</sup>	-,12	-,19 <sup>**</sup>	,26 <sup>***</sup>	,42***	,15 <sup>*</sup>	-,20 <sup>**</sup>	,22**	-	,51 <sup>***</sup>			
enhancing	,25 ***									,31 <sup>***</sup>				
13.Self-	,19**	,18	,23 <sup>**</sup>	,02	,03	,62	-,09	,12	-,08	,07	,27***	,35		
defeating humor														
14.Aggressive	,40 <sup>***</sup>	,39**	,35 <sup>***</sup>	,18 <sup>**</sup>	-,05	,33 <sup>***</sup>	-,17 <sup>*</sup>	,27 <sup>***</sup>	-,22**	,24**	,11	,03	,49 <sup>***</sup>	
humor														
Mean	52,8	16,8	13,1	22,8	15,0	13,7	12,3	10,7	12,8	10,4	23,8	27,0	21,7	18,0
	6	7	2	6	7	0	8	1	4	3	6	0	9	9
Skewness	-,33	-0,20	-0,37	-0,61	0,46	0,34	0,44	-0,16	0,38	0,09	-0,44	0,14	-0,09	-0,08
Kurtosis	,02	-0,44	0,73	0,54	0,47	0,64	0,94	0,05	0,48	0,28	0,79	-0,05	-0,08	-0,98

Before assessing the predictive value of the independent variables through the regression analysis, the variables significantly related to the alexithymia total scores of the parents, the scores of the sub-scales and the independent variables were identified and illustrated on Table 1 along with their mean, skewness and kurtosis values. As a result of the analysis, it was revealed that considering the skewness and kurtosis values, all the variables were normally distributed (see Table 1). Besides the alexithymia total scores, which is a dependent variable of this study, the relationship between the sub-scales (i.e., difficulty identifying feelings, difficulty describing feelings, externally-oriented thinking) and the independent variables (i.e., the sub-scales of the self-compassion and the sub-scales of the humor styles) and the predictive value of this relationship was investigated using the hierarchical regression analysis.

The Hierarchical Regression Analysis for the Prediction of the Total Scores of the Parents' Alexithymia Firstly, the sub-dimensions of the self-compassion scale (i.e., self-kindness, common humanity, isolation, mindfulness, over-identification) that have significantly meaningful (minimum at the level of 0,01) relationship with the Alexithymia total scores and the sub-dimensions of the humor styles scale (i.e., self-enhancing humor, self-defeating humor, aggressive humor) were included in the regression analysis. Self-judgment that is a subdimension of the self-compassion scale and the affiliative humor variable that is sub-scale of the humor styles scale were not included in the analysis as they were not found to be meaningful at the level of 0,05. According to the multiple regression analysis conducted before the hierarchical regression analysis (R=0,60; R<sup>2</sup>=0,36, F=15,63, p < 0,001), it was revealed that although a meaningful model was revealed, the variables whose only t values were meaningful (p < 0,05) were subjected to the hierarchical regression analysis. These variables were ordered from largest to the smallest in line with the standardized beta ( $\beta$ ) values. Firstly, mindfulness and then, self-defeating humor and finally the self-enhancing humor were included in the analysis and the results are illustrated in Table 2.



		Over-	Mindfulness	Aggressive	Self-enhancing
		identification		Humor	humor
1. Stage	β	1,56			
R =,51; F= 69,82	t	8,35			
R <sup>2</sup> = ,26 ; p=0,00	р	0,00			
2. Stage	β	1,16	-,589		
R =,56; F= 44,08					
R <sup>2</sup> =,31 ; p=0,00	t	6,805	-3,71		
	р	0,00	0,00		
3. Stage	β	1,17	-0,59	,44	
R = 61 · F= 39 36	t	6.23	-3 15	4 58	
$R^{2} = 38 \cdot p = 0.00$	L	0,23	5,15	ч,50	
	р	0,00	0,00	0,00	
4. Stage	β	1,06	-0,54	0,47	-0,14
R = 62 <sup>.</sup> F= 30 87	t	5 51	-2 87	4 83	-1 94
$R^{2} = 39 \cdot p = 0.00$	c	3,31	2,07	1,00	2,31
,,,,,,	р	0,00	0,00	0,00	0,00

Table2: The Hierarchical Regression Analysis for the Prediction of the Total Scores of the Parents' Alexithymia

As illustrated in Table 2, in the first stage of the analysis, the 26% of the total scores of the Alexithymia scale is justified by the over-identification scores that it is positively related to ( $R^2 = 0.26$ ; F= 69,82; p <0,001). In the second stage, it was revealed that 31% of the total scores of the Alexithymia is justified with the addition of the mindfulness variable, which is negatively related to the Alexithymia total scores by causing a 5% contribution to the variance ( $R^2 = 0.31$ ; F= 44,08; p <0,001). In the third stage, with the addition of the aggressive humor variable to the model that is positively related to the total scores of Alexithymia, an increase of 7% in the variance was observed and all these variables justified 37% of the total scores of the Alexithymia ( $R^2 = 0.38$ ; F= 39,36; p <0,001). In the final stage, with the addition of the self-enhancing humor score to the model, an increase of 1% was observed and all these variables justified 39% of the total scores of the parents in the Alexithymia Scale ( $R^2 = 0.39$ ; F= 30,87; p <0,001).

# The Hierarchical Regression Analysis for the Prediction of the Difficulty Identifying Feelings Sub-dimension of the Alexithymia Scale

Before the hierarchical regression analysis for the prediction of difficulty identifying feelings scores in the Alexithymia Scale was done, the sub-dimensions of the self-compassion scale (i.e., self-kindness, common humanity, isolation, mindfulness, over-identification) that have significantly meaningful (minimum at the level of 0,01) relationship with the variable and the sub-dimensions of the humor styles scale (i.e., self-enhancing humor, self-defeating humor, aggressive humor) were included in the regression analysis. Self-judgment that is a sub-dimension of the self-compassion scale and the affiliative humor variable that is a sub-scale of the humor styles scale were not included in the analysis as they were not found to be meaningful at the level of 0,05. According to the multiple regression analysis conducted before the hierarchical regression analysis (R=0,67;  $R^2$ =0,44, F=25,65, p < 0,001), it was revealed that although a meaningful model was found, the variables whose only t values were meaningful (p < 0,05) were subjected to the hierarchical regression analysis. These variables were ordered from largest to the smallest in line with the standardized beta ( $\beta$ ) values. Firstly, overidentification and then, mindfulness and finally the self-enhancing humor were included in the analysis and the results are illustrated in Table 3.



		Over identification	Mindfulness	Aggressive Humor
1. Stage	β	1,027		
R =,,59; F= 106,379 R <sup>2</sup> = ,34 ; p=0,00	t p	10,314 ,000		
2. Stage	β	,866	-,468	
$R^{2}$ =,41 ; p=0,00	t p	8,565 ,000	-4,621 ,000	
3. Stage	β	,79	-,40	,22
R =,68; F= 56,40 $R^2 = 46 : r = 0.00$	t	8,05	-4,11	4,28
·····································	р	,000	,000	,000

Table3: The Hierarchical Regression Analysis for the Prediction of the Difficulty Identifying Feelings Subdimension of the Alexithymia Scale

As can be seen in Table 3, it was found that in the first stage of the analysis, 34% of the scores in the difficulty identifying feelings sub-scale which is one of the sub-scales of Alexithymia are justified with the scores of the over-identification that is positively related to the difficulty identifying feelings sub-scale ( $R^2 = 0.34$ ; F= 106,379; p <0,001). In the second stage, it was revealed that 41% of the difficulty identifying feelings scores is justified with the addition of the mindfulness variable, which is negatively related to the difficulty identifying feelings sub-scale of the Alexithymia scale by causing a 5% contribution to the variance ( $R^2 = 0.41$ ; F= 69,332; p <0,001). In the third stage, with the addition of the aggressive humor variable to the model that is positively related to the difficulty identifying feelings scores, an increase of 5% in the variance was observed and all these variables justified 46% of the difficulty identifying feelings scores ( $R^2 = 0.46$ ; F= 56,40; p <0,001).

# The Hierarchical Regression Analysis for the Prediction of the Difficulty Describing Feelings Sub dimension of the Alexithymia Scale

The regression analysis was done between the Difficulty Describing Feelings, which is one of the sub-scales of the Alexithymia and significantly related (minimum at the level of 0,05) Self-compassion sub-scales of self-kindness, common humanity, isolation, mindfulness, and over-identification and the self-defeating humor and the aggressive humor variables that are the sub-scales of the Humor Styles Scale. As a significance value of 0,05 was not found, the sub-dimension of self-judgment that is a sub-dimension of self-compassion scale and the affiliative humor and self-enhancing humor variables that are both sub-dimensions of the self-compassion scale were not included in the analysis. According to the multiple regression analysis conducted before the hierarchical regression analysis (R=0,49; R<sup>2</sup>=0,24, F=8,76, p < 0,001), it was revealed that although a meaningful model was revealed, the variables whose only t values were meaningful (p < 0,05) were subjected to the hierarchical regression analysis. These values were ordered from largest to the smallest in line with the standardized beta ( $\beta$ ) values. Firstly, over-identification and then, the aggressive humor scores were included in the analysis and the results are illustrated in Table 4.

		Over-identification	Aggressive Humor
1. Stage	β	,383	
R = 38: F= 32.49	t	5,70	
$R^{2}$ = ,14 ; p=0,00	р	,000	
2. Stage R =,46; F= 26,29 R <sup>2</sup> =,21 ; p=0,00	β	,32	,15
	t	4,79	4,17
	p	,000	,000

Table 4: The Hierarchical Regression Analysis for the Prediction of the Difficulty Describing Feelings Subdimension of the Alexithymia Scale



As can be realized in Table 4, in the first stage of the analysis, it was found that 38% of the scores in the difficulty describing feelings sub-scale which is one of the sub-scales of Alexithymia are justified with the scores of the over-identification that is positively related the difficulty describing feelings sub-scale ( $R^2 = 0.38$ ; F= 32,49; p <0,001). In the second stage, the variance that is justified with the addition of the aggressive humor variable that is positively related to difficulty describing feelings increased by 8%, and it was revealed that these variables justified 46% of the difficulty describing feelings scores ( $R^2 = 0.63$ ; F= 26,29; p <0,001).

#### The Hierarchical Regression Analysis for the Prediction of the Externally-Oriented Thinking Scores

Finally, the regression analysis was done between the Externally-Oriented Thinking, which is one of the subscales of the Alexithymia and significantly related (minimum at the level of 0,05) to the Self-compassion subscales of isolation, mindfulness, over-identification and the self-enhancing humor and the aggressive humor sub-scales of the Humor Styles Scale. As a significance value of 0,05 was not found, the variables of selfkindness, self-judgment, common humanity, which are all the sub-scales of the self-compassion scale and the variables of affiliative humor and the self-defeating humor, which are the sub-scales of the Humor Styles Scale were not included in the analysis. As a result of the multiple regression analysis (R=0,27; R<sup>2</sup>=0,07, F=3,83, p < 0,01), it was found that although a meaningful model was revealed, the self-enhancing humor that is negatively related to the sub-dimension of Externally-Oriented Thinking which is a variable whose only t value is meaningful (p < 0,05) can predict the score of the externally-oriented thinking at the level of 7%.

#### **DISCUSSION AND RESULTS**

In this study, the relationship between self-compassion, humor styles and the characteristics of alexithymia of parents who have autistic children was investigated. As a result of the study, it was revealed that the variable of over-identification that is one of the sub-scales of the self-compassion scale positively predicted the total scores of the Alexithymia Scale and the scores of the difficulty identifying feelings and the difficulty describing feelings. It was indicated that an individual in a state of over-identification cannot display an objective attitude because of the emotional status he/she caught up (Scheff, 1981). It was also emphasized that such individuals can exaggerate their perception of such feelings as separation and isolation (Nolen-Hoeksema, 1991). Seeming unaware of the feelings they experience, individuals with alexithymia do not have the words to be able to express their feelings to the others (Szatmari et.al., 2008), and it is likely for these people to generally fail to evaluate their experiences objectively due to the over-identification with themselves. It would be fair to think that individuals who have the following characteristics of alexithymia do over-identification with themselves and become introverted so as not to share their experiences: Not being able to make a connection among their feelings despite their strong feelings, not indicating their feelings appropriately (Taylor, 1987 and Thompson, 2009) and having difficulty in arranging and managing emotional expressions that are important in interpersonal relationships (Way et.al., 2007). Under these circumstances, it becomes harder for individuals with alexithymia characteristics to have a proper relationship both with themselves and with others; moreover, it is more difficult for them to receive social support they need from the people around themselves. It would also be fair to state that while the parents are trying to overcome the challenges related to bringing up their autistic children, the way they share things with other people is very limited and the time they allocate to take care of themselves is not available. Being a parent of an autistic child and the failure in establishing communication and relationship with his/her child might cause him/her to feel bad. It can be pointed out that parents with autistic children come across many physical and emotional challenges, and thus feel an emotional burden both at home and in social surroundings while they endeavor to meet their children's needs. Although these parents are in need of describing their feelings and sharing them, they may not have the chance to do so or they might not be emotionally ready. That is because they hold the idea that all they have to do is to think about their children all the time and look after them. While the parents are meeting their autistic children's needs, they tend to deal with their feelings in their internal worlds, avoid any social interaction or communication, turn out to be introverted and finally become self-identified instead of describing and expressing their own feelings. Focusing merely on themselves and what they experience when encountered with challenge, such parents can over identify themselves and exaggerate their experiences. However, if these individuals could approach themselves and their experiences more consciously, more positive outcomes would be parts of their lives. It is underlined that approaching painful and troublesome feelings and thoughts in



balanced mindfulness and avoiding over-identification with these experiences (Kirkpatrick, 2005) are ways to cope with the ego-centrism which causes such feelings as consciousness, feelings of isolation and separation from rest of humanity (Elkind, 1967).

As a result of the current study, it was also found that the mindfulness variable, which is one of the sub-scales of the self-compassion scale, has a negative predictive value on the total scores of the Alexithymia Scale and the difficulty identifying feelings sub-scale. Self-compassion suggests that although there is no need for a person to evaluate him/herself very harshly, the person can be clearly aware of his/her failures and cannot ignore them thanks to his/her awareness (Neff, 2003b). When people are not aware of the feelings causing pains and sufferings, they cannot accept their experiences as they, are which causes them to fail to reach the level of mindfulness referring to the conscious awareness or to emotionally resist to the pain (Hayes, Wilson, Gifford, Follette, Strosahl, 1996). Such a reaction can make a person focus on negative thoughts from a narrow perspective and get stuck in these thoughts (Nolen-Hoeksama, 1991). Conversely, non-judgmental consciousness reduces self-criticism and helps people to understand themselves (Jopling, 2000). Besides, it was indicated that consciousness is important in that though consciousness, individuals can mentally keep away from the negative experiences, and thus their sense of self-compassion and common humanity skills like social sharing can be developed (Neff, 2003). In addition, by means of awareness, individuals can at least be happy (Hollis-Walkerve Colosimo, 2011). In the relevant literature, it was also highlighted that providing education about mindfulness encourages people to accept their pains and sufferings as they are instead of trying to change them (Hayes, Strosahl and Wilson (1999). Similarly, it was revealed that as a result of such education programs, the stress and anxiety levels of such parents can be reduced and these parents were found to be more tolerant and forgiving to themselves and the others (Benn, Akiva, Arel, Roeser, 2012). Therefore, parents of autistic children should accept the special characteristics of their children, display behavior compatible with their needs and become aware of themselves and their children in the case of aggressive and obsessive behavior; in other words, they should not over-identify with themselves and instead develop their selfcompassion skills alone. As maintained by Allen and Leary (2010), individuals with self-compassion approach the problems consciously and take responsibility by accepting these problems rather than paying attention to other issues or avoiding these problems. Therefore, it would be fair to state that mindfulness, which has a negative predictive value on the characteristics of alexithymia of the parents with autistic children, helps parents to realize themselves and approach themselves in a positive way.

The results of the present study indicate that the aggressive humor, which is a sub-scale of humor styles scale, variable has a predictive value on the total scores of the Alexithymia Scale and the scores of difficulty identifying feelings and difficulty describing feelings. It was also revealed that the self-developing humor variable has a positive predictive value on the total scores of Alexithymia Scale and the externally-oriented thinking sub-scales. This finding leads to the idea that the characteristics of alexithymia influence the styles of humor used by the individuals while expressing themselves. That is because the characteristics of alexithymia refer to the difficulty in an individual's expressing him/herself or in realizing others' feelings. People who have difficulty in realizing others' feelings do not mind using an aggressive style of humor, and even ignore the fact that other people can be offended. Salloğlu (2002) points out that the emotional density of alexithymia individuals is lower than other individuals, and thus such individuals attach a denser meaning to words and expressions having a negative connotation. Therefore, it can be stated that individuals with alexithymia cannot name their feelings correctly and thus are generally misunderstood (Taylor, 1987). In other words, the characteristics of alexithymia of the parents with autistic children have an influence on their aggressive style of humor. It is likely for parents with autistic children to have difficulty in social environments and feel themselves pressured as a result of the stress they experience with their children and especially the repeated and obsessive behavior of their children. It is also natural to think that parents with autistic children might make their children more aggressive and aggressive as a result of the pressure on these parents. To put it differently, when parents of autistic children face challenges they cannot overcome, they prefer to resort to aggressive style of humor when they are angry with people around. Alexithymia is also considered to be a defense mechanism against an emotional distress or pain (Solmaz et al., 2000), and it was stated that individuals with alexithymia characteristics come forward with their extroverted personalities (Hindistan, 2012). Considering that the self-enhancing humor is used a type of humor that embodies an individual's personal characteristics



and takes other people's needs into account (Kuiper, Martin and Olinger, 1993; Martin, Public-Doris, Larsen, Gray and Weir, 2003), it is natural that the self-enhancing humor has an influence on the characteristics of alexithymia and the externally-oriented thinking dimension. It would be true to state that parents with autistic children use their sense of humor for others and deal with others rather than facing their own emotional states, describing them and expressing their experiences in a humorous way. That is because the individuals with alexithymia characteristics avoids describing what they experience in their internal world and focus on others. It can be suggested that parents with autistic children use self-enhancing style of humor, which helps them to be accepted by the people around themselves and adapt to their social environment. On the other hand, it can be regarded as a defense mechanism against alexithymia-related psychological conflicts and anxieties (\$aşioğlu et al., 2013) and against the emotional distress and anguish (Solmaz et al., 2000). Parents with autistic children can also develop defense mechanisms genetically or as a means of defense mechanism, which might emotionally affect these parents. Thus, it is also known that the relatives of autistic children have difficulty in the use of the language socially and pragmatically (Piven, 1999), and they differ from other individuals in their use of the language for communication and socialization purposes (Bishop et al., 2004).

As a result of this discussion, it can be recommended that some precautions should be taken to help parents with autistic children to handle the challenges they experience and to enable them to express themselves. Programs offered to these parents generally focus on the ways to help parents to teach something to their autistic children. Conversely, it is suggested that programs with a focus on parents' self-compassion is considered to be more helpful for them to feel themselves better, and related experimental studies should be carried out as further studies. The evaluation scales utilized in the present study were filled out by parents with autistic children; therefore, the data was obtained through self-evaluation from their own perspectives. Further studies can concentrate on the relationship between the evaluation scales by collecting data from people close to the parents with autistic children. Additionally, by means of comparing the data obtained from the parents who evaluated themselves as in the present study and their relatives, further studies should be carried out. Finally, further studies can investigate what kind of a transition can be observed by evaluating such parents' styles of humor in several generations.

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# **PROOF STARTEGIES PREFERRED BY STUDENTS IN THE GEOMETRY**

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#### ABSTRACT

New geometry program in Turkey was developed by TTKB and became effective in 2009. The most significant innovation contained in the program its use of synthetic, vectoral and analytical approaches simultaneously towards proof in geometry. In addition the program encourages geometry teachers to make common the use of all these approaches among students instead of conventional synthetic approach. The first graduates of this program completed their education 2013. Analysing the use of approaches by these students in solving problems is significant in that it may provide useful insights about the efficiency of the program. The study aims at identifying proof strategies preferred by students and the reasons for their choices. For his aim 51 senior high school students attending three different Anatolian High Schools participated in the study. They were asked to answer two questions which can be solved through using all three approaches towards proof. They were also asked to indicate the reason for their choice of the approach they used. The findings of the study showed that majority of the students used the synthetic approach while solving the problems.

Key Words: Geometry program, proof, approaches towards prof.

#### **INTRODUCTION**

Geometry is part mathematics and helps children to develop relationships between geometrical patterns in universe and other fields of methematics. In addition through geometrical knowledge children could successfully deal with problem-solving and other solution-required daily routines and school subjects. Geometry education should start in basic education. However, given that in geometry courses at the level of secondary education students experience significant difficulties the course at the level of basic education is not effective. Geometry as a field of study has developed further than it was expected due to its scope and differential sub-branches. Therefore, educational planners come across such questions as which of these advances and concepts in geometry should be included in educational programs from pre-school to universty levels? and Which geometrical topics and concepts are much proper to be taught (MEB, 2011).

Geometry is "a complex interconnected network of concepts, ways of reasoning, and representation systems that is used to conceptualize and analyze physical and imaged spatial environments" (Battista, 2007). Activities related to proof are significant in that they reflect the ability to reasoning. In geometry all types of proof



strategies could be employed (Zaimoğlu, 2012). Sir Christopher Zeeman stated that the scope of geometry include "remembering theorems, understanding proofs, making predictions, seeing truthand employing visual intution" (Royal Society/JMC, 2001). Proofs are significant part of mathematics (Padula, 2006). In mathematics many procedures depend on previous patterns and structures. New and acceptable patterns in mathematics are produced through proofs and other related procedures. Therefore, proofs are necessary basic patterns for mathematics to develop and expand (Mingus and Grassl, 1999). Through proofs problems are shown as either correct or incorrect (Tall and Mejia-Ramos, 2006). In addition to this function proofs also provide the reasons for why something is correct or incorrect (Hanna, 2000). There are numerous studies about the views and attitudes towards proofs among students, student teachers and teachers (Harel and Sowder, 1998; Almeida, 2000; Moralı, Uğurel, Türnüklü and Yeşildere 2006; Coşkun, 2009; Arslan and Yıldız, 2010; İpek, 2010; İskenderoğlu and Baki, 2011; Güler and Dikici, 2012; Köğce, 2012).

Countries attempt to modify educational systems which is regarded as a significant activity. Educational systems should prepare individuals how to uptade their knowledge-base and how to employ different study environments. Therefore, modifications in educational systems are improtant ways to adapt the developments and advances in changes occurred in wider settings (Wedell, 2009). This is necessary to produce those individuals who can positively react to novice environments, adapt to new skills at different periods of their life and contribute to the society where they live. Thus educational changes are significant to achieve such goals. Most of the governments allocate major part of their budget for educational activities. Changes in educational systems are among those regarded by governments as important (Kennedy, 1996). In Turkey revisions of educational programs at the levels of basic education and secondary education have been going on (Kurt and Yıldırım, 2010).

Similarly geometry program in Turkey has been revised and modified. The new geometry program was developed by the board of education in 2009. In the same year it was used for ninth grade. In 2010 it was employed for tenth and eleventh grades. In 2012 the program was began to be used for twelfth grade. A number of new activities and strategies was introduced to geometry course through the new educational program. One of the major novice approaches is to emphasize the significant place of proof in mathematics and geometry. In addition, the program encourages the use of three proof approaches simultaneously. These approaches towrds emphasized by the program are synthetic, vectoral and analytical. More specifically instead of using only synthetic approach towards proofs teachers are expected to use and make the students familiar with all three proof approaches. Based on this change in regard to the proof approaches the aims of the geometry course were expanded to contain the followings: "Students can deal with geometrical concepts using the approaches of synthetic, vectoral or analytical and use them properly. They should use these proof approaches based on their easiness and appropriateness." (MEB, 2012).

## Geometrical approaches towards prof

Major appraoches towards proof in geometry are briefly defined as follows:

Synthetic approach towards proofs is one which employs postulates. Vectoral approach towards proofs uses vectoral algebra. Analytical approach towards proofs, on the other hand, employs coordinate system (MEB, 2012).



Let's show volume correlation of a cube using three approaches towards proofs:



In order to assess the effectiveness of the new geometry program it is important to reveal which proof approach is used by the students who were given geometry education through this program. The first graduates who were educated by this new program finished school in 2013. The aim of the study is to identify the proof approaches preferred by these students. In line with the aims the study attempts to respond the following research questions:

- Which proof approach was preferred by the 12. grade students?
- What are the reasons for their preferrence over these proof approaches?

## METHOD

The design of the study is case study which is among qualitative research techniques. Case study is a research technique which analyses any fact or event in its real setting using multidimensional, systematical and in-depth examinations (Yıldırım and Şimşek, 2005). Case studies are especially appropriate for the individual studies. It provides the opportunity to study a dimension of a research question in depth and in a short time. It also prvides the researcher to focus on a specific topic (Çepni, 2009).

Information about participants, data collection tools, data collection process and data analysis are given in this section.

#### **Participants**

The participants of the study were 51 senior high school students attending three Anatolian High School in a province of Turkey.

### **Data Collection Tools and Procedure**

In order to collect the data of the study the participants were given two different geometrical statements which can be proved by three approaches towards proof, namely the approaches of synthetic, vectoral or analytical. The proofs of the statements were also given to the students. The related geometry statements are as follows:

Statement 1: "The lenght of the line which passes through the middle points of a triangle's sides and is parallel to its base equals to the base lenght of the triangle."

Statement 2: "The area of a rhombus equals to the half of its diagonals multiplied."

In addition the participants were asked to indicate which proof approach they preferred to use and the reasons for their preferrence over the proof approaches.



## **Data Analysis**

The data obtained were analysed to reveal which proof approach the participants preferred to use and the reasons for their preferrence over the proof approaches. The preferrence of the participants were identified based on the similar concepts they used (Yıldırım and Şimşek, 2005). In order to increase the internal validity and reliability of the findings the direct quotations from the statements of the participants are given (Altunışık et. al., 2001).

## FINDINGS

#### **Proof approaches employed by the participants**

Table 1 shows the number of participants based on their preferrence over the proof approaches in both geometrical statements given to them.

	Statement 1	Statement 2
Synthetic approach	38	36
Vectoral approach	9	11
Analytical approach	2	2
None	1	2
Others	1	-

#### Table 1: Approaches towards proof preferred by students in two statements

As seen in Table 1, for the first statement given the participants (38 students) mostly used synthetic approach to prove the assertion. This approach is followed by vectoral approach (9 students) and analytical approach (2 students). The same preferrence pattern was also found for the second statement. More specifically in the second statement the participants also preferred synthetical approach, followed by vectoral approach and analytical approach.

The category of "others" refers to the fact that one participant preferred both synthetic and vertical approach for the first statement. There were also students who used proof strategies which cannot be categorized under any proof approach categories. There were some students who preferred synthetic approach for the first statement but vectoral approach for the second statement.

#### The reasons for the preferrence of proof approaches by students

It was found that the participants preferred to employ synthetic approach to proof because they regarded it as easier to understand, more practical, used by teacher, habit, having less formulas and used in textbook. The distribution of the participants based on their reasons for using synthetic approach to proof is given in Table 2.

	Statement 1	Statement 2	
Habit	6	8	
Easier to understand	14	10	
Having less formulas	2	1	
More practical	7	8	
Used by teacher	8	7	
Used in textbooks	1	1	

Table 2: Reasons for students to prefer synthetic approach towards proofs

As indicated in Table 2, the most frequently stated reason for using synthetic approach is that is much easier to understand. The following quotations exemplify the indications of the participants in this regard: *S* 3: It is easy to understand...



*S* 10: It uses similarities and angles. Since these are the easiest topics to understand, the approach is also clear and easy to understand...

S 39: The solution is much more memorable...

There were also students who thought that this approach is much more practical. The following statements reflect this reason for preference of the synthetic approach:

S 17: Solution is short...

S 30: It is better to have much more practical solution ...

S 31: This solution is much more practical...

Some students reported that they preferred synthetic approach because teachers preferred it. The followings show this reason:

S 7: In courses mostly this solution is used...

S 16: Our teacher uses this in the courses...

S 35: Our teacher prefers this way, but for me vectoral way is much more enjoyable...

Habit was also given as a reason for using the synthetic approach as exemplified by the following quotations: *S* 1: *It contains what I learned...* 

S 2: This way is much more familiar for me...

S 33: It is much more familiar way...

There were also students who reported that they preferred synthetic approach because it includes less formulas. The related student statements are given below:

S 6: The others contain more formulas ...

S 14: When formulas are used I am confused...

*S* 28: What is proof? I do not even know what proof is, in the course teacher does not employ proof, but in textbooks mostly this approach is given...

Some students reported that their preferrence for the synthetic approach was due to its frequent use in textbooks as given below:

S 26: In textbooks always this solution is used...

In regard to vectoral approach the participants stated that they preferred this approach because it is much more reasonable, more attractive, more practical, easier to understand and has less formulas. The distribution of students based on these reasons is given in Table 3.

	Statement 1	Statement 2
More reasonable	1	-
More attractive	3	4
More practical	2	3
More understandable	2	4
Less formulas	1	-

Table 3: Reasons for students to prefer vectoral approach

The most frequently stated reason for preferring vectoral approach is its being more attractive as can be seen in Table 3. The following quotations exemplify this reason:

S 27: I like to deal with vectors...

S 40: I like to make transactions using vectors...

S 44: My interest in vectors is higher...

The participants also stated that they preferred vectoral approach due to its being much more practical. The following quotations show this reason:

S 22: Teacher generally uses synthetic approach, but vectoral approach helps me to understand the topics...



S 45: For me this approach is much easier to understand...

S 49: Vectoral approach makes it much more possible to see how things happen...

The vectoral approach was also preferred by the participants who regarded this approach as more practical. The following statements of the students indicate this reason:

S 17: The use of vector in this statement makes the proof much easier...

S 19: Proof with vectors is much easier...

*S* 43: When vector is used the procedure becomes more plain...

Vectoral approach was also considered by the participants to be much more reasonable, leading to be preferred by them. The related quotation is given as follows:

S 20: Teacher prefers synthetic approach, but vectoral approach is much more appropriate for my reasoning...

One student reported that she preferred vectoral approach because it contains less formulas as can be seen in the following excerpt:

S 36: This approach does not require the use of formulas...

The participants reported two major reasons for preferring the analytical approach, namely being easier to comprehend and being much more attractive. The distribution of students based on their reason for preferrence of this approach is given in Table 4.

#### Table 4: Reasons for students to prefer analytic approach

	Statement 1	Statement 2
Easier to comprehend	1	1
More attractive	1	1

One student reported that proof through analytic approach is much easier to comprehend. This quotation is given below:

S 8: This approach is much clearer and easier to comprehend...

The other one reported that she preferred this approach due to its being more attractive as can be seen in the following excerpt:

S 37: I like to work in the analytical setting...

In addition, one student stated that proofs made with either vectoral approach or synthetic approach are much easier to understand than those with analytical approach. His remarks are given as follows: *S* 4: Analytic approach is much more difficult to understand, so the other two approaches can be employed...

# **DISCUSSION AND CONCLUSION**

The study was carried out to identify the proof approaches employed in geometry by the students. The findings of the study suggest that students mostly used synthetic proof approach which was followed by vectoral proof approach and analytical proof approach. Therefore, less preferred proof approach was found to be vectoral approach.

One of the reasons for preferring synthetic proof approach by the participants was its frequent use by teachers in the courses. In addition, it is thought that students much frequently come across this approach in their daily life. Due to all these reasons they thought that proofs with this approach is much easier to understand. Therefore, the use of this approach becomes a habit for them. Harel and Sowder (1998) analysed proof schemas used by students. They concluded that those students who have external proof schema use it because teachers use this schema or this schema is commonly employed in textbooks.



The reasons for preferring vectoral proof approach reported by the participants are found to be as follows: it is novice, more attractive and proofs done by it are easier to understand. Hangül and Üzel (2010) analysed the effects of computer-assisted teaching on the attitudes of the eighth graders and attempted to reveal their views about computer-assisted teaching. It was found that concepts taught in the course lasted for a long time due to the software program used in teaching these concepts. The software program was novice and included vivid and colorful techniques, leading to long-lasting concepts.

It was also found that easier proofs to understand is among the significant factors affecting the students' preferrence over the proof approaches. In addition, it was also observed that those proof approaches such as synthetic approach and vectoral approach were preferred by the participants because these approaches include less formulas and are much more practical. Of them the latter seems to influential in their preferrences due to the students' tendency to prefer practical solutions to the problems.

In some cases the participants preferred to use synthetic approach for the first statement given, but they used vectoral approach for the other one. This finding suggests that the students' preferrence over the proof approaches may vary based on the case at hand. İpek and Okumuş (2012) studied the representations used by student basic education math teachers in problem-solving. It was found that the student teachers may use differential representations for each step in solving the same problem.

Based on the present findings it can suggested that teachers should avoid using single way of teaching in classroom activities and should employ a variety of techniques, taking into account the individual differences among students.

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# STEREOTYPES AS STIGMATIZING BARRIERS TO EFFECTIVE INCLUSIVE EDUCATION

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## ABSTRACT

Inclusive education embraces various activities that aim to help the socialization of children with antisocial behavior and act as protective factors for reducing the risk of antisocial behavior. Pedagogues, psychologists and educators from different institutions play major role in the management of such activities. They are not only the organizers but also mentors, whose influence is crucial to the effectiveness of inclusive education. On the other hand, their motivation depends on their attitude towards their clients - delinquents. That makes the study of the stereotypes that pedagogues, psychologists and educators have toward the group of minor and juvenile delinquents of high importance. Their stereotypical perception can turn into a barrier to effective implementation of programs for inclusive education, stigmatizing them in a negative way. This paper presents a study of the stereotypes in a sample of the so-called public educators engaged in activities, which are conducted by the Anti-nuisance commissions of minor and juvenile offenders. The model SCM (Stereotype Content Model) is used, which is developed by S.Fiske, P.Glik and A.Cuddy. The survey results show that the negative stereotypes of children - delinquents are prevalent. That conclusion outlines the need for specialized training for professionals, engaged in the activities for inclusive education of minor and juvenile offenders.

Key Words: Inclusive education, delinquents, stereotypes, SCM.

#### INTRODUCTION

#### A Model for inclusive education for minor and juvenile offenders

A good model for inclusive education for miner and juvenile offenders should consist of three main stages. The first one is to identify the main risk factors and risk assessment of the delinquent behavior of children. In general, 'risk factor' is defined as that characteristic variable or event, which, if present in an individual, it makes it more likely for the problem to be manifested (in this case it is an offense - note of mine) in this individual, in comparison with any other subject of the general population (Pollard, Hawkins & Arthur, 1999). Criminologists have found that there is more than one way to become delinquent and have noticed that in the presence of several risk factors the likelihood of committing a crime naturally increases. Also, the focus is on the interaction between these factors, to the cumulative effect of the presence of a number of these conditions and to how some protective factors can reduce these risks (Farrington, 2005). The methodology that includes risk assessment takes into account the probabilistic nature of the estimates based on this approach: although it is experimentally proved that the risk factors can predict recurrence of criminal behavior, there are individuals, who are exposed to multiple risk factors but never commit crimes. This can be interpreted in the context of the psychological constructs free will and personal choice - human individuals are thinking beings, subjects of decisions and choices between different options, which also probably depends on the positive impact of certain conditions, described also as protective factors. These conditions are kind of a 'buffer' between the risk factors and the act of violating the law. They mediate the effects of exposure to risk factors, leading to a reduction in the proliferation of criminal behavior (Pollard et al., 1999). There are two principal



points of definition of the construct 'protective factor'. One of them considers the protective factors as the opposite poles of a risk continuum. For example, the high success rate in school can be considered a protective factor as the other pole is the school failure, which often leads to consequences such as running away and dropping out of school, unstable and low self-esteem and many other negative consequences, motivating children to perform antisocial acts. Another point considers protective factors as characteristics or conditions that interact with risk factors, thereby reducing their impact on the behavior of individuals. For example, poverty is often seen as a significant risk factor for delinquency, but the presence of supportive, caring parents can modify the negative impact of poverty, reducing the likelihood of adolescents performing nuisance.

The approaches based on the methodology of risk assessment include four main stages to manage the problem:

- *Monitoring* development and improvement of the system for data collection and analysis of the status and distribution (epidemiological analysis);
- *Identification of the risk group* definition of individuals with the highest risk; places, time and other important conditions that are associated with increased risk;
- Study of risk factors analysis of potential causal mechanisms for the impact of risk factors;
- Implementation and evaluation of programs planning, preparation, implementation and evaluation of preventive measures based on the identification of populations at risk and identified risk factors related to the community (Pollard et al., 1999);

The second stage of the model for inclusive education includes development of individual profiles for each child and teenager at risk in which to address specific deficits, needs and requirements of each individual belonging to the target group. This profile includes the available social, individual resources and protective factors that have a positive influence and can be used to increase the effect from activities related to inclusive education. Therefore, when analyzing the data for each particular child or teenager, we can distinguish those risk factors with the greatest influence on the antisocial behavior so the specialists can draw out the requirements for positive intervention (Prodanov, 2013:1).

The third and last stage of the model for inclusive education consists of working out a program of educational and psychological targeted activities, which are specific to each child or young person at risk. Of course, the systematic approach assumes that, when implementing programs for inclusive education, they are supposed to be a part of the activities carried out by different institutions with a common goal - the reduction and elimination of negative influences on behavior to minimize the long-term and short-term antisocial potential in each separate case. In the section on inclusive education the following activities can be accomplished:

- Support from special educator in case of certain physical or mental deficits;
- Ensuring regular school attendance, overcoming the barriers that impede the child or teenager from attending school (e.g. abuse by other students may be the main reason for a truancy);
- Training in vocational skills through special training courses with regards to the interests and abilities of the child or adolescent;
- Individual forms of learning, including home-teaching when it is appropriate;
- Creating sufficient opportunities to engage in extracurricular activities related to sports, dance, music, visual, theater, and the organization of public events for children and adolescents involved in such activities where they can manifest their talents;
- Influencing on attitudes of parents or guardians for more involvement with the activities related to individual learning of their teenagers (Prodanov, 2013-1).

# Why is it important to talk about the stereotypes in context of the relationships between professionals and their clients – minor and juvenile offenders?

Qualified professionals are committed with inclusive education of minors and juvenile offenders. Their professional competence could not be questioned. But their motivation to work with such a group of children depends on the attitudes they have towards them. In this sense, those social psychological constructs, which describe intergroup relations must be considered. This is because of the fact that labeling the children as 'minor and juvenile offenders' categorizes them in another social group, which is different than the group of law-abiding children and law-abiding citizens who respect the laws and regulatory requirements of the society.



In interpersonal relations people often are guided by inter-group stereotypes. According to W.Lippmann (1997), stereotypes are preconceptions of others, often not as a result of personal experience. To form stereotypes, it is first necessary for the individuals to be perceived as belonging to different social groups, i.e. they must have different social identity. According to H.Tajfel and J.Turner, 'social identity' is defined as the awareness of one's affiliation and belonging to a certain social group together with the value and emotional importance, which are attributed to its membership (Tajfel & Turner, 1986). The basis of this self-identification is the cognitive process of categorization. The categorization is fundamental to the processing of the incoming information about the physical and social objects. Indeed, we permanently compare the perceived objects between each other, as well as we compare them with us. This process allows clear distribution of objects into groups. This is a cognitive function that is inherent in human thinking. Moreover, according to Tajfel categorization increases existing differences between objects, which are perceived as belonging to different categories (groups, classes) and reduces differences between objects that belong to the same group. Therefore, categorization can explain the formation of stereotypes by means of putting the people into separate groups. When we perceive particular individual as equal to us by certain criterion (e.g., gender, race, ethnicity, nationality, etc.), we categorize him as object of 'in-group', and when he is different we put him in 'out-group'. What makes our perception insufficiently objective is that we are insensitive to differences between objects, whether of our group or which belong to another (Tajfel, 1974). In fact, we begin to perceive in the same way all of the objects in the separate group. This exactly constitutes the stereotyping. But is insufficient objectivity of stereotypes in the individual assessment rooted solely in defects of cognitive level?

The criterion for assessing the objectivity of stereotypes can hardly be found, because besides the cognitive processes that underlie the formation of stereotypes, significant interactions between the social groups must be taken into account. Stereotypes are common shared beliefs of the representatives of a social community on what the likely impacts of the other group on them are. For example, the stereotypes are not only the result of cognitive processes of categorization, but also a function of existing and/or probabilistic intergroup relationships.

The nature of inter-group relations as a factor of stereotypes is one of the fundamental principles of the model SCM (Stereotype Content Model) (Fiske, Cuddy, Glick & Jun Xu, 2002). In accordance to this model the stereotypes reflect the overall shared evaluation of the representatives of a particular social group on what the probable influences of other social groups on them are. According to the authors of this model, there are two main dimensions of inter-group stereotypical perceptions by means of which the individual distinguishes members of other social groups according to their likely effects either on the recipient or upon his own group. These dimensions are related and necessary for the assessment of the intentions and capabilities of the 'others'. Despite the importance of specific, historically contingent beliefs, much of the variation in stereotypes is due to the underlying dimensions 'warmth' and 'competence' (Cuddy, Fiske & Glick, 2008). The functional significance and universality of the dimensions 'warmth' and 'competence' come from their reference to two crucial aspects, which are basic circumstances for the survival and development of our social world, composed of many groups and communities. First, people need to predict the intentions of others towards them. Therefore, the features included in the dimension 'warmth' - ethics, reliability, sincerity, benevolence and kindness, evaluate the perceived intentions of others in the social context. Second, individuals should be aware of other's abilities to pursue and realize their intentions. In this sense, the 'competence' includes traits such as efficiency, dexterity, creativity, confidence and intelligence - they relate to the perceived ability of others to realize their intentions. In short, people distinguish the groups of fellows as well as other relevant social groups in accordance with their likely effects on their personality or the group of affiliation (in-group), which is determined by the perceived intentions and capabilities of the other groups' members. SCM assumes the existing of two main categories of stereotypes - univalent and ambivalent. In case of univalent stereotypes two types are possible: the first, when low esteems of 'competence' combine with low esteems of 'warmth' and the second - when high esteems of 'competence' combine with high levels of 'warmth'. Many groups are perceived ambivalent, receiving positive evaluations in one dimension but negative - on the other. For example there are social communities, which are considered 'competent' but not 'warm' or vice versa - there are groups that are perceived as 'warm' but 'incompetent' (e.g. the elderly). It is important to underline that the positive subjective



assessments of one dimension don't exclude the prejudice and don't reduce the likelihood of discrimination based on unfavorable assessment of the second dimension. One of the principles of SCM is related to the social-structural origin of the perceived 'warmth' and 'competence'. It turns out that the groups, which are perceived as competitive receive low assessments on 'warmth' and those, which are ascribed as high status groups are perceived as 'competent'. An explanation may be sought in the context of the functional significance of stereotypes and their social-structural roots. The groups with high status (e.g. 'the Rich') are considered competent until the low-status groups (e.g. 'the Poor') - incompetent. This probably stems from the widespread assumption that the status is invariably linked to the ability (as opposed to factors such as opportunities, luck or inheritance). Regarding the relationship between competitiveness and warmth SCM assumes that the assessment of the existence of rivalry and competition brings about a perception of group relations as conflict because of incompatible groups' goals. The representatives of their own group, its allies and other related groups do not compete with each other, so they are defined as 'warm'. On the other hand, the conciliatory, submissive groups perform 'convenient roles' and for that reason they are treated with 'benevolent prejudice'. Such social groups, which are treated ambivalently, are people with disabilities, housewives, elderly people who are perceived as incompetent, while viewed positively as warm because of their characteristics that make them submissive and the fact that they do not compete for economic or educational resources. Conversely, the groups, which are perceived as competing to us, at the same time, are stereotyped as 'cold' precisely because of the idea of incompatibility of their goals with the goals of our group. If they are successful, the 'out-groups' get our respect but also make us feel envy that they control resources and that is a reason for us to never like them. Furthermore, some low-status groups are not perceived as successful competitors, but nevertheless, there is a tendency for them to be assessed as 'freeloaders' in the sense that if any resources go for them, they will squander all. These are groups of welfare recipients, who are seen as parasites, they contribute nothing to society but only suck resources through the social assistance system, which is subsidized by taxes on other social communities. Because their objectives are perceived as incompatible with the goals of others, the groups mentioned above are also low assessed on 'warmth'. In short, when we think that a certain group has plans to compete for resources and goods, we tune ourselves negatively to its members, describing them as unreliable, cold and unfriendly. This stereotype performs and functions to mobilize and unite the members of one group to compete more successfully with the 'foreigner groups'. Conversely, knowing that a given social community has a spirit of cooperation, it forms a positive attitude towards these representatives, who are described as warm, friendly and reliable partners. Positive stereotype motivates cooperation.

One aspect of the research framework of the SCM is related to the emotional reactions of the individuals, depending on the perceived 'warmth' and 'competence'. Four combinations of high/low warmth and high/low competence produce four basic emotions: admiration (respect), contempt, envy and compassion (pity). The groups, which are stereotyped as warm and competent enjoy our respect and admiration. The ones considered as incompetent and cold (e.g. 'homeless') receive our contempt. The competent but cold groups provoke our envy and those, who are stereotyped as warm but incompetent (e.g. 'the elderly') – pity (Cuddy et al., 2008: 102-105).

SCM also analyzes the behavioral aspects of assessments 'warmth' and 'competence', their projections in social interactions. It is assumed that the four possible combinations of high/low scores on both dimensions lead to specific behaviors: active facilitation, active harm, passive facilitation and passive harm. Since the dimension 'warmth' is paramount (because it is related to the assessment of the intentions of others - my note), assessments on this scale motivate active behaviors: groups, which are assessed as 'warm', receive our active facilitation, while the groups, which we perceive as 'cold' receive active harm (e.g. can be attacked). The competence dimension, which is the second most important (as it assesses the ability of others to accomplish their intentions), causes passive facilitation (e.g. 'advisable association' and 'convenient cooperation'). And those, who are assessed as incompetent, provoke passive harm (neglect) (Cuddy et al., 2008:107-111).



As it is clear, the affective component of stereotypes may bring about ambivalent behavior. For example, the groups to which we feel pity can get either our active support or be ignored (passive harm) – e.g. older people, who receive special care sometimes but in other cases are neglected. This is true also for the people with disabilities status, who are placed in institutions. As for the groups to which we feel envy because of their high competence, they can get both - our passive cooperation but also to suffer from active harm sometimes. For example, we buy from the shops of the rich increasing their wealth, but in a situation of economic and/or social crisis, these same stores can be broken down and looted by the same customers who used to shop there before.

# METHOD

#### Sample

Fifty-four respondents filled out the questionnaire, which is used by authors of the SCM.<sup>1</sup> All these participants are psychologists, social workers, teachers, secretaries and members of municipal anti-nuisance commissions of minor and juvenile offenders. The sample is not representative as far as the present study is a trial study. The average age of participants is approximately 40 years (Mean = 39.8). The age of participants ranged from 25 to 70 years (there are three persons, who have not indicated their age). There is a considerable variation in the expertise of the participants particular in activities with juvenile offenders - from 3 months to 40 years (Mean = 7 years). The sample is unbalanced concerning gender – 9 participants are men and 43 are women (there are two persons, who have not indicated their gender). The test procedure involved filling out an anonymous questionnaire; data on gender, age and experience is gathered on the grounds that they are necessary for the scientific conclusions of the study.

#### Instrumentarium

The instrumentarium consists of the items of the original questionnaire, probed by L. Andreeva and S. Karabeliova on Bulgarian sample (Andreeva & Karabeliova, 2011). A specific emphasis is made when instructing the respondents – they are asked to answer according to how other people in their own group would assess the objects - in this case children who are delinquents. Thus, the aim is to actuate stereotyped assessment, which is a consequence of the social group identity of the participants, different from the one of the young offenders. The structure of the questionnaire includes two scales – 'warmth' and 'competence'. The features describing warmth are: *tolerant, warm (affectionate), good-natured and sincere*. The items of competence are: *competent, confident, intelligent, independent and competitive*. Total number of items in questionnaire is nine. For assessment it is used a five-point scale with variations of responses from 'strongly disagree' (evaluation 1) to 'completely agree' (evaluation 5).

#### **FINDINGS**

The statistical processing of the data was carried out with the program SPSS for Windows. Table N1 represents some data of descriptive statistics of scales 'warmth' and 'competence'. As the table shows, the average values of the data on the two dimensions - *warmth* and *competence*, are lower than 3. Assessment '3' is an average score of five-point scales, so it divides the space delineated by the two dimensions. Thus the space is divided into four quadrants. The type of a stereotype depends on the quadrant in which it is positioned - that defines whether a stereotype is univalent or ambivalent and whether it can produce prejudice and discriminatory behavior.

<sup>&</sup>lt;sup>1</sup> Assistance in collecting the data and conducting survey was done from student of psychology Maria Urilska.



### Table 1: Number of Sample, Means, St. Deviations, Minimal and Maximum esteems

		Competence	Warmth
Ν	Valid	54	54
	Missing	0	0
Mean		2,51	1,99
Std. Deviation		0,72	0,69
Minimum		1,00	1,00
Maximum		3,80	3.50

Table 2 reflects some psychometric characteristics of the two scales, which attest to their internal consistency and reliability. Data values of Cronbach's alpha are satisfactory. Similar values of Cronbach's alpha were obtained in another study with a different Bulgarian sample and with different purpose – study of stereotypes about nations (Prodanov, 2013-2).

Table 2: Reliability Statistics: Internal Consistency of the Scales Warmth and Competence – Cronbach's Alpha

Scale	Cronbach's Alpha	N of Items
Competence	0,68	5
Warmth	0,75	4

 Table 3: Correlations between Warmth and Competence

Correlations	Competence	Warmth
Competence		
Pearson Correlation	1,00	0,140
Sig.(2-taied)		0,312
Ν	54	54
Kendall's tau_b	1,00	0,005
Sig.(2-taied)		0,958
N	54	54
Warmth		
Pearson Correlation	0,140	1,00
Sig.(2-taied)	0,312	
N	54	54
Kendall's tau_b	0,005	1,00
Sig.(2-taied)	0,958	
Ν	54	54

Furthermore, two types of correlations are presented in Table 3: parametric Pearson's coefficients of correlation and Kendall's nonparametric correlations. Insignificant correlations between two scales show that they are independent dimensions. These results support the theoretical assumptions of the SCM.




Figure 1: Spatial Dispersion of Stereotyped Perceptions of the Respondents (Scatter Plot)

Figure 1 presents the dispersion of stereotypical perceptions of each inquired person according to the specific values of the two dimensions - *warmth* and *competence* (the numbers next to the dots in the figure correspond to the participants' serial number in the survey data list). As it can be seen, the vast majority of the sample falls in the quadrant with univalent negative stereotypes. In fact, it can be said that only one of the respondents has relatively positive univalent stereotypical perception of delinquent children. A small portion of the sample manifests contradictory attitudes - the first group is those, whose assessments of competence are greater than 3, but the assessments of warmth are lower than 3; the second group with ambivalent stereotypes consists of those, whose assessments of warmth is higher than 3 but on competence they have lower assessments than 3 (there are only two people in this position). It is important to point out that people with either ambivalent or negative univalent stereotypes are expected to think with prejudices and act discriminatory either explicitly or implicitly.

# DISCUSSION

First, the results of the study are consistent with other studies applying SCM and, moreover, they demonstrate good psychometric parameters of the instrumentarium. This can be taken as proof of the universality of the two dimensions ('warmth' and 'competence') with respect to the stereotypes.

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Second, it appears that the stereotypes of people who are engaged with various educational and corrective influences on young delinquents are predominantly univalent and negative. This is a basis of prejudice and discrimination toward 'out-group' of minor and juvenile offenders. The traits that mentors attribute to minor and juvenile offenders form an extremely negative image of this group. This means that professionals of the inquired sample have a kind of a social identity, which explicitly excludes the group of delinquent children and sends them to the opposite pole - with the out-groups, perceived as threat to the interests of their own group. As far as whether the stereotypes reflect existing and/or likely attitudes to interpersonal relationships between mentors and their delinquent clients, we can see that these attitudes are too distant (at least of the mentors, who were being inquired). Moreover, the results show that the majority of the surveyed mentors probably feel a sense of contempt for their clients. This in turn is important for motivation and diligence, which these professionals put in their work: according to the SCM stereotypes of this type have a negative emotional and behavioral component. As far as feelings of the mentors to their clients, which are predominantly negative, the mentor's behavior in the best case will be oriented towards 'passive harm'. Passive harm can be expressed in formal attitude to the duties and activities designed to help offenders in overcoming their deficits, changing their thinking and building models of social positive behavior. With such a negative stereotype, the mentors are more likely to participate in these processes inefficiently, since they probably do not believe that their efforts will lead to a positive change in the life style of minor and juvenile delinguents.

### **CONCLUSION**

Undoubtedly, the specialists who will implement activities related to inclusive education of minor and juvenile offenders are main factor for the efficacy of these activities. This raises questions about their qualifications, experience and abilities. The study presented above raises a question that refers to the social psychology of interpersonal relations. By reason of the categorization, the children with antisocial behavior are stigmatized. The stigma brands and insulates them in a separate group of social outsiders, who are considered as not only quite incompetent to deal with the challenges of life, but are also seen as dangerous for loyal-to-law citizens. These children are considered as threat with their criminal behavior to the resources and interests of other social groups. This fact brings about to the formation of univalent negative stereotypes that become regulators of the interpersonal relationships between other people and this particular group - the delinquent children. The professionals who work with these children are also subordinated of this stereotypical thinking. But exactly these professionals are called to 'bring out' young offenders from their unfavorable group and then to 'include' them in groups of loyal citizens. This process will be hardly effective if the mentors themselves have extremely negative attitudes and are not motivated, and do not believe in the successful resocialization of the minor and juvenile offenders. From this perspective, it would be appropriate to establish procedures for selection of the experts, which include the assessment of their attitudes towards young offenders. Furthermore, it could provide specialized training modules for mentors themselves to form tolerance, so that they have a differentiated approach, which reflects the individual characteristics of the delinquent children with their positive, not just negative traits.

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# WHAT DO JUNIOR SCIENCE TEACHER STUDENTS THINK ABOUT CHEMISTRY?

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# ABSTRACT

This study aims to identify the perspectives of junior elementary science teacher students towards chemistry as a science. To accomplish this reason, 51 first year science teacher students studying in one of the governmental universities in the west part of Turkey were included in a survey investigation. Students' habits, daily life concerns, wonders and initial considerations related to chemistry were collected with an instrument developed by the researchers. Descriptive statistics method and content analysis were utilized to analyze data. The findings represent a whole picture of the participants' habits, daily life concerns, wonders and considerations related to chemistry. Based on the findings, a number of suggestions will be provided for science educators which will be beneficial to improve the vision of junior teacher students in terms of chemistry aspect beginning from their first year in the university to increase their academic success and to contribute their future occupational needs.

Key Words: Chemistry, junior science teachers, opinions.

# INTRODUCTION

In the worldwide, the year - 2011 was declared as International Year of Chemistry (IYC) by UNESCO and UN with the encouragement of International Union of Pure and Applied Chemistry (IUPAC) in order to trigger awareness about the science of chemistry which influences all parts of life (Sözbilir, 2013). For this purpose, four fundamental goals were determined to address all people who were related to chemistry directly or indirectly. Those goals were:

- 1. Raising awareness to sense and accept the significance of the chemistry in order to meet the needs of the world
- 2. Raising the interest of young people towards chemistry
- 3. Encouraging the generation of creative opinions for the future of chemistry
- 4. Celebrating the role of ladies and significant historical events in chemistry (Sözbilir, 2013).

As mentioned in the goals above, evoking interest of the youth is also significant for the future of our country because academic success and efficient studies in this area firstly depend on positive tendencies of young people towards chemistry. Unfortunately, the literature reports that students tend to get away from physics and chemistry courses (Woolnough, 1994; Solbes & Vilches, 1996). When the university entrance examination results in Turkey are investigated, it is seen that the results are not good in terms of the number of the net right responses gained from the science test. When the general mean of entrance to higher education examination (abbreviated as YGS in Turkish) results are investigated, it is found that the participants have an average of 4.6 net right responses in 2010; 4.1 net right responses in 2011 and 3.6 net right responses in 2012 from 40 questions in the science test (Measurement, Selection and Placement Center, 2012a). It is remarkable



that the mean of the net right response numbers gained from science test remains very low when compared to the other courses such as Turkish, social science and mathematics. The mean of the net number of right responses of all the participants for chemistry course in 2012 undergraduate placement examination (abbreviated as *LYS* in Turkish) is 9.87 from 30 questions (Measurement, Selection and Placement Center, 2012b). Additionally, when decreasing number of students who are selecting chemistry programs is considered, it is highlighted to research the chemistry perceptions of students regarding their success level (Tosun, 2013).

In this paper, mainly chemistry and daily life relations will be addressed. The previous study results indicate that students fail to connect the things they learn in the courses with daily life (Yiğit, Devecioğlu & Ayvacı, 2004). The students should be able to apply their theoretical knowledge practically in daily life. Daily life is a social aspect of science (Koçak & Önen, 2012a). It will be a failure to think of science without daily life. When the rapid changes in our day's conditions are considered, daily life is affected by those changes substantially and we have to be aware of them as scientifically literate people.

Rather than limiting the vision of the students, repeating the clichés and scaring them with difficult questions; the educators should assist them become individuals who enjoy science a lot. Koçak and Önen (2012a) taught 9<sup>th</sup> grade students chemical changes unit with the help of experiments which connect them with daily life and as a result of their study, they gained increase in students' motivation and success. Also, being chemically literate is important. Students should be developed as people who can access information by themselves (Üce & Şahin, 2001; Bayrakçeken, Canpolat & Çelik, 2011).

The results of the research report that the initial concepts considered as one hears the name of chemistry are laboratory, chemical substances and dangerous exploding experiments (Koçak & Önen, 2012b). This finding is also reflected in the drawings of young children related to scientists which show them with experiment tubes, laboratory coats and glasses (Demirbaş, 2009; Korkmaz & Kavak, 2010). Such results can be acceptable for young aged children. However expectations related to the conceptions about chemistry for those who come to university level by graduating from science branch in the high school and achieving science or chemistry related courses are more.

Encouraging students to make research, to connect theoretical knowledge with daily life can prevent memorization and influence their looks at science positively. The look of teacher candidates at science is significant since they may affect their opinions for their future students. So, this study addresses the opinions of junior science teacher candidates about the science of chemistry.

# The Aim and Significance of the Study

In this paper, it is aimed to determine the opinions of junior science teachers in terms of chemistry by finding out their wonders and conceptions about it.

The results of this study will present the profiles of the participants in terms of chemistry subject. The points which are included in and which are excluded from chemistry will be determined by investigating their profiles. Those findings might contribute educators to form the content of "special topics in chemistry" and "elective courses related to chemistry" in addition to helping educators to insert new ideas to the students which will enlarge their vision related to chemistry.

# **METHOD**

# Study Design

A survey study was conducted as it was convenient for the purpose of the study. In the literature, survey studies are defined as the studies which are conducted with relatively large samples in order determine the characteristics about the interests, skills and attitudes of the participants related to a subject or event (Büyüköztürk, Çakmak, Akgün, Karadeniz & Demirel, 2010: 231). In the present study, participants' tendency towards the science of chemistry was aimed to figure out.



### **Study Group**

The study group involved 51 first year elementary science education students studying in one of the governmental universities in the west part of Turkey. 43 of the participants were females whereas 8 of them were male students. All of the participants graduated from science branch from their high schools.

# **Data Collection Instrument**

The researchers developed the data collection instrument to meet the purpose of the study (see the instrument in Appendix). This instrument involved two questions which aimed to measure the habits of the participants about chemistry and those questions were rated in three dimensions (never/seldom/frequently). The other questions were prepared as open ended.

### **Data Analysis**

In data analysis, descriptive statistics and content analysis were utilized. In the analysis of open ended questions, content analysis, which aimed to reach concepts and relations to explain collected data, was utilized (Yıldırım & Şimşek, 2008). In the analysis of other questions, descriptive statistics methods were used by presenting the frequency and percentage distribution of the findings in order to quantify the data.

### RESULTS

# Do You Follow up the News related to Chemistry via Internet/TV/Newspaper?

According to Figure 1, 38 of the participants (74.5 %) *seldom* followed up such news. The students who *frequently* followed up constituted only 2 of them (3.9 %) whereas 11 of them (21.6 %) were *never* interested in following up chemistry related news via internet, newspaper or TV.



Figure 1: Distribution of Following up the News related to Chemistry

# Do You Read any Publications related to Chemistry?

Similar to the results of the previous question, 37 of the participants (72.5 %) *seldom* read publications related to chemistry. 10 of them (19.6 %) *never* read such publications whereas only 4 of them (7.8 %) *frequently* read. The distribution is displayed in Figure 2.





Figure 2: Distribution of the Following up the Publications related to Chemistry

# Where Do You Use Chemistry in Your Daily Life?

The responses of the participants related to daily life use areas of chemistry are shown in Table 1. Since each participant could provide more than one opinion, the total number of the opinions exceeded the number of the participants.

Table 1. Distribution	of the Oninions	related to Daily	v Use Areas of	<sup>Chemistry</sup>

Daily life utilization	f (%)
In wipers	46 (34.8)
In the kitchen	31 (23.5)
In the medicines	16 (12.2)
In cosmetics	13 (9.8)
In dyes	8 (6.1)
In the drinks	8 (6.1)
In the building area	6 (4.5)
In heating	4 (3.0)
Total	132 (100)

According to Table 1, participants asserted that mostly, chemistry was utilized in wipers, kitchen, medicines and cosmetics. Other use areas are as shown in Table 1.

# What are Your Favourite Questions related to Chemistry?

After the analysis of the questions whose answers were wondered by the participants at most, the questions were collected under eight themes as provided in Table 2. Additionally, example questions to illustrate each theme were placed in Table 2 below.



T     0 T					o
Table 2: Theme	s that involve Si	tudents' Questi	ons and Examp	ples for the	Questions

Themes Examples from the questions					
Matter and Particle	How was the first particle found? Why was it found?				
Watter and Particle	How was the first element discovered?				
Chamical Banda	How do bonds form?				
Chemical Bonas	How did the first reaction occur?				
Matters and Their Properties	Why does "He" element cause a change in the voice?				
watters and their properties	What is the structure of the diamond like?				
	How is the foundation formed? What are the materials used to form it?				
Structure of Cosmetics	How was acetone found?				
Winors	How do wipers clean dust and dirt so easily?				
wipers	How does soap foam form?				
Structure of Dues	How are dyes made up?				
Structure of Dyes	How does the first dye discovered?				
Formation of Colours	Why is the flame in the oven blue in the oven?				
	Why are the papers white in colour?				
	According to Democritus, atoms can neither be created nor broken up				
Scientific Process	and formed. How did other scientists refute this idea?				
	Would chemistry be so well developed if there were no alchemists?				

As can be seen in Table 2, students' questions were related to matter and particles, matters and their properties, chemical bonds, dyes, colours, cosmetics, wipers and scientific process. The frequency and percentage distribution of the questions of the participants related to each theme are demonstrated in Table 3. Since one student could write more than one question, the total number of the questions constructed by the students was more than the number of the students.

Table 3:	Distribution	of the Que	estions of the	Participants	related to	Chemistry	in Each <sup>¬</sup>	Theme
		0				•••••••••••••••••••••••••••••••••••••••		

Themes	f (%)
Matter and Particle	24 (28.6)
Matters and Their Properties	24 (28.6)
Scientific Process	14 (16.7)
Wipers	7 (8.3)
Formation of Colours	6 (7.1)
Structure of Dyes	4 (4.8)
Structure of Cosmetics	3 (3.6)
Chemical Bonds	2 (2.4)
Total	84 (100)

As shown in Table 3, the questions wondered by the students at most belonged to the themes - *matter and particle* and *matters and their properties* with the percentages of 28.6 %. To make the first theme more clear, following questions can be provided from the participants' responses: "How can atom be broken up?", "How can an atom bomb be produced?, "How can an element know to form compounds with particular elements?". To illustrate the second theme, following questions can be added: "How is glass formed from sand?", "What is there inside the chemical weapons?", "How does toothpaste make our teeth whiter?".

When the questions were investigated in general, it was seen that the students were keen on the things done/discovered first (the first particle, first element, first reaction, first dye, and first yoghurt). They questioned the people who made/discovered those and how those things were made/discovered.



# The Concepts related to Chemistry

The concepts in Table 4 were found out when the participants were asked to write down the things they considered when they were told the term – chemistry.

Concepts	ots f Concepts		f
Atom	13	Formulas	3
Experiment	12	Ammonia	2
H <sub>2</sub> O	9	Cosmetics	2
Element	9	My teacher	2
Matter	6	Kelvin	1
Periodic table	6	Organic chemistry	1
Alchemy	5	Soaps	1
Acid	5	NaCl	1
Laboratory	5	Molecule	1
Compound	4	Inventions	1
Gases	4	Science	1
Bases	4	Problem	1
Mixtures	3	Electron	1
Reactions	3	Total	106

According to Table 4, the most frequently considered concepts related to chemistry by the participants were "atom", "experiment" and " $H_2O$ ". Similar to the most frequently asked questions, most frequently considered other conceptions were "element" and "matter". Since one student could write more than one concept, the total number of the concepts exceeded the total number of the participants.

# **DISCUSSION AND CONCLUSION**

According to the results of the study, most of the students *seldom* follow up chemistry news or *seldom* read publications regarding chemistry. What is more important, the ratio of students who respond to this question as *never* is almost five times than those who respond this question as *frequently*. This result can be accepted as an astonishing consequence when we consider today's technological conditions and when we consider that those participants will be our future science teachers.

It is found that students mostly observe chemistry in "wipers" in their daily life. Those substances can be easily observed in daily life both in the cleaning of body or of home. Hence, this is reflected in the frequency of the responses. Again, other easy to observe themes, "kitchen", "medicines" and "cosmetics" follow it. The reason of the fact that students connect scientific concepts with daily life might be due to the fact that they can easily meet such situations which affect their lives, in their home, in their environment and in their lesson applications (Yiğit, Devecioğlu & Ayvacı, 2002). Also, high proportion of the female students in the participants can be another factor influencing the high frequency of above mentioned themes as they are more interested in those mentioned themes when compared to male students.

Most of the students' favourite questions focus on "matter and particle" and "matters and their properties" themes. However, among those questions, no specific issues such as CERN experiments are encountered. The questions of the students remain mostly superficial. They seem not rising to higher cognitional levels, staying in knowledge and comprehension level. When those determined consequences are considered by the educators, it is expected that four years that will be spent in the university by the students will contribute to their questioning skills. Good questioning capability will be the consequence of receiving inquiry based education beginning from primary level. However, it is seen that this ability was neither gained from the family nor from the school environment. So, the experiences and habits before coming to university are critical for shaping such



characteristics of the students. At this respect, encouraging education faculty students to read magazines, books related to chemistry and to follow up such news via internet/TV/newspaper will be beneficial for their future students also.

Despite the fact that chemistry involves various different themes inside it (such as acids-bases-salts, gases, liquids, solutions...) the level of students' questions generally remains in general chemistry level. This is also an interesting result. From this result, it can be concluded that the students cannot comprehend chemistry from a broad perspective.

Parallel to the previous study results, students consider "atom", "laboratory and "experiment" when they hear the term – chemistry (Ürek, 2012). Additionally, the indispensible of life - " $H_2O$ " keeps its place in top 3 of the responses. The concepts of students related to chemistry match with the themes of the questions they wonder. Matter and particle theme also takes place in a high proportion among the concepts. In this question also, no more different and more creative response was gained. Hence, students can be reported to live a never ending circle.

When the findings are evaluated all together, it can be concluded that the profiles of junior science teachers are very limited in terms of chemistry. They need to be introduced to nanotechnology, CERN and green chemistry which are recently very popular and inter disciplinary research areas of chemistry. For this purpose, science-technology-society relationships should be emphasized during the courses. Construction of the science-technology-society relationship does not only improve students' opinions related to science and raise their interest towards physics and chemistry with its motivating aspect but also those results stem from its contextualization affect on those disciplines (Solbes & Vilche, 1996).

The conceptions of the students related to chemistry in this paper overlap with the previous studies' cliché findings related to science, scientists, chemistry and chemists. Therefore, educators' considerations related to interdisciplinary interactions are significant for the students. Projects can be assigned to the students by considering students' wonders and favourite questions related to chemistry. Their presentation and sharing with peers might be beneficial. Such planning could shape the content of the "Special Topics in Chemistry" and various "Elective Courses" related o chemistry. Also, the points which are never mentioned by the students could be assigned to the students in order to make them investigate those different aspects. With such attempts, the vision of the future teachers can be enlarged and they can be developed as more qualified.

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# **APPENDIX: Data Gathering Instrument**

**1.** I follow chemistry related news via TV/newspaper/internet. Never O Seldom O Frequently O

2. I read publications related to chemistry. Never O Seldom O Frequently O

**3.** Where do you use chemistry in your daily life? Give examples.

4. What are the questions that make you wonder most related to chemistry?

I wonder the answer of this question because .....

I wonder the answer of this question because .....

5. Write down the concepts that you consider when you hear "chemistry".



# THE INCLUSIVE ENGLISH LANGUAGE CLASSROOM AND THE EFFECTS OF ACCULTURATION ON CHILDREN FROM DIFFERENT ETHNIC GROUPS

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### ABSTRACT

In the process of English language learning the issue of acculturation inevitably appears since the members of a minority culture come into contact with the culture and language of a majority culture. This phenomenon of acculturation and its effect on second language acquisition is to be observed not only with the Bulgarian learners of English but also with all the other ethnically represented groups in our society.

This article studies the way the dilemma whether to resist or to conform to the cultural norms and the specifics of the English language is represented both by Bulgarian schoolchildren and by pupils from other ethnic groups. The difference in their results will be indicative of the degree to which the inclusive English language classroom has succeeded in giving equal opportunities for English language acquisition to all the children in the Bulgarian primary school.

Key Words: Acculturation, language learning, inclusive education.

#### INTRODUCTION

The policy of the public school system in Bulgaria is founded upon the idea that all people, regardless of their cultures or special circumstances, are entitled to a free, quality education so that they can become productive, contributing citizens in our society.

On the first place this idea is further supported by the principles of inclusive education defined in the 1994 UNESCO Salamanca Statement and the framework of Action. Schools should respond to diverse needs of all children and fit themselves in children's learning styles and needs, and not the other way. Ferguson (1996), Udavi-Solner (1996), Thomas et al (1998), Ainscow (1999) and Mittler (2000) have extensively dealt on the school reforms perspectives to develop the concept and practices of inclusive education. Continuing with this approach, Sebba and Ainscow (1996) have offered a definition of inclusion:

Inclusion describes the process by which a school attempts to respond to all pupils as individuals by reconsidering its curricular organization and provision. Through this process, the school builds its capacity to accept all pupils from the local community who wish to attend and, in so doing, reduces the need to exclude pupils (p.9).

The 1994 UNESCO World Conference also realized this situation when it argued that a school should, ...accommodate all children regardless of their physical, intellectual, social, linguistic or other conditions. This should include disabled and gifted children, street and working children, children from remote or nomadic populations, children from linguistic, ethnic, or cultural minorities and children from other disadvantaged or marginalized area and groups. (UNESCO, 1994, Framework for Action on Special Needs Education, p.6)



These inclusive schools,

... must recognize and respond to the diverse needs of their students, accommodating both different styles of learning and ensuring quality education to all through appropriate curricula, organizational arrangements, teaching strategies, resource use and partnerships with their communities. (UNESCO, 1994, Framework for Action on Special Needs Education, p.11-12).

On the second place these principles are further supported by the need of modern-day society to produce global citizens able to transcend social, physical, economic, or cultural barriers to pursue their ambitions and dreams. Globalization enabled people to travel, live and work all over the world, gave them the chance to study in an international environment and work in multinational institutions. Hence comes the need for new communication skills and intercultural education which although difficult at times is very enriching and useful experience. Intercultural dialogue has long been a principle supported by the European Union and its institutions. The year 2008 was designated "European Year of Intercultural Dialogue" (EYID) by the European Parliament and the Member States of the European Union. It aimed to draw the attention of people in Europe to the importance of dialogue within diversity and between diverse cultures.

But the development of these skills for communication with people from different cultures hides one delicate aspect - and more specifically the aspect connected with the inclusion of minority groups in the host society. This task is burdened with different prejudices, negative attitudes, cultural stereotypes, fears and sometimes by actions of intolerance.

Education is the mechanism that can provide effective inclusion of the representatives of different kinds of minority groups and this inclusion can further enable them increase their job opportunities and overcome the economic barriers that prevent them becoming equal participant in the social life. Teachers must be sensitive to their students' cultural and academic differences. They need to create culturally sensitive learning communities, develop positive teacher– student–parent relationships, design lessons that motivate all students to learn, and implement those lessons using differentiated instructional strategies to maximize student learning. Diverse classrooms provide a venue for children to learn to embrace cultural differences and eliminate the barriers of racism, sexism, and prejudice.

A major challenge facing all the schools in our country is teaching primary schoolchildren a second language. The aim of this research is to compare the results in English of fourth-graders in three different schools – a Bulgarian, where predominantly the pupils are of Bulgarian origin, an Armenian school and a school where the prevailing number of schoolchildren are of Roma origin.

# THE REALITIES IN BULGARIA

According to the 2011 POPULATION CENSUS conducted by the national statistical institute as of 1.02.2011 the population of Bulgaria is 7 364 570 persons.

- The Bulgarian ethnic group comprises 5 664 624 persons or 84,8% of persons who declared their ethnic identity on a voluntary basis.
- The Turkish ethnic group is the second highest number 588 318 persons. It represents 8.8% of the population.
- The Roma ethnicity is traditionally the third one numbering 325 343 persons, with a relative share of 4.9%.
- 49 304 persons or 0.7% determine themselves to other ethnic groups. The following are included: Russian ethnic group 9 978 persons, Armenian 6 552, Vlashka 3 684, Greek 1 379, Jewish 1 162, Karakachanska 2 556, Macedonian 1 654, Romanian 891, Ukrainian 1 789 and others 19 659 persons.

The Bulgarian language is pointed as mother tongue by 5 659 024 persons or 85.2% of the population, the Turkish - by 605 802 persons or 9.1% and Roma - by 281 217 persons or 4.2%.



The connection between the ethnic self-determination and self-determination by mother tongue is strongly expressed.

The Roma ethnic group is distributed by mother tongue as follows:

- 272 710 persons or 85.0% have pointed Roma as a mother tongue;
- 24 033 or 7.5% Bulgarian;
- 21 440 or 6.7% Turkish;
- 1 837 persons or 0.6% Romanian.

# EDUCATIONAL STRUCTURE OF THE POPULATION

Surveying of the population educational status starts with 1934 census. Up to 2011 the educational structure of population aged 7 and more improves considerably. Clearly expressed tendency of increase of the number and share of population with tertiary and upper secondary education and decrease of the number of people with lower secondary or lower education is observed. For the first time during the current census (2011 Populatin Census – Main Results,www.nsi.bg/census2011/PDOCS2/Census2011final\_en.pdf) the category "school never visited" is included. The number of persons who have never visited school is 81.0 thousand or 1.2% of the population aged 7 and more. The fact that these people have never been part of the educational system is disturbing.

Illiterate are 112 778 persons, representing 1.7% of the population aged 9 and over years of age.

There are considerable differences in the share of illiterate persons amongst the three main ethnic groups. Amongst the Bulgarian ethnic group the share of illiterate is 0.5%, amongst the Turkish - 4.7% and amongst the Roma ethnic group - 11.8%.

Considerable differences are observed also for children aged 7 to 15 years, who are supposed to be part of the educational system, but are not as of 1.02.2011. For the Roma population the share of children who do not visit school is 23.2%, for the Turkish ethnic group - 11.9% and for the Bulgarian - 5.6%. Reasons due to which children do not visit school are not object of the census and therefore are not studied during the census. These might be health or other personal reasons.

# **TEACHING ENGLISH AS A FOREIGN LANGUAGE**

According to the Law for Public Education of 1991 the compulsory starting age for primary schools is 7 (the optional is 6). The age at which compulsory education ends is 16. The levels of schooling in Bulgaria are: primary education, grades 1-4, lower secondary education, grades 5-7/8 and upper secondary, grades 8-13. Students are assessed according to a 2-6 scale with 6 as the best mark.

The English instruction is carried out in the primary course of education (1st - 4th grade) by a curriculum, approved by the Ministry of Education and Science, which is obligatory for both public and private schools. The Ministry of Education and Science is the only body authorized to approve and recommend a list of international and local textbooks to be used for every grade and type of school. The schools then select among the listed textbooks, which generally fit into three main categories: textbooks written and published locally; international textbooks licensed for publishing in Bulgaria (mainly for higher grades) and original international textbooks offered on the Bulgarian market by representatives of the publishers. Besides the chosen textbooks teachers are free to use any other materials they consider useful and appropriate.

**Our first hypothesis** is the process of acculturation and inclusion of the Armenian representatives in Bulgarian society is far more successful than that of the Roma people.

**Our second hypothesis** is that there will be significant differences in the pupils' results in English between these three kinds of school.



### **CONCEPT AND METHODOLOGY**

The research on the first stage aimed at studying the attitude of the Bulgarian people towards the inclusion of different ethnic groups in mainstream schools. Another goal we set was to investigate the validity of the statements and assumptions underlying the Acculturation model of Second Language Acquisition.

On the first stage the research is based mainly on a survey on Public Attitudes and Reactions towards Inclusive Education in Bulgaria conducted in 2006 by ALPHA RESEARCH Ltd. (Обществени нагласи и отношение към приобщаващото образование, *cie-bg.eu/userfiles/file/PublicAwarenessSurvey\_June2006.pdf*) Their attention was directed towards the attitudes of the parents, teachers and directors and the children towards the inclusion of children with special educational needs and the inclusion of children from the minority groups in mainstream schools. Our interest in this study is predominantly focused on the reactions towards the inclusion of children from minority groups. The reactions from the group discussion show that this is considered as problem only when discussing the children from Roma origin. Such negative attitude is not noticed towards the other minority groups – namely, children from Armenian, Turkish, Chinese, Russian or Jewish origin.

### The group of the Bulgarian parents

Some of the parents of the Bulgarian schoolchildren have such a negative attitude towards Roma children that they express readiness to move their children out of the school immediately after Roma children happen to be enrolled in the same class as their children. Other Bulgarian parents are less reactive, more passive and ready to wait and see if any problems will appear after the arrival of the Roma pupils and strongly believe that the Roma children might drop out soon after their enrollment. Several of the participants in this survey mentioned that there are no problems in connection with integrating children from the Armenian or Jewish ethnic groups. Bulgarian parents strongly recommend Roma children to be involved in educational programmes in their Roma neighbourhood dedicated to the task to teach them "to read and write at least". They insist the venue of this initiative to be their neighbourhood in regard with the easy access and financial justification. Many parents believe that Roma people are not ready to be integrated because the choice they have made is "to do nothing and steal" but they united around the idea that chances must be given to those willing to succeed. They think that before integrating the children the Roma parents have to be prepared because if "the parents are not normal the children cannot be integrated". The lack of hygiene and the specific stink is also a great hindrance for the integration of Roma people.

#### The group of the Roma parents

Roma parents are willing their children to be integrated in Bulgarian schools but the difficulties they have are mainly economic. They approve very much the idea and possibility their children to continue their stay in preparatory groups after school to help them do their homework and learn their lessons. In this way they want to neutralize their financial difficulties and to ensure an appropriate educational environment for their children. Roma parents have high opinion of Bulgarian teachers but mainly due to their own low educational level and lack of ambitions for their children. The ambitions they have for their children are to give them the opportunity to find a job requiring neither qualifications nor education. This lack of ambitions or dreams is reflected upon the children later on. These parents' inability to help their children with the preparation of their lessons, their lack of control and insistence for regular school attendance makes the educational process even more difficult. They believe that it is good for their children to be in the same class with Bulgarian pupils but at the same time because of their poor communication with their children and low cultural level they are not able to identify the problems connected with their acceptance by the Bulgarian peers in the mainstream school. Parents are insensitive to their children's feelings and experience at school because physical aggressiveness is something normal for them - i.e., the "positive" image of the educational system presented by the parents is in contrast with the real "clash" with the their children's environment and their world. Foreign language education is important for these parents only because of the possibility their children to find work abroad although there are not cases of mass migration of Roma people to the countries of the European Union. Education is not viewed as a means for social mobility and realization - it is only a means for acquiring only some basic educational characteristics as reading, writing and arithmeic skills.



# The group of the teachers

Teachers and directors in Bulgarian mainstream schools believe that they are not enough prepared to deal with children with Special Educational Needs. On the other hand the teachers and directors from the specialized schools strongly believe that the inclusion of children with special educational needs cannot be total and that the elimination of specialized schools might have negative effect. According to them specialized schools prepare children with special needs for integration and are an option for the parents of these children to go back to them if the integration proves to be impossible. Teachers also find the lack of normal standards of personal hygiene, the lack of support or educational assistance from the family, Roma children's indifference to the educational process and the poor discipline to be the main obstacles in their work with these children. They agree that because of their segregation Roma pupils are deprived of normal conditions for development but at the same time their presence in Bulgarian mainstream schools lowers the quality of the educational environment which is not favourable at all for the Bulgarian schoolchildren. They also believe that it is essential for the Roma children to attend preschool educational groups because there they acquire some learning habits and learn Bulgarian language.

### The group of the Bulgarian children

Bulgarian children consider their peers from other ethnic groups exactly the same as them. Only one child was anxious that problems might appear. They are more than ready to spend their free time with them, go to the cinema together or on excursions. Most of the children learn about the problems of children from other ethnic groups from their parents and only one child has talked with his teacher. They are willing to accept a Roma child in their class and say that all of them have already come into contact and communicated with Roma children. But those of them who have already been in a class with a Roma peer confess that they cannot accept the unequal attitude and criteria towards them and their Roma classmates.

#### The group of the Roma children

The Roma children are more or less indifferent on the matter of education and school attendance because school life is not associated only with positive emotions. On the first place their difficulties are connected with the school subjects, then come the problems with the discipline – because they are either really responsible for all the disruptive acts in class or are unfairly accused of such by their teachers. This discriminative attitude of the teachers towards the Roma pupils permanently impairs these children's sense of justice and their judgement of what is right or wrong. As a whole school life is not a positive experience or a determinative factor in their whole life. They have difficulties at school because of the language barrier and their poor command of Bulgarian and they consider their parents, friends and relatives as the main source of useful knowledge and skills. Their parents' uttermost ambition is the graduation of the 8<sup>th</sup> grade and those who do graduate secondary education are rare cases of academic achievement. Education is not a part of Roma people's value system. Their communication with Bulgarian schoolchildren is superficial and not of stable or durable character. Another negative feature of Roma children's everyday life is the lack of trust towards them and the preconception that they are always ready to steal something whenever they have the opportunity.

As it is summarized in the country assessment and the Roma education fund's strategic directions called 'Advancing Education of Roma in Bulgaria' (Advancing Education of Roma in Bulgaria', <u>http://www.erisee.org/downloads/2013/2/b/Advancing%20Roma%20Education%20ENG%202007.pdf</u>), the major obstacles for improved Roma education in Bulgaria include the following:

**Particular enrollment obstacles:** Access to noncompulsory pre-school education is generally unavailable for Roma children, due to the required attendance fee, which many Roma families cannot afford. Furthermore, there are limited spaces in pre-school education institutions, and they have a policy that gives priority to children of working parents. As a result, many of Roma children are excluded. Even access to the one year of compulsory pre-school education (kindergarten) is often denied to Roma children, mainly because of classroom space limitations. The poor quality of education received by Roma students in the lower levels of the education system creates obstacles for their progression to higher levels. There is a general lack of support, including financial support, for students preparing for entrance exams to high schools and universities.



**Segregated education:** The system of "Gypsy schools," where the students are predominantly or exclusively Roma children, creates a poor educational environment and, consequently, low-quality education. Many Roma children are simply not allowed to enroll in Bulgarian mainstream schools, and they are instead channeled into overcrowded Roma schools. In cases where students do get transferred from a segregated "Gypsy school" to a mainstream school, further problems often arise. Desegregation can be accompanied by protests of non-Roma parents and exacerbated social divisions if: the process does not involve parents and the community, Roma children are not offered an adequate choice of schools, there is not a broad distribution of Roma children in different schools and classes, there is no preliminary support for families in need, extra lessons for Roma children are not provided, there is no information campaign, etc. Thus, transferring Roma children to mainstream schools requires an overall national desegregation policy and action programme. Education in special schools: Although the new policy of the Ministry of Education and Science supports the downsizing of special schools, the process is slow, and the majority of the children in special schools are still of Roma origin. Many of these children are enrolled by their parents – not because of any mental handicap but because of benefits like free meals and clothing.

**Adult education:** Adult education and vocational training is currently only available on a project basis, and the experience with the majority of these programmes has not been positive. These projects did not manage to improve the education level or employability of the Roma participants, because they did not reflect the real needs of the labour market or the education system.

# THE PROCESS OF ACCULTURATON AND ITS PEDAGOGICAL IMPLICATIONS

The first step towards academic achievements is the acquisistion of the mother tongue. For many of the ethnic groups this is not the language of the host society. According to Schumann (Schumann, 1978, 1990) the degree of the successful second language acquisition is closely correlated with that cluster of social and psychological factors that he defines as the acculturation model. Schumann claims that leaners of a second language can be placed along a continuum ranging from social-psychological distance to social-psychological proximity with the speakers of the target language. The degree of language acquisition, then, would correlate with the degree of the learner's proximity to the target group. Schumann (1986, p. 385) proposes that "acculturation as a remote cause brings the learner into contact with TL-speakers and verbal interaction with those speakers as a proximate cause brings about the negotiation of appropriate input which then operates as the immediate cause of language acquisition". According to Schumann the effective acculturation and second language acquisition depend on the social and psychological distance between the learner and the target language culture. Basic is the social distance and the psychological is decisive only when the social factors have neither positive nor negative implications upon acculturation. The social variables determine the educational environment as "good" or "bad". When the learning situation is good:

- the native speakers and the learners of the target language determine themselves as socially politically, culturally, technically or economically equal;
- the representatives of the two language groups want the learners of the target language to be assimilated into the culture of the target language ;
- the representatives of the two language groups expect that the learners of the target language will share social institutions such as schools, churches, workplaces, clubs, and others with the target language group;
- the learners of the target language must be not a very large group and they must be coherent;
- the culture of the target language learners must be comparable with the culture of the native speakers;
- both groups must have a positive attitude towards one another;
- the longer second language learners plan to remain in the L2 environment, the more likely it is that they will feel the necessity of learning the target language.

The absence of these prerequisites is indicative of a poor educational situation and will certainly lengthen the social distance.



The psychological factors include:

- language shock learner's confusion when using L2;
- cultural shock learners' disorientation as a result of culture differences.

Brown (1980) postulates the process of acculturation in the target language natural environment consists of four stages:

- Euphoria- the learners' initial excitement over the newness of the surroundings;
- Cultural shock- emerges as individuals feel the intrusion of more and more cultural differences into their own images of self and security and start feeling alienated and hostile;
- Cultural stress according to Brown this stage is the most crucial because it is connected with gradual recovery: some of the problems of acculturation are solved, while others continue for some time. The learner starts to understand the differences in thinking. The learner's problems center around the question of identity, she/he does not perceive himself/herself as belonging to any culture.
- **Full recovery-** assimilation, adaptation, or acceptance of the new culture. The new identity is developed.

According to Schumann if the social and/or psychological distance is great then acculturation is hindered and the learner does not progress beyond the early stages of language acquisition. As a result his/her target language will stay pidginized. Pidginization is characterized by simplifications and reductions occurring in the learner's interlanguage which lead to fossilization when the learner's interlanguage system does not progress in the direction of the target language (Gitsaki, 1998).

# **Pedagogical Implications**

Menard-Warwick (2005) states that educators need to understand the social and personal forces that create dilemmas for students and address them directly by making them topics for discussion in class, allowing the students to use the target language to derive a collective solution based on the resources that each student brings to the class. Skilton-Sylvester (2002) encouraged teachers to learn as much as they can about their students' identities outside the classroom, and draw on those identities in classroom activities to encourage the students to continue their investment in learning.

It can be inferred that the acculturation model takes into account the most important factors which may be involved in SLA since it describes the learners' social and psychological factors. But, based on our experience in teaching English, the problem is the application of these factors in the classroom. First, the teacher may lack knowledge how to teach culture or may not have adequate knowledge to teach. Second, informing these factors to the students demand more naturalistic context than in a classroom environment.

# **RESULTS OF THE TEACHING PROCESS**

In order to prove the second hypothesis we have to take into consideration the results from the final scores in English of the fourth-graders in a Bulgarian, an Armenian and a Roma school. The Bulgarian school with predominantly Bulgarian children is called "Aleko Konstantinov". The school with predominantly Roma pupils is called "Naiden Gerov" and the Armenian school is called "Viktoria and Krikor Tiutiundjian". The pupils in the Armenian school are mainly of Armenian origin as well as the number of the children in the Roma school are predominantly of Roma origin so here are presented the results of the whole classes. All the children in the three schools are taught by the Longman textbook "Blue skies English" which makes the comparison even more reliable. The total number of the schoolchildren whose scores were researched is 721 - of them 230 Bulgarian pupils from "Aleko Konstantinov" school, 180 Armenian pupils from "Viktoria and Krikor Tiutiundjian" school and 311 Roma children from "Naiden Gerov" school.

We decided to follow the results in English in three successive years so as to be sure that the results are a tendency and not a coincidence.



The fourth-graders from the Bulgarian school "Aleko Konstantinov" have the following average results in English in the school years:

- 2010/2011 Excellent 5,56
- 2011/2012 Very good 5,25
- 2012/2013 Excellent 5,61

The same results presented with a bar chart look like that:



Graph 1: The average scores in English of Bulgarian fourth-graders in "Aleko Konstantinov" school

The Armenian children in the fourth grade from the Armenian school "Viktoria and Krikor Tiutiundjian" have the following average results in English in the school years:

- 2010/2011 Excellent 5,60
- 2011/2012 Very good 5,40
- 2012/2013 Very good 5,10

Here are the same results presented in a bar chart:



Graph 2: The average scores in English of Armenian fourth-graders in "Viktora and Krikor Tiutiundjian" school



And finally the results of the Roma children from "Naiden Gerov" school by years:

- 2010/2011 Good 4,01
- 2011/2012 Good 4,20
- 2012/2013 Good 3,89



Graph 3: The average scores in English of Roma fourth-graders in "Naiden Gerov" school

The students' results in the Roma school are lower than those in the Armenian and Bulgarian schools, but they are by no means poor. These are very good achievements for primary students who have not learned basic grammatical and lexical concepts in their mother tongue yet.

As expected, the results of the pupils in the Bulgarian school and the results of the Armenian pupils in the Armenian school are comparable and range from very good to excellent. This fact can be explained with Armenian children's absence of social or psychological distance that helps them accept and adapt to the Bulgarian culture and does not hinder their acculturation.



Graph 4: Comparative analysis of the average scores in English of fourth-graders in the three schools



# CONCLUSIONS

This research focused on the level of inclusion of fourth-graders from different ethnic groups in the English language classroom.

On one hand, we were interested in the attitudes towards the inclusion of different minority groups in the Bulgarian school and next our attention directed towards the theory of acculturation and its pedagogical implications. Thus we explored the results from a public survey conducted by Alpha Research Ltd on the Public Attitudes and Reactions towards Inclusive Education in Bulgaria conducted in 2006. Our attention was focused on the attitudes of the parents, teachers and directors and the children towards the inclusion of children from the minority groups in mainstream schools.

On the other hand, in order to explain the differences in the attitude towards different ethnic groups and their different level of academic achievements and ambitions for further advancing we took the acculturation model for second language acquisition to account for these differences. We explored the final scores in English of Bulgarian, Armenian and Roma fourth-graders from three different schools. The results can be briefly summarized in the following way:

- 1. The attitude of Bulgarian parents, teachers and schoolchildren towards the inclusion of Roma pupils is not favourable at all in comparison with their attitude towards the inclusion of Armenian, Jewish and other ethnic groups in mainstream schools.
- 2. Roma access to noncompulsory pre-school is generally unavailable, due to the required attendance fee, and the limited spaces in pre-school education institutions. This lack of pre-school education and its poor quality create obstacles for their progression to higher levels.
- 3. The lack of an overall national desegregation policy and action programme does not allow Roma children to be enrolled in the mainstream Bulgarian schools but mainly into the overcrowded Roma schools where the educational environment is poor, and consequently the education is of low-quality. The same does not apply for the representatives of other ethnic groups.
- 4. According to Schumann's acculturation model for second language acquisition the learning situation is poor only for the Roma children because neither they nor the Bulgarian society determine these two groups as socially, politically, culturally, technically or economically equal. The representatives of the two language groups are not ready for the process of assimilation into the culture of the Bulgarian language because the culture of the Roma people is not comparable with the culture of the Bulgarian society.
- 5. Despite the positive trends, seen in the result in English of the fourth-graders the education outcome of Roma still remains well below that of the majority.

# **POLICY RECOMMENDATIONS**

We believe our research findings provide valuable and up-to-date information on the state of inclusion of different ethnic groups in the English language classroom in the primary schools in our country and the reasons for that. It will be beneficial for government officials, the Ministry of Education and Science, and other decision makers for reviewing policies and institutional structures and developing new strategies and initiatives that determine how to:

- support Roma parents and community leaders to recognise and engage in the educational development of their children;
- increasing the enrollment of Roma children in pre-school education and kindergartens;
- developing sustainable models for desegregation of all Roma schools;
- raise awareness about the need for desegregation and other Roma education support initiatives through media campaigns and other communication activities;
- provide additional support for Roma children, including mentoring, tutorials, after-school activities, and materials linked to specific grades and needs;
- reducing the number of dropouts in grades five through eight and increasing transition to high school and tertiary education;



• application of sustainable approaches to second-chance and adult education.

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# AN INVESTIGATION INTO FOREIGN LANGUAGE LEARNING ANXIETY, STRESS AND PERSONALITY IN HIGHER EDUCATION

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### ABSTRACT

The purpose of the present study is to investigate the correlations between foreign language anxiety, coping with stress and personality characteristics in higher education learners. The study was carried out with 399 learners (164 females and 235 males). The learners' age ranged between 17 and 32, and the mean age was 19.30. The data collection instruments used in the study were Personality Test Based on Adjectives, Scale for Coping with Stress and the Anxiety Scale for Foreign Language Learning. Pearson's conduct moment correlations and independent samples t test were used to analyze the data. Statistical analyses revealed that the mean anxiety scores of the males and females did not differ significantly. Moreover, there was not a significant correlation between coping with stress and personality characteristics.

Key Words: Personality, coping with stress, foreign language learning anxiety.

#### INTRODUCTION

Personality is one of the most extensively studied concepts in psychology. Every trait that defines a person helps us get acquainted with and understand that particular person. In this respect, personality refers to a person's all interests, attitudes, skills, speaking style, outer appearance and his/her adaptation into the environment (Burger, 1993). There are quite a few theories about personality. These are psychoanalytic approach, biological approach, behavioural/social learning approach, cognitive approach, humanistic approach and distinctive feature approach (Burger, 1993). One of these theories is the five-factor personality theory. A number of personality psychologists have adopted the five-factor personality model since 1980s and obtained significant findings that lend support to this model (lnanç and Yerlikaya, 2010). The five-factor personality model, which is a hierarchical organization of personality factors, is composed of five basic dimensions. These five factors are extrovertedness, neuroticism, agreeableness, conscientiousness and openness (McCrae & John, 1992; Costa ve McCrae, 1995), and these factors have been investigated in quite a few studies (e.g., Bacanlı, Ilhan & Aslan, 2009).

The subscale of neuroticism is described by the characteristics of being, anxious, distressed, uneasy and insecure (Manavipour, Mohammadi & Shahabi, 2013). Extroverted individuals are often known to be social, lively, cheerful, enthusiastic, optimistic and sociable people. Among the characteristics that form openness are a powerful imagination, desire to welcome new ideas, multi-faceted thinking and intellectual curiosity.



Agreeableness can be defined as being forgiving, helpful, humble, meek, merciful, and accommodating (McCrae & John, 1992; Costa ve McCrae, 1995). The individuals with a high agreeableness score are sociable people who love others and tend to give what they have to others (McCrae & John, 1992; Costa & McCrae, 1995). Conscientiousness encompasses the characteristics of being responsible, ambitious, cautious and disciplined (Bacanlı, İlhan & Aslan, 2009).

Individuals' encountering serious or insignificant difficulty might lead to the initiation of the coping process (Türküm, 2001). In this process, the individual tries to assess his/her situation, puts into practice his/her existent skills activated by personality features and takes action (Türküm, 2001). Stress emerges as a result of the interaction between the person and the environment. What is significant in this interaction is that the individual considers events and persons as a source of stress (Lazarus & Folkman, 1984). If the individual does not see these events and people involved in them as a source of stress, he/she will not experience stress (Lazarus & Folkman, 1984; Arslan, 2010). Two methods for coping with stress are as follows: Problem-focused coping refers to a situation in which direct coping strategies that alter the relationship between the individual and environment are used (Lazarus, 1993). Problem-focused coping, one of the methods of coping with stress, is a more active strategy, and it encompasses a logical analysis that directs itself to knowledge and planned action that entail accurate expectations about the properties of emotional stimulants (Türküm, 1999). If the change occurs in the form of the individual's interpreting the environment rather than in the form of direct behaviours, this type of coping is referred to as emotion-focused coping (Lazarus, 1993). The second method; that is, emotion-focused coping is a passive strategy, and it encompasses getting rid of emotions that emerge as a result of an undesirable event (Türküm, 1999). Problem-focused coping results in change in external conditions, while the use of emotion-centred methods leads to an internal change in the individual (Lazarus, 1993). In coping patterns of individuals, both coping strategies appear together and various strategies are used (Türküm, 1999).

Certain properties of the individual such as personality, thinking style, psycho-social characteristics and his/her capabilities play a significant role in how efficiently and properly he/she can cope with stress (Aysan, 1988; Aysan, 1993). Successful coping strategies that the individual uses help eliminate stress, while unsuccessful ones lead to various psychological and physiological responses that are triggered by stress (Folkman, 1984). It was found that individuals who lack effective problem-solving skills were more anxious, less self-confident and more stress in comparison with those with such skills (Heppner and Anderson, 1985; Heppner and Baker, 1997).

Researchers and educators have identified various types of anxiety (Brown, 2000). However, not all types of anxiety are harmful for learners as there is a distinction between debilitative and facilitative anxiety, the latter referring to a little anxiety that fuels to learn better. Another distinction is between trait and state anxiety. Trait anxiety is a part of a person's personality and is often difficult to get rid of. Therefore, researchers mostly focus on state or situational anxiety and debilitative anxiety to help learners alleviate negative impacts of anxiety. A number of studies have found that such variables as anxiety, attitude and motivation have a deep impact on foreign language learning (Gardner, 1982; Gardler & MacIntyre, 1992, 1993; Skehan, 1989, 1991; Spolsky, 1989). Finding solutions for the problems that foreign language learners encounter today is relatively significant. Research findings concerning this issue and views of the stakeholders of foreign language education suggest that we should accept the existence of anxious learners and seek solutions for this problem (Ergür, 2004).

Anxiety is often defined as the state of uneasiness or fear in a threatening situation (Scovel, 1991). Foreign language anxiety remains outside the scope of this general definition. Anxiety is defined either as a situation or a characteristic in educational research. A person who is always anxious might feel anxiety in a variety of situations. On the other hand, anxiety based on a situation is a temporary phenomenon that emerges due to a particular reason (Woodrow, 2006 However, some researchers mentioned a third type of anxiety; that is, anxiety for a particular situation. Such type of anxiety is the type of anxiety that emerges in particular situations (Spielberger, Anton and Bedell, 1976). Studies show that foreign language anxiety falls into this category



(MacIntyre and Gardner 1991b; Horwitz 2001). It causes uneasiness and negative feelings, particularly in second language acquisition that is centred on speaking, listening and learning (Gardner & MacIntyre, 1994). Horwitz et al., (1986) claimed that foreign language anxiety has three components. The first of these is communication anxiety; the second one is negative social criticism, and the third one is test or academic anxiety. Gardner and MacIntyre (1989) found an anxiety type supporting Horwitz's perspective, but test anxiety was not significant in his study.

A number of studies have found that anxiety leads to negative consequences in foreign language learning. For instance, MacIntyre and Gardner (1989) observed that anxious students learned a list of words more slowly than their peers with less anxiety, and that they had difficulty in remembering the words they had learned before. In two other studies, it was found that learners who experienced anxiety studied harder than learners without it, but they were less successful than the latter (Horwitz et al., 1986; Price, 1991). In a study on secondary school students in English classes, Öner and Gedikoğlu (2007) found that anxious learners were less successful than their less anxious counterparts. Scovel (1978) stresses that positive and negative anxiety should not be confused. Positive anxiety makes students willing to learn and encourages them to participate in learning activities actively. On the other hand, negative anxiety, on the other hand, makes learners worry about or doubt their own capabilities, discouraging target language use (Ergür, 2004, p. 49). Similarly, Brown (2000) notes that anxiety stifles learning if it is too much or too little. A little anxiety might work and it is commonly referred to as facilitative anxiety. On the other hand, too much anxiety proves harmful to learning and is referred to as debilitative anxiety. Andrade and Williams (2009) found that approximately 25% of the students stated that anxiety hindered the learning process.

There have been contradictory findings regarding foreign language learning anxiety in males and females. Some researchers found that higher anxiety scores in favour of females (Donovan & MacIntyre, 2005; Mesri, 2012; Demirdaş & Bozdoğan, 2013) or males (Kitano, 2001), while some others found no correlation between foreign language anxiety and gender (Cheng, 2002; Dewaele, 2002; Doğan, 2008; Capan, & Simsek, 2012). Furthermore, in a recent study, Park & French (2013) studied on 948 university students in Korea, and they found that female students had higher levels of anxiety, but they had higher grades in comparison with males and low-anxiety students.

The purpose of the present study is to examine foreign language learning anxiety with respect to personality and coping with stress. Furthermore, it also investigates whether foreign language learning anxiety significantly differs across genders. The following section gives information about method, participants and data collection tools.

# **METHOD**

# **Participants**

The survey model is used in the present study. The study sample was selected from several faculties at Selçuk University in Konya, Turkey through random group sampling method. The participants to the study were 399 volunteers (164 females and 235 males). The mean age of the participants was 19.30 years (with an age range of 17-32 years) with a standard deviation of 2.26 years.

*Coping with Stress Scale (CWSS):* Coping with Stress Scale, *CWSS for short,* was developed for higher education students by Türküm (2002). This scale is composed of 23 Likert items (Strongly agree absolutely suitable=5, strongly disagree never suitable=1) and is used to test learners' styles for coping with stress. The scale consists of 3 subscales. These are seeking social support, problem-focused coping and avoidance. The internal reliability coefficients for these subscales of the CWSS were calculated to be .85, .80 and .65, respectively. The item-total correlations of the subscales were found to be .61, .48 and .34, whereas calculated correlation coefficients were found to be .85, in the test-retest method (Türküm, 2002).



# **Personality Test Based on Adjectives**

The Personality Test Based on Adjectives, the PTBA for short, is a scale developed by Bacanlı, İlhan and Aslan (2009). It is composed of 40 pairs of adjectives that are appropriate for the personality conception put forward by the Five-factor Personality Theory. The scale, which is composed of five subscales (Emotional instability/neuroticism, extrovertedness, openness, agreeableness and conscientiousness), included sevenpoint items. The internal reliability coefficient of the PTBA was calculated using the data collected from 285 participants, and the scale was administered to 90 participants in two-week intervals. The internal reliability coefficients of the subscales of the test ranged between .73 and .89. The highest internal reliability coefficient was calculated to be .89 for extrovertedness, while the lowest one was .73 for neuroticism. The range of itemtotal correlations for the subscale of emotional instability (.26-.55) accounts for why the internal reliability coefficient of this subscale is lower in comparison with others. It is seen that the weakest correlation belongs to agreeableness (r=.86\*\*, p<.01), while the highest one belongs to openness (r=.68\*\*, p<.01) As a result, the internal reliability coefficients of personality subscales are well over .70 (Nunnally and Bernstein, 1994), and this indicates that the scale is reliable (Bacanlı, İlhan and Aslan, 2009). Based on the results of the factor analyses carried out to test the validity of the PTBA, 40 adjective pairs were determined, and it was found that the five subscales explained the 52.6% of the variance in the PTBA. As a result of the calculations for external validity, it was found that personality factors significantly correlated with the scales used. This finding indicates that this data collection tool is valid (Bacanlı, İlhan and Aslan, 2009).

### Foreign Language Learning Scale

The Foreign Language Learning Scale, developed by Doğan (2008), is composed of 27 items. The scale is composed of five-point Likert items with options ranging from "Completely Agree" to "Completely Disagree". The reliability of the scale was calculated after 80 students responded to it. The internal reliability of the scale was found to be .92.

# RESULT

The data were analyzed using SPSS 16.0. Pearson's conduct moment correlations and independent samples t test were used to analyze the data.

	Ν	Mean	Standard Deviation
Neuroticism	399	30.31	8.33
Extrovertedness	399	41.53	9.71
Openness	399	36.88	9.15
Agreeableness	399	40.73	9.85
Conscientiousness	399	31.05	8.36
Avoidance	399	28.93	4.35
Problem-focused	399	29.29	4.68
Seeking social support	399	21.74	3.05
Foreign Language Learning Anxiety	399	73.75	16.65

Table 1: Descriptive Statistics

Table 2: Comparison of Foreign Language Learning Anxiety Scores of the Students Across Genders

Locus of Control	Ν	Mean	Std. Deviation	t	р
Female	164	73.72	15.92	020	07
Male	235	73.77	17.18	029	57



The participants to the study were 164 females and 235 males. The mean foreign language learning anxiety score of female learners were found to be 73,72, while the male learners' score was calculated to be 73.77. There was not a significant difference between the mean scores of the gender groups (t=-.029, p=.97). This finding indicates that males and females are similar in terms of foreign language anxiety. This finding concords well with those of some other studies mentioned earlier (Cheng, 2002; Dewaele, 2002; Doğan, 2008; Capan, & Simsek, 2012).

Table 3:	The	Correlation	Between	the	<b>Five-Factor</b>	Personality	Characteristics	and	Foreign	Language	Learning
Anxiety											

	Neuroticism	Extrovertedness	Openness	Agreeableness	Conscientiousness
Foreign Language Learning Anxiety	00	05	06	04	00

An examination of foreign language anxiety and personality characteristics reveals that there is not a statistically significant correlation between foreign language learning anxiety and neuroticism, extrovertedness, openness, agreeableness and conscientiousness.

Table 4: The Correlation Between Coping with Stress and Foreign Language Learning Anxiety			
	Avoidance	Problem focused	Seeking social support
Foreign Language Learning Anxiety	08	09	00

An examination of the correlation between foreign language anxiety and coping with stress reveals that there was not a significant correlation between avoidance, being problem-focused and seeking social support.

# CONCLUSION

In the present study, it was found that foreign language learning anxiety scores did not differ significantly across genders. This finding indicates that female and male learners are similar in terms of foreign language anxiety. However, as noted earlier, there are opposing findings in the literature about this issue. Interfering conditions and certain variables might account for these contradictory findings. This finding suggests that foreign language learners regardless of gender might experience anxiety to a certain extent. Too much anxiety stifles learning and should be alleviated using various instructional methods and techniques to help anxious learners learn better.

Another finding of the present study is that there was not a significant correlation between learners' personality characteristics and foreign language learning anxiety. Similarly, there was not a significant correlation between coping with stress and foreign language anxiety. The success of coping styles used by the individual helps alleviate stress, while the failure of these styles results in various psychological and physiological responses (Folkman, 1984).

Spielberger (1972) maintains that how the source of stress is perceived by the individual affects how deeply it is felt by him/her. Anxiety increases in line with how threatening or harmful the situation is for the individual. It emerges after the individual consciously feels the disharmony between his/her identity and his/her experiences, and it emerges as a response to the struggles that intend to change the identity (Aydın & Dilmac,



2004). Foreign language anxiety causes uneasiness and negative feelings, particularly in second language acquisition that is centred on speaking, listening and learning (Gardner & MacIntyre, 1994). However, it is often observed that speaking anxiety is more severe in foreign language learners.

Horwitz et al., (1986) claimed that foreign language anxiety has three components. The first of these is communication anxiety; the second one is negative social criticism, and the third one is test or academic anxiety. Positive or negative correlations between personality features and anxiety and between coping with stress and anxiety are expected. This expectation concord well with the findings in the literature discussed earlier. However, there was not a significant correlation between these variables in the present study. This finding might be due to the characteristics of the study sample or the properties of the data collection tools used in the study. Prospective studies with different sample sizes and using other scales might be effective in understanding the relationship between personality traits. Furthermore, since there are opposing findings regarding the role of gender in foreign language anxiety, we need to carry out more detailed studies on this issue and perhaps meta-analyses that synthesizes all studies regarding this issue to give a more general outlook.

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# MATHEMATICAL KNOWLEDGE AND THE COGNITIVE AND METACOGNITIVE PROCESSES EMERGED IN MODEL-ELICITING ACTIVITIES

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# ABSTRACT

The study investigates the relationship between mathematical knowledge and cognitive and metacognitive processes exhibited by 83 students from Grades 6, 7, and 8 who engaged in a set of model-eliciting activities in groups of 4-5 students each. The data sources include audiotapes of their group work, worksheets, and notes. The findings indicate that the groups in each grade use different mathematical concepts. While they employed cognitive and metacognitive processes, these differed in number and distribution. The highest percent of cognitive processes and lowest percent of metacognitive processes occurred amongst the Grade 6 students. The lowest percent of cognitive processes and highest percent of metacognitive processes occurred amongst the Grade 8 students. The Grade 6 students' metacognitive processes indicate that they exhibited greater awareness than regulation and evaluation skills. Conversely, the Grade 7 and 8 students employed more regulation and evaluation processes.

Key Words: Cognitive processes, metacognitive processes, model-eliciting activities.

# INTRODUCTION

Cognitive and metacognitive thinking processes—such as translation, organizing, prediction, and evaluation are essential components of today's dynamic and technological age. Modeling activities give students an opportunity to put these processes into practice (Lesh & Zawojewski, 2007). Although broad studies have examined cognitive and metacognitive thinking processes and model-eliciting activities, little is still known about the interaction between mathematical knowledge and the nature of the cognitive and metacognitive thinking processes employed in model-eliciting activities. The present study seeks to explore this area by comparing how students from different grades and with different mathematical knowledge dealt with a specific set of model-eliciting activities.

# THEORETICAL BACKGROUND

#### **Cognitive and metacognitive processes**

Cognition is a mental process or representation that manifests itself in such things as problem solving, learning memory, and reasoning (Dunlosky & Metcalfe, 2009). The first to define metacognition was Flavell—who identified as referring to "one's knowledge concerning one's own cognitive processes and products or anything



related to them" (1976: 232). In a later work, he simplified this definition to "thinking about thinking" (Flavell, 1979). According to Brown (1987), metacognition includes awareness of one's own knowledge. Jacobse and Paris (1987) identify three metacognitive thinking processes—monitoring, planning, and evaluation. Monitoring includes sequential self-testing and awareness of one's comprehension and task performance. Planning involves prediction, selection of appropriate strategies, and their implementation in an optimal sequence to ensure the best allocation of resources and time. Evaluation refers to the ability to assess the efficiency of outcomes. Similar categorization suggested by Wilson and Clark (2004) they suggested three metacognitive functions- awareness, evaluation and regulation; metacognitive awareness that relates to individuals' awareness of their problem solving process, their content-specific knowledge, knowledge about their problem solving strategies. The metacognitive evaluation relates to judgments made regarding individuals thinking process, capacities and limitations as these are employed in a particular situation or as self-attributes. The metacognitive regulation for the using of particular strategies and decision-making skills such as planning and setting goals.

Distinguishing between the cognitive and metacognitive processes involved in problem-solving, Garofalo and Lester (1985) argue that cognition relates to doing and metacognition to choosing and planning what to do and monitoring what is being done. Kluwe (1987) distinguishes between cognitive skills—remembering things learned earlier that might help with the present task or problem—and metacognition—monitoring and regulating the process of problem-solving. Lester, Garofalo, and Kroll (1989) maintain that cognitive processes focus on doing, reading, drawing, and calculating while metacognitive processes relate to planning, selecting, predicting, and monitoring performance. Artz and Armour-Thomas (1992) identify four cognitive processes—reading, exploring, implementing, and verifying—and six metacognitive processes—understanding, analyzing, exploring, planning, implementing, and verifying.

Many others, however, regard the distinction between cognitive and metacognitive processes as problematic (cf. Lesh & Zawojewski, 2007; Magiera & Zawojewski, 2011). Such scholars maintain that during problemsolving interactions cognitive and metacognitive processes are parallel and interactive rather than sequential. Cognition is thus inherent in metacognitive activity, while metacognition may be present in many cognitive activities.

Cognitive and metacognitive processes are also measured via different methods, Schoenfeld (1985) suggests dividing problem-solving protocols into segments of consistent behavior he calls episodes, which can then be classified according to the type of thinking they use. Many studies promote the "think-aloud" strategy (cf. Jacobse & Harskamp, 2012). Lesh, Lester, and Hjalmarson (2003) suggest a models and modeling perspective (MMP) according to which thinking becomes metacognitive when a person shifts from "thinking with" to "thinking about"—i.e., monitoring, controlling, and regulating. On this understanding, the two forms constantly interact with and influence one another.

Model-eliciting activities (MEAs): The modeling approach has become increasingly popular in mathematics education in recent decades (NCTM, 2000). A MEA is designed to a reflect real-life situation, containing incomplete, ambiguous, or undefined information regarding a problem that requires solving (English & Fox, 2005). Students must interpret and make sense of the situation in a meaningful way, the challenge encouraging them to elicit conceptual tools which function as mathematical models. This is not a linear process, the givens being tested and iteratively revised (Lesh & Harel, 2003) through multiple cycles of translation, description, data prediction, and deliverables. This is known as "mathematizing the situation" (Lesh & Doerr, 2003). MEAs call for small groups in which social interaction facilitates the development of metacognitive processes (Zawojewski & Lesh, 2003). According to Lesh, Hoover, Hole, Kelly and Post (2000), productive MEAs are based principles: model construction, reality, self-assessment, construct on six documentation, construct/shareability/reusability, and effective prototype.


# **Research goal and questions**

The present study seeks to examine the nature of the metacognitive processes used by students and compare the cognitive and metacognitive processes employed by elementary and secondary school students while working through an MEA:

- 1. How do elementary and secondary school students compare with respect to their use of cognitive and metacognitive processes?
- 2. What is the nature of the metacognitive processes employed by small groups engaged upon a specific MEA?

### METHOD

The study is based on qualitative research employed to reveal which cognitive and metacognitive processes the students used while engaged upon a specific MEA.

### **Participants**

The study was conducted in three heterogeneous classes in Grades 6, 7, and 8 in schools in an Arab village in the north of Israel. Grade 6 was represented by 26 students (11-12 year-olds), Grade 7 by 32 (12-13 year-olds), and Grade 8 by 25 students (13-14 year-olds). The students in the three classes worked in heterogeneous groups of 4-5 students each.

### Procedure

Each group was given two MEAs—the "Garage" followed by the "Snow White and the Seven Dwarves". No time limits were set. The average time spent on the two MEA was approximately three lessons (each lesson = 45 minutes).

### The MEAs

The two MEAs were designed on the basis of the six principles outlined by Lesh et al. (2000). The "Garage" activity: the owner of a toy store has some customers who wish to purchase individual parts of the set, which consists of five items. Despite all being similar in composition, the sets are priced differently. The price of the individual parts must equal the price of the whole set. As employees, the students are assigned with the decomposition and pricing task. The task sequence contains:

- Pricing the individual items when the set sells at \$50.
- Pricing the individual items when the set sells \$60.
- Comparing the price of the same item in steps 1 and 2.

In the "Snow White and the Seven Dwarves" set MEA, a toy store is stuck with a lot of unsold "Snow White and the Seven Dwarves" sets. This being sold in various materials—canvas, plastic, wood, carton, etc.—the prices differ. Each set consists of twenty items: a house, a Snow White, seven dwarves, and other items. Looking for a way to sell the sets, the store owner asks his workers for suggestions, adopting that of separating the sets and selling each item separately. As store employees, they students are assigned the decomposition and pricing task. The task sequences resemble those of the "Garage" MEA (\$60, \$80, and \$90).

### **Data collection**

The data sources include audio transcripts of the groups' discussions, two groups in each class being selected randomly and taped for the full time they worked on the problems. They also include also the groups' worksheets and notes.

### Data analysis

We used open coding analysis of the conversational statements, a method that allows new categories to emerge from the groups protocols (Corbin & Strauss, 2008). The coding scheme is adapted from Kim, Park, Moore, and Varma (2013) study, which distinguishes between metacognitive activities (thinking about) and cognitive activities (thinking with)—cognitive processes not involving any evaluation or regulation and



metacognitive processes being consisting primarily of evaluation and regulation. Following the categorization process, we compared the cognitive and metacognitive processes exhibited by the students in the three Grades. The categorization of the metacognitive processes was according to Wilson and Clarke (2004) method that was described in the theoretical background section.

### **FINDINGS**

We will present the types of cognitive and metacognitive processes employed by the groups, focusing upon the essential modeling phases through their engagement in the "Garage" MEA. Subsequently we present a brief summary of their engagement in the "Snow white and the dwarves" MEA.

### Grade 6 engagement in the MEAs

The two Grade 6 groups succeeded in building mathematical models for the two activities. All the groups employed fraction knowledge. As indicated by the students' discussion during the activity, the modeling process and construction of the mathematical models included both cognitive and metacognitive processes— the latter being divided into three types. We present the essential modeling phases, focusing on the cognitive and metacognitive processes.

### Grade 6: The "Garage" MEA

In the first phase and after reading the first activity, the students attempted to translate it into a real context. Their first step was to name the five items. Although the items differed, the garage remained constant in all the groups' records. Doing so, the students were involved with cognitive as well as meta-cognitive processes. The cognitive processes that the students were involved with included mentioning the real life conditions of the activity (selling each item of the set separately); mentioning the real life constituents of the mathematical situation (the components of the set); and replacing a constituent of the mathematical situation with another. The meta-cognitive processes included regulating towards real life/mathematical actions regarding the separation of the set into five items; being aware of the analysis of the mathematical situation (thinking about items more relevant for the set).

In the second phase, the students priced the items in the "Garage" set when it was sold at \$50. In the beginning, they intuitively priced the items equally. After validating their solution by thinking of real examples, however, they adopted an unequal division, ranking the items according to size and importance and setting an appropriate a price for each item. The students in this phase were also involved with cognitive as well as meta-cognitive processes. The cognitive processes included: mathematical actions (computing the cost of each set's item - dividing \$50 by 5 to get \$10); giving values relevant for the mathematical situation (giving the price of the garage and the car); making conclusions regarding the mathematical situation (the price of the screwdriver and the wheel as a result of the price of the garage and car). The meta-cognitive processes included evaluating the mathematical action relevant for the mathematical situation of \$50 by 5); regulating for a mathematical action relevant for the pricing process; evaluating a mathematical action (not accepting that the price of the screwdriver); regulating for a mathematical action (the price of the screwdriver); regulating for a mathematical action (the price of the screwdriver); regulating for a mathematical action (the price of the screwdriver); regulating for a mathematical action (the price of the screwdriver); regulating for a mathematical action (the price of the screwdriver); regulating for a mathematical action (the garage should be the most expensive); awareness to the pricing process.

In the third phase, the students discussed the implications of the difference in sale price (\$50 vs. \$60). In order to compare the price of the same item in the two cases, they examined each item price in the two sets and the price relative to the other items. This demanding that they evaluate the fairness of the pricing process, they realized that the prices had to be proportionate not only within the same set but also relatively (with regard to the other sale prices). This led them to conclude that each item in the cheaper set should be cheaper than the same item in the more expensive set. In the third phase, the students performed cognitive as well as meta-cognitive processes. The cognitive processes included comparing between two mathematical situations (the two prices of every item in the two sets), while the meta-cognitive processes included awareness to the comparing process; an evaluation of a mathematical action (not accepting that the wheel's prices in the two sets are equal). Computing the relative price of each item from the overall price of the set enabled the students



to work with fractions and compare the sets, leading to the construction of a fair price model. The students built a mathematical model based on fraction knowledge. The following mathematical model suggested by one of the groups exemplifies a general pricing model:

Garage =  $\frac{1}{2}$  of the price, car =  $\frac{1}{6}$  of the price, screwdriver =  $\frac{1}{12}$  of the price, mechanic =  $\frac{1}{6}$  of the price, wheel = 1 of the price.

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Computing the relative price of each item from the overall price of the set, the students performed primarily the following cognitive process: mathematical actions (building mathematical model representing the relative price of every item from the whole set). They also performed the following meta-cognitive processes: being aware to the fractional part that each item get; evaluating the mathematical situation (evaluating the suggested mathematical model); and regulating for mathematical actions (suggesting how add fractions from different denominators).

# Grade 6: The "Snow White and the Seven Dwarves" MEA

While the solution process the Grade 6 groups employed was similar to the one they applied to the "Garage" MEA, here the students adduced unequal prices for the items right from the beginning. Rather than engaging in the pricing process in all the tasks, in pricing the second set they decided to construct a model that would enable them to price all the sets. This expanded the mathematical model they constructed in the "Garage" MEA. Doing so, they performed cognitive as well as meta-cognitive processes; the cognitive processes they performed were of the type of performing mathematical actions (giving specific prices for the new items, computing the overall price of all the items, giving relative prices for the new items). The meta-cognitive processes the group of students performed were regulating for mathematical actions (requesting the group to choose a large denominator and an appropriate fractional part for each item, specifying which item should have the biggest fraction: the house); being aware of mathematical actions (the price of each item, the ranking of the price items, the relative price of each item) and evaluating the mathematical actions (pricing suggestion, the ranking of items' prices).

### Grade 7 engagement in the MEAs

The two Grade 7 groups succeeded in constructing two mathematical models appropriate to the two MEAs, based on percent-concept knowledge. As the students' discussion reveals, the modeling process and construction of the mathematical models included cognitive and metacognitive processes that fell into three types. We present the essential modeling phases, focusing on the cognitive and metacognitive processes.

### Grade 7: The "Garage" MEA

After reading the "Garage" MEA, the students identified the individual garage items. Doing so, they performed meta-cognitive and cognitive processes. The cognitive process was performing a mathematical action (specifying the garage constituents). While the meta-cognitive actions were: regulating for a mathematical action (imagining a real garage); being aware of the solution (the garage's items); evaluating the suggestion (the garage's items' prices).

In the second phase, the students considered the case when the garage was priced at \$50, immediately pricing each individual item unequally. Doing so, they also performed cognitive and meta-cognitive processes. The cognitive processes were mathematical actions (giving a price for the set items, computing the overall price), while the meta-cognitive processes were: regulating for a mathematical action (suggestion of the ranking of the prices); being aware of the pricing process (the price of each item comparing to other items and to the overall price); evaluating a mathematical action (accepting the pricing action, because it fulfilled the condition "the most important is the most expensive").

Afterwards, the students considered the situation when the set was priced at \$60, and used the model they had arrived at for the \$50 set. Doing so, the students mainly performed meta-cognitive and cognitive processes. The cognitive processes were a mathematical actions (computing the items' price, comparing the items' prices). The meta-cognitive processes were: regulating for a mathematical action (suggesting to add \$2



for each item, to divide the price according to the items' importance or to compare with a previous mathematical model) and evaluating (not accepting the adding strategy, accepting the relative division).

In comparing the price of the items in the two sets, the students understood that they should have the same ratio. Doing so, the cognitive processes that they performed were: performing mathematical action (pricing the two sets; concluding regarding the relative price of the items, for example the garage is 40% of the set). In addition, the meta-cognitive processes that they performed were: being aware of the pricing process (comparing the items' prices, the relative price of each item); regulating for considering a mathematical relation (suggesting that the items' prices should be the same percent in both sets); evaluating mathematical actions (comparing of items' prices, the suggestion of the comparing process).

The comparison between the items' prices in the two sets prompted the students to use their percent knowledge to construct a mathematical model that functioned as a pricing model: garage = 40% of the set, car = 30% of the set, worker = 10% of the set, crane = 10% of the set, wheel = 10% of the set. Doing so, the students used meta-cognitive and cognitive processes. The meta-cognitive processes were regulating (suggesting the use of percentage in giving prices to items); evaluating the suggestion. while the cognitive processes were mathematical actions that resulted from following the regulating, i.e. giving prices to the items as percentages of the set.

### Grade 7: The "Snow White and the Seven Dwarves" MEA

The Grade 7 students first identified the individual items of the "Snow White" set. In place of the pricing process they had originally employed in the "Garage" MEA they adopted the mathematical model they had constructed during this activity. Doing so, they performed meta-cognitive processes and cognitive processes; The cognitive processes were mathematical actions (pricing the items using percent; computing the price of the all items). The meta-cognitive processes were: regulating for a mathematical action (Doing the same as in the previous set), being aware of the pricing process and evaluating the mathematics situation (The Snow White is the most important item).

### Grade 8 engagement in the MEAs

The two Grade 8 groups succeeded in constructing two mathematical models to fit the two activities. They used decimals, ratio and proportion, and percents, building their general models on the basis of the percent concept. As demonstrated in their discussions, the modeling processes and construction of the mathematical models included cognitive and metacognitive processes, divided into three principal types. We shall present the essential modeling phases, focusing on the cognitive and metacognitive processes.

### Grade 8: The "Garage" MEA

After reading the "Garage" MEA, they identified the individual items, performing meta-cognitive processes and cognitive processes. The cognitive processes were mathematical actions (specifying the garage constituents). The meta-cognitive processes include regulating for a mathematical action (imagining a real garage) and evaluating the solution.

In the second modeling phase the students were engaged in pricing the first set, they adopted an unequal division based on the items' importance. Doing so, the students were involved with cognitive as well as meta-cognitive processes. The cognitive processes were giving a price for the set's items. The meta-cognitive processes were: regulating for a mathematical action relevant for the mathematical situation (giving the garage a cost more than the other items of the set). In the pricing of another set, the meta-cognitive processes were: regulating for a mathematical action (suggesting computing the ratio of each item from the overall price in the first set and then to generalize to the second set), and evaluation of the suggestion. The cognitive processes included the calculating the ratio of each item in relation to the overall price.

In comparing the prices of the two sets, the students used relative ratios, expressing their opinion using the percent representation. They stressed the fact that their mathematical model was appropriate for all the sets: Doing so, the cognitive processes that they performed were: performing mathematical actions (pricing the two



sets; concluding regarding the relative price of the items, for example the car is 20% of the overall price). In addition, the meta-cognitive processes that they performed were: regulating for a mathematical relation (suggesting that the items' prices should be the same percent in both sets) and evaluating their solution (the relevant of using the ratio in the pricing process).

# Grade 8: The "Snow White and the Seven Dwarves" MEA

The mathematical model suggested in the first activity was expanded and implemented in the "Snow White and the Dwarves" MEA. Rather than seeking to arrive at a pricing model for the sets they directly suggested a mathematical model. Doing so, they performed meta-cognitive processes and cognitive processes. The cognitive processes they performed were of the type of performing mathematical actions (ranking the sets' items, giving relative prices for the set's items; computing the sum of all the prices items). The meta-cognitive processes performed were: regulating for mathematical actions (suggesting the use of the pricing model from the previous activity, suggesting the use of percentage, and suggesting the ranking of the price), being aware to the pricing process (the relative price of each item, the overall price of several items) and evaluating mathematical actions (pricing suggestion, ranking of the items' price).

# Cognitive and metacognitive processes across the three grades

The finer grained analysis of students' conversational statements through their engagement in the two MEAs indicate that cognitive and metacognitive processes that students evinced were integrated as clarified in the following segment of students' discussion through their engagement in the "Garage" activity:

- 43. Mahmood: \$50 divided by 5, so each item will be \$10 [cognitive]
- 44. Samer: (recording) 50:5=10 [cognitive]
- 45. Haia: Why are you dividing them this way? [metacognitive (evaluating)]
- 46. Nadeen: The garage must be the more expensive item. [*metacognitive* (*reguation*)]
- 47. Haia: we must try to divide the items unequally [metacognitive (regulating)]
- 48. Samer: The garage is \$15, the car is \$10 ... [cognitive]
- 49. Nadeen: No, the garage cannot be the same price as the screwdriver [metacognitive (evaluating)]

metacognitive processes the students evinced in the two modeling activities were similar in type across the three grades. Analysis of their discussions reveals the presence of other processes unrelated to the situation solution—such as "We have two cars" or "I go with my father to the garage." These segments were coded as irrelevant. Through The percentage distribution of the cognitive and metacognitive processes is presented in Table 1.

Table 1: Percentage distribution of cognitive and metacognitive processes in the two MEAs

Process Grade		Metacognitive		
6	51%	37%		
7	46%	39%		
8	43%	45%		

The metacognitive processes were divided into three types—regulating, awareness, and evaluating. The distribution of these three types is presented in Table 2.

	Table 2:	Percentage of the	metacognitive	processes	types per	grade in th	e two MEAs
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Process	Metacognitive		
Grade	Regulation	Awareness	Evaluation
6	25%	45%	28%
7	36%	33%	30%
8	33%	31%	35%



# DISCUSSION

The study examines the relationship between mathematical knowledge and cognitive and metacognitive processes as evidenced by primary and middle-school students engaged in two MEAs. To do so, primary and middle schools groups of student carried out two MEAs that had the same mathematical structure, where all the Grade groups constructed a mathematical model for each activity, the models being based on various mathematical concepts and knowledge. The overall findings confirm numerous other studies that have suggested that MEAs trigger and foster metacognitive processes (Lesh & Zawojewski, 2007; Magiera & Zawojewski, 2011). Small-group frameworks induce social interactions that encourage regulatory processes and metacognitive monitoring (Goos, Galbraith, & Renshaw, 2002), also giving students the opportunity to share their mathematical models and test and revise their assumptions and predictions (Lesh & Doerr, 2003).

Comparing the different grades models, the grade 6 students used fractions, the grade 7 students used decimals and percentages, and the grade 8 students used proportional ratios and percentages. This finding contrasts with Mousoulides, Sriraman, Pittalis, and Christou (2007) comparison of Grade 6 and 8 students, which reported that Grade 6 students failed to effectively apply mathematical processes in MEAs while grade 8 students succeeded in doing so. In our research, what made the three grades succeed in getting a mathematical model is that the activity was appropriate for the three grades.

Analysis of the students' cognitive and meta-cognitive processes while carrying the MEAs indicates the integration of the two types of processes in students' work — a result that confirms the findings of previous studies (Lesh and Zawojewski, 2007; Magiera & Zawojewski, 2011) pointing that cognition and metacognition are essentially integrated during problem-solving tasks, where they develop interactively and in parallel. Our findings also support Artz and Armour-Thomas's (1992) claim that a continuous interplay of cognitive and metacognitive behaviors appears to be necessary for successful problem solving and maximum student involvement.

The largest percent of cognitive processes were evinced by the grade 6 groups. Artz and Armour-Thomas (1992) suggest that groups that employ more cognitive than metacognitive process are frequently less successful than other groups. In the present study, the greater use of cognitive processes by grade 6 groups may be due to a lack of ability to generalize and plan. In contrast to the groups in the other two grades, who directly adopted an unequal pricing system, grade 6 students initially priced the items equally. Similarly, coming to the second MEA "Snow White and the Seven Dwarves", grade 6 students initially priced the items in the MEA, i.e. they repeated the steps of the first MEA again, and only subsequently they reached a general pricing model. Grade 7 groups extrapolated a model from their pricing of the first set, while the Grade 8 students adopted a general pricing model immediately.

With respect to metacognitive processes (awareness, regulation, and evaluation), the findings indicate that grade 6 students used the smallest, while grade 8 the greatest percent. This finding supports Bryce and Whitebread's (2012) study, according to which, while metacognitive processes improve with age and task-specific ability, metacognitive deficiencies are more affected by task-specific ability than by age. Analysis of the Grade 6 students' metacognitive processes indicates that they showed greater awareness than regulation and evaluation skills; in contrast to Wilson and Clarke (2004) study who reported that awareness was the less reported metacognitive process. The results of the previous study agree with our findings regarding grade 7 and 8 students' use of metacognitive processes. These students employed more regulation and evaluation process, where evaluation was the most commonly used amongst the three metacognitive processes, a finding that also supports Wilson and Clarke's (2004) study. The principal difference in metacognitive processes distribution was observed between the grade 6 and middle school groups, where grade 7 and 8 students' metacognitive processes evinced a much closer distribution. The latter finding supports Leutwyler's (2009) report that little development in metacognitive skills occurs between grades 10 and 12, where in our case little difference was observed between grade 7 and grade 8.



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# APPLYING A TRANSFORMATIVE-PRAGMATIC PARADIGM TO ENGENDER COLLABORATION IN EDUCATIONAL PROCESSES

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### ABSTRACT

The transformative-pragmatic paradigm as applied in this paper has as one of its principles an emphasis on partnerships between researchers and participants, with the understanding that participants are themselves co-researchers who shape the research process. This paper elaborates on this starting point and indicates how in a particular research project undertaken in South Africa to examine the implementation of inclusive education, the initiating researchers (Nel, Romm, and Tlale) conducted focus groups with the intention of encouraging collaboration of various kinds. Collaboration as a way of thinking and organising is particularly important in the field of inclusive education. This paper shows how we, with teacher participants or co-researchers, set up collaborative processes at various levels, including:

- between researchers and teacher-participants (co-researchers),
- between teachers as part of institutional level support teams in schools,
- between teachers, the district support team and others in the Department of Education.

Key Words: Transformative-pragmatic paradigm, inclusive education, collaboration.

### **INTRODUCTION**

Within the theoretical framework that Prof Romm has presented, one of the principles this paper aims to highlight is the partnerships that were forged between researchers and participants and to illustrate how the latter evolved as co-researchers in the research process.

It all started with the initiation of an international collaborative, comparative research project titled: *A comparative analysis of teachers' roles in inclusive education* which included researchers from England, Finland, Lithuania, Slovenia, China and South Africa. Our main aim with this project was to ascertain how teachers from the different countries perceived the development of inclusive education in their particular contexts. It thus necessitated the researchers to consider the context and cultures of these countries when comparing their education policies and practices. Comparative studies do have limitations, seeing that there are a great deal of differences between countries in terms of culture, language, geography, education systems and so forth.

It is difficult to arrive at a unified conclusion as Devecchi, Dettori, Doveston, Sedgwick, and Jament (2012, p.182) tried to understand "how different European countries provide for the inclusion of children with SEN (Special Educational Needs) ... to breach the linguistic and conceptual gaps". What was of significance about their study was "how different countries can learn from each other to implement better and more effective strategies... and inform each other's provision for training and professional development". Relevant to this paper is that Devecchi et al. (2012, p.182) identified the need to provide effective and meaningful training as well as continuous support and effective collaboration for teachers in order to realise effective inclusive education.

The research was based on a cultural-historical framework. Our research design was a sequential mixedmethod design using convenience sampling for the quantitative part (300–500 teachers in each country) and



purposeful sampling (purposeful sampling, eight focus groups consisting of six teachers in each group). The data collection methods were:

(a) <u>Quantitative</u>: The sentiments, attitudes and concerns about Inclusive Education Scale (SACIE); Self-efficacy in implementing the Inclusive Practices Scale – pilot testing for readability and understanding of concepts (sample – 20 teachers)

(b) <u>Qualitative</u>: Focus group as well as individual interviews; document analysis

The data analysis used the SPSS for the quantitative part and content analysis for the qualitative part.

The three data collection phases were to be conducted over three years. In phase one, a quantitative survey involving four themes of inclusive education which emerged, was conducted which teachers had to complete. Phase 2 consisted of the focus group interviews and phase 3 (two years after the first survey) is a quantitative follow-up survey concerning inclusive education which will be conducted. Collaboration was identified in the quantitative part of the project as being pivotal for inclusive education and therefore one part of the focus group interviews consisted of the following questions:

- 1. How do you understand collaboration within inclusive education?
- 2. Tell me about your experience with collaboration in including learners who are experiencing barriers to learning at your school.
- 3. How do you see your role as a teacher within a collaborative network to support learners experiencing barriers to learning?

The South African researchers consisted of a researcher from the North-West University (residential) and two researchers from the University of South Africa (Unisa) – an open and distance learning university – of which one is the author of this article.

It is, however, necessary to refer to findings reported by Nel, Engelbrecht, Nel, and Tlale (2013: 11-12) which formed part of this collaborative project. The results from participant responses to open-ended questions and focus group interviews indicated that there was a general wish for collaboration between role players such as professionals and parents. However, numerous challenges prevent this from realising. A positive outcome of the interviews was that the participants expressed their feelings of being afforded the opportunity to express their feelings of frustration and inadequacies.

### **REPORTS ON THE INTERNATIONAL RESEARCH**

As an outcome of the abovementioned collaborative international research, Malinen, Savolainen, Engelbrecht, Xu, Nel, Nel and Tlale (2013, p.34) which explored teacher efficacy for inclusive practices in China, Finland and South Africa, "the predictive power of other variables differed from country to country" was illustrated. However, despite these differences, and based on our findings, we were able to illustrate how teacher education can be improved in order to respond better to the challenges which inclusive education holds in the global arena. A significant finding, which pertains to this paper, is that there was a commonality between the three countries, that is, that experience in teaching learners with disabilities and "mastery experiences are assumed to be the strongest source of efficacy evaluations" and the variance in the collaboration dimension of self-efficacy was best explained.

As a further outcome of this collaborative research, Nel, Engelbrecht, Nel, and Tlale (2013) focused on understanding teachers' views on collaboration in an inclusive education system in South Africa. They found that teachers believed that their training and skills are inadequate to collaborate, hence reverting to referring learners experiencing barriers to learning to other structures and professionals for support. Although the participants appealed for collaboration between role players, the challenges they faced makes it difficult to forge collaborative partnerships. This study had its limitations, particularly the small sample, that is three focus groups consisting of six teachers (at two South African universities, one residential and the other an open and



distance learning university). Therefore, the findings are not generalisable, but the recommendations are significant, namely that a collaborative effort should be made by the provincial Departments of Education and Higher Education to develop strategies where pre-service and in-service teachers are provided with opportunities to develop a "deeper understanding about collaborative strategies", particularly in their specific school contexts.

In response to the recommendations for teacher training made in the abovementioned paper, Nel, Muller, and Savolainen (2013) focussed on the implications of the international collaborative research project, findings for an open and distance learning (ODL) university, the University of South Africa (Unisa). One of the constructs that surfaced and has a considerable impact on the successful implementation of inclusive education for all participating countries, is teachers' self-efficacy in inclusive education practice, which can be addressed in the pre-service and in-service training programmes offered at Unisa. Taking cognisance of the findings in the different phases of the research project as a whole, particularly teacher self-efficacy regarding collaboration, it is recommended that Unisa offers initial teacher education programmes which will equip them with specialist skills to teach learners with disabilities. In addition, skills to accommodate these learners in inclusive schools and (Mays and Glennie in Nel et al., 2013) "knowledge-in-practice" skills, inter alia collaboration, which is a pivotal part of these programmes, must be taught. It is also important to consider the school structure and planning regarding inclusive education at government, provincial and school level. This calls for "extensive and well-orchestrated collaboration between Inclusive Education Schools and ODL Higher Education institutions such as Unisa.

With this bird's eye view of the main research project and some of the significant findings which have been written up in the three papers above, I reflect on the focus group interviews that took place during the second phase of the research project and the initiative taken by Nel, Romm, and Tlale (2013) to take it a step further. We co-explored with the participants of the focus groups the implementation of inclusive education and provided space for them to reflect on their experiences of the focus group sessions with the three researchers.

# AN EMERGENT DEVELOPMENT EMANATING FROM THE FOCUS GROUP INTERVIEWS

This article reports on an additional avenue that was not planned. This evolved from the focus group interviews in phase 2 with reference to the three questions posed in the focus group interviews. During this phase another researcher joined the Unisa researchers (Prof Romm) injecting the "transformative research paradigm with pragmatic twist" (Romm, 2014) in the focus group interviews. Nel, Muller, and Savolainen (2013) to be published in a special edition of *Progressio* (2014) as an outcome of the international collaborative research project mentioned) report on the quantitative findings that, where teachers have experience teaching learners with disabilities in an inclusive education (IE) environment and where there is diversity in the classroom, they are familiar with IE practice, their attitude is that of concern and their self-efficacy in terms of collaboration is heightened.

The evidence above suffices to conclude that for inclusive education to succeed, the collaboration of all stakeholders is needed. This propelled the authors of this article to report on the activity initiated by the three Unisa researchers after the focus group interviews were conducted (in June 2012), that is, to request the participants to voluntarily participate in further reflections on the process of the focus group interviews, directly after the interviews, with the aim of encouraging collaboration on various levels and realise "collearning encounters" (Romm, Nel & Tlale, 2013). In these sessions, which were limited to ten minutes, the following guiding questions were posed to the participants:

- 1. How did you experience the focus group session?
- 2. How did you experience the process of facilitation?
- 3. How did you feel about the facilitator's questions—did they make sense to you—did they make you think?
- 4. Do you think you learned from the facilitator?
- 5. Do you think you learned from others in the group and can you give examples?
- 6. Would you have liked us to ask any other questions?



It should be noted that the three participating schools formed part of the Gauteng Primary Literacy Strategy (GPLMS), which aims to improve numeracy and literacy skills in Grades 1–3 in 792 underperforming primary schools in the Gauteng province. The emphasis is on consolidating and expanding the current support provisioning model in order to ensure early identification of barriers and to offer learners access to a least restrictive learning environment and support system. The main aim of the strategy is to ensure that learners' literacy skills are enhanced by means of improving the teaching of literacy. This is done by training teachers, providing textbooks, workbooks, phonic charts and mobile libraries. Teachers, DBSTs, learner support educators, Gauteng Province learner support coaches, officials in inclusion units and special schools' therapists and support staff need to be capacitated to identify and provide support to learners. It is, however, noteworthy that there is a huge number of learners in regular schools who do not have disabilities, yet experience barriers to learning due to a range of reasons such as language barriers, socio-economic barriers, poorly trained teachers and the like. It is reported that, even though some teachers try to accommodate learners with diverse needs by differentiating and adapting the curriculum, there are others who find it difficult to do so and they are also resistant to making these changes (Department of Basic Education (DoBE) 2011-2014: 2, 10-14).

Although the GPLMS initiative is currently being implemented, the participants in the selected schools often digressed from the questions posed to them in the interviews, as they expressed their dissatisfaction with the fact that they have been labeled as underperforming schools and hence have been identified to be part of the GPLMS. Having been labeled as GPLMS schools influenced their responses during the interviews and the further post interview sessions and this could be considered a limitation in the research. The researchers would pose the questions and the participants would respond positively to the interview process, but then consider it as a platform to expand on the challenges they are encountering with the GPLMS, particularly the lack of support from the DBST and the policy makers. They also expressed their dissatisfaction with the fact that they are not recognised for the hard work that they are doing in very trying circumstances such as lack of resources, lack of training and support and the like. They expressed their hope that the researchers have come to help them and to act as mediators between the school and the DBST and Head Office, that is to convey their concerns to the powers that be and that it will bear fruit. With this background and the context in which we conducted our interviews in mind, and taking into consideration the participants' positive responses as well as the concerns they raised, we were able to facilitate collaboration between the DBST and Gauteng Department of Education's Head Office. We intentionally concentrated on social transformation through transforming "traditional" research relationships and simultaneously facilitating collaborative relationships between teachers, DBST officers and the GDE Head Office.

By adopting the storywork approach as discussed by Romm (2014), the communicative and transformative validity criteria were met. Romm cites various researchers regarding storytelling, which evokes "insights as well as feelings, where stories offer openings for inviting co-reflection with others on values and critical themes". We thus attempted to shift "towards transforming social relationships towards a more relational style of human relating" (Romm, 2010: 10).

### A SYNOPSIS OF THE PARTICIPANTS' RESPONSES

From a transformative agenda, Romm (2014) explains that "[i]t is argued that research itself should be a process of creating more equitable human relationships, where particular 'knowers' do not pose as authorities by virtue of their using 'scientific methods'". The following responses illustrates the participants' freedom to coreflect on issues of inclusive education, in particular collaboration and further on the process of the focus group interviews, which ultimately assisted the researchers to facilitate collaboration between teachers, the school's ILST, the DBST and the GDE head office.

By the very nature of our questions that were asked after the focus group interviews, we were able to help the participants to discover the necessity of collaborating in an inclusive education environment. The participants responded to the questions as follows:



### Question 1 How did you experience the focus group session?

The participants felt that they were able to air their views and that they had the freedom to say what they wanted to say, such as being able to speak about policies and at the same time learn from one another and that there were people who were willing to listen to them. They were able to listen to each other's views and their experiences, which they felt were informative and, at the same time, motivating. However, they did express a need for more time to share their views and that they were concerned about what would be done about their frustrations.

I believe that information sharing is very good because there you will get a chance to listen other people's views. And hopefully learn from one another. It is good to hear other people's experiences. I mean, I have never been to Grade 1 class. I did not know that Mam Talane has got a difficult learner that she needs her special attention. This interview was very fruitful and informative.

I think that I am very motivated because I was very very demoralised. Prof Nel dominated and conducted the whole interview session very well and professionally, she also gave us motivation by saying that you guys are doing a great job.

This question also led to the participants' expectancy that something was going to be done about their dire situation, that is, to attend to their frustrations. At least you guys are going to do something with the information you got from us, maybe things are going to change.

## Question 2 How did you experience the process of facilitation?

The participants expressed their impressions on the facilitation process by pointing out that the questions were appropriate for the information required by the researchers. The facilitation was professionally conducted as the interviewer was friendly, patient and a good listener, allowing them to express the challenges they face. Probing questions were asked without being prescriptive, allowing them to talk spontaneously. They knew exactly what to expect as the interviewer explained how the interview was going to be conducted and what they could expect.

Yes, she was very patient and she is again a good listener.

The questions were very straight forward and they were more understandable.

Yes, the questions were also open-ended. We were given a platform to say and relate our experiences in the classroom. I did not find anything problematic about the questions as they were straight forward.

You were probing enough – you probing to get what you wanted from us and you gave us practical examples and you asked us to give you examples to see if you we understood what you were asking.

Ja I think it was ok because like when Patricia was saying that some of the problems – she's dealing with some of the problems I've taken some of the hints that I will be using.

# <u>Question 3</u> How did you feel about the facilitator's questions—did they make sense to you—did they make you think?

The participants responsed to this question by saying that they felt the question and subquestions were relevant, meaningful, straightforward and understandable, which led them to express their experiences in class and to provide practical examples. As two participants explained: Participant 1 - We've got a very nice little word; we do code switching for language barriers. We have learners who speak Xhosa sitting next to English speaking so that they can explain to one another and also the opposite where you take a stronger child and you put them next to a weaker child. There the stronger child assists the weaker child.



Participant 2 - I found that some children are stronger visually than auditory and I pair them together, the auditory ones together and the other together but as you said about cooperative learning in my situation it works because children learn easier form a child than from grownups.

The questions also allowed them to speak freely and where difficult questions were asked, the interviewer allowed them time to think about it and to provide the answer.

# **Question 4** Do you think you learned from the facilitators?

The responses of the participants were very positive, as they felt they had learned interviewing skills such as the guidance given by the interviewer to reflect on what could be done and to try something else, despite their challenges; that the interviewer could summarise what was being said; and that the questions were posed in such a way that they could elicit original ideas from the participants. The interviewer asked the following question: "Are you saying that just because we're coming in and asking questions from a slightly different angle that we are helping you to re-look at things?" and the answer was: Yes, I have learned how people are interviewed.

Very true, that is one of the skills we have acquired, for example, if you are an SGB member you will know how to address the questions.

### Like in most situations she is the guiding us on how to handle those situations.

And what made me think was am I doing enough in the classroom – that's what made me think about when you were asking the questions even though we have the challenges that we have, is it made me think am I doing enough as a teacher in the classroom shouldn't I be trying something else or doing something else.

However, the participants expressed their needs for more ideas from the interviewer's experiences and to offer solutions for their challenges. The interviewer indicated that the district was there to assist them with their challenges and that they could ask the DBST to help them.

*Ee maybe to talk about how we feel about the problems that we are experiencing in class, ja, we cough it out we say and you are going to help us to do that since you are going to take it to the district level so that they should know the problems that we are facing at this point in time.* 

### Question 5 Did you think you learned from others in the group and can you give examples?

It was quite clear from the participants' responses that they experienced the interviews as informative. It was also a learning experience for them as they felt that they learned from the examples which their colleagues gave and that they could share ideas and how they deal with their diverse challenges. They also felt that they were not alone and that their colleagues were also frustrated although they are trying to cope; that they were not receiving the support they needed from the district officials; and that policies development and implementation differ.

[For instance], like Killie was explaining that the learning problem with the learners' foreign languages—I didn't know that and the way that maybe a child doesn't understand when she's teaching she'll ask another to explain in mother tongue, aaa you know I've learned a lot.

It reinforces it, yes. And when the teacher says, uh, they take, they-they have a remedial book, I didn't know that. It's there in junior phase so now I have that idea, there's a book. So I will get that in the senior phase.

### Question 6 Would you have liked us to ask any other questions?

The participants felt that questions needed to be asked around teacher/learner ratios and work allocation; the GPLMS and how it is supposed to be implemented; and the many learners and their diverse needs and the support that is required in the different situations; about district officials and their much needed support which is inadequate and inconsistent; the policies and the system, and how teachers are expected to implement them.



Like a question of big classes. If she could have asked how many learners we have in our classrooms, because we are now experiencing an issue of having so many learners in one classroom like now I have 53 learners in my class.

Again we haven't touched the teacher ratio, because our teacher ratio at the moment is 1:40 but I feel that it is a lot.

To add on what has been said, work allocation is really a burden, for example, if the assistant can concentrate on one child with the learning barriers one has to pay attention to the rest of the class.

# **OUTCOMES OF THE CONDUCTED INTERVIEWS**

Of significance was the participants' positive response to the facilitation process, that is, that it was a learning experience for them. However, they also expressed their concerns by informing the researchers of their needs as summarised under question 6, inter alia a cry for greater support from the district. In response to these expectations, we committed ourselves in "carrying the baton forward" by engendering collaboration in the current educational processes as discussed in the following sections.

This involves collaboration between:

- The researchers and the teacher participants, who by this time were regarded as co-researchers. At this stage, the researchers and participants were engaged in the process of action research where the stage was set to establish collaborative support structures for teachers. Nel, Muller and Savolainen (2013, to be published in *Progressio* in 2014 special edition) report on South African teachers' sense of self-efficacy in inclusive education practice and implications for their education within an open and distance learning context, where the sense of self-efficacy as collaborators is highlighted. The latter research formed part of the first phase of the main study as the questionnaires used in the quantitative part of the research and distributed by the Unisa researchers to qualified teachers enrolled for the Advanced Certificate in Education: Inclusive Education. During the interviews, the teachers became aware of the possibilities of establishing support structures by strengthening the functioning of the ILSTs and also the support from the DBST and other stakeholders.
- Between teachers and members of the Institutional Level Support Team (ILST) of their school. The ILST comprise the teachers, head of departments, parents, therapists, community members and other stakeholders from, for example, the Department of Health, and the principal is responsible to see that such a team has been set up and is functional. Among others, the ILST members help teachers and guides them in developing and implementing individual support plans and to differentiate the curriculum; conducts consultation sessions with parents; identifies teacher training needs and organises staff development and support (Department of Education, 2010, p.23). Throughout the interviews, the teachers and those serving on the ILSTs were given the opportunity to vent their frustrations and at the same be guided by the interviewer to realise the necessity of collaborating, co-operating and supporting each other in a more organised way.
- Between teachers and the District-Based Support Team (DBST), the Provincial Department of Education (Gauteng) and Unisa. The DBST comprise departmental professionals who are responsible for promoting inclusive education by means of "training, curriculum delivery, distribution of resources, identifying and addressing barriers to learning, leadership and general management" (DoB E, 2010, p.49).

The fact that these participating schools were part of the GPLMS – which meant that they were labelled as underperforming schools – ultimately led to teachers' feeling that they were not recognised for the hard work that they were doing, despite the challenges they were faced with. In addition, they felt that they were not supported by the district and their plea for more support motivated the researchers to arrange a seminar where the district, three officials serving the participating schools, a GDE head office official from Inclusive Education and the three researchers were present.



### DESIRED OUTCOMES RESULTING FROM THE SEMINAR

The seminar, which also served as a way of member-checking, was held in December 2012 at Unisa. Whilst waiting for officials to arrive, casual discussions took place between the attending teachers, a district official and the researchers. The teachers were asked whether they had reflected on the focus group interviews. They responded by saying that a lack of parental involvement is a concern and expressed what they felt the ILST can to do to address the problem. The district official offered that the children with barriers to learning could be referred to the District Office for consideration of placement in a special school. In addition, she explained how special concessions can be applied for at the district office for those learners who have writing barriers and referred to relevant forms that need to be completed. However, she also emphasised that ILSTs in general are too "lazy" to fill in the forms and encouraged the teachers to make a concerted effort to do so.

On arrival of the rest of the officials, we sketched the background of the research and pointed to collaboration as the most significant aspect in inclusive education, which surfaced from the quantitative results as well as the focus group interviews. We expressed our concern about the different worlds that the DBST and the teachers work in and that in some cases they are not even aware of one another. On this note, the researcher explained that this was an opportune platform and time to get full-steam collaboration going, as teachers are able to express their concerns and district officials and the head office official is in a position to respond and offer solutions and to forge a communication network.

As the discussions continued, it became clear that both the ILST and the DBST have their unique challenges. For example, the ILSTs are not always as functional as they should be, as teachers are burdened by a heavy workload, which prevents them from attending to individual learners whilst the DBST, on the other hand, have limited human resources as they are 11 officials expected to service 260 schools. The problem of getting principals to "buy in" for the training of teachers was raised as the concern is that notification is received too late from the District Office and sometimes teachers are not informed resulting in teachers not attending the training. Although teachers felt that they learnt from one another in the interviews, they felt that further support from the District and Head Office was lacking as their attitude towards teachers were that of "underperforming", never praising them for the good work they were doing, which ultimately led to no collaborative relationships. The teachers' request was that district officials support them and help them to address their challenges in a developmental way. In response to these comments, the district officials explained that they do praise teachers. However, they are not involved with the GPLMS and that there is sometimes no cooperation between the GPLMS and the Inclusive Unit at the District Office and that integration of the two units is needed. The head office official took note of the discussions and committed to taking the concerns raised to the authorities.

With reference to the researchers and the role they played in the interviews, the teachers explained that for once they were listened to, that they were given time and an opportunity to express their feelings and that they were not prescribed to and that the researcher understood their situation. The researchers also offered their assistance to the teachers in helping them to address the challenges they were experiencing, particularly with learners experiencing barriers to learning. The head office official also acknowledged our working relationship with them.

At the closure of the seminar teachers, district officials and the head office official were continuing their discussions and planning future meetings.

### CONCLUSION

This paper focused on offering an example of researchers taking some responsibility for their ways of conducting research processes so that the "results" are likely to make a positive difference to the quality of life of participants and wider communities. This indeed means that during the process of the research itself, as well



as in offering (draft) results, researchers orient the research enterprise so that it can offer mutual learning opportunities, as well as opportunities for considering courses of action among concerned stakeholders. This paper gives a detailed account of how we set up the focus groups with this intention and also how we were sensitive to emerging possibilities, also in relation to participant requests. One of the emergent options was the organisation of a meeting where the researchers, with participants, could, as one participant stated it, carry the baton further, so that voices could be heard in forums that were likely to "make a difference" to the way in which inclusive education could be addressed. At the same time, the participants were able to make their challenges known to the district officials and the head office official and vice versa, thus shedding light on each other's challenges and eradicating misunderstandings, ultimately forging good relations with one another and opening communication channels.

The article indicated that this intention to be alert – as researchers – to possibilities for contributing to the field of practice, in this case the practice of implementing inclusive education, can be seen to fit in with the "transformative paradigm", albeit that this does not necessarily exclude other paradigmatic orientations (as explained in Romm, 2014).

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