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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 4, Number 4. In this issue it publishes 18 articles. And this time, 39 authors from 8 different countries are placed. These are Brunei,, Bulgaria, Iran, Malaysia, Pakistan, South Africa, Turkey and Zimbabwe.

Our journal has been published for over four years. It has been followed by many people and a lot of articles have been sent to be published. 200 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,

1st October, 2013

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THE PROCESS OF CONSTRUCTING ABSOLUTE VALUE FUNCTION KNOWLEDGE FOR HIGH SCHOOL STUDENTS

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ABSTRACT

In recent years, there have been important changes in the construction of learning environment due to the scientific developments regarding cognitive process. This study aims to analyze high school students' processes regarding construction of the knowledge in the absolute value function in a learning environment prepared according to the recent developments. Using a case study method with a volunteer high school student regarding the teaching part of the project, this study has proposed two problems which expected to give student an opportunity to use his/her pre-experience and knowledge in a maximum level, and these two problems have been used respectively. The study has found out that, in solving the later problem, the student used the knowledge that s/he had acquired from the first two problems and that s/he would be able to conceptualize the absolute value function correctly in a certain level. The study has also found out a certain contribution of using environmental incidents and problems to teaching functions.

Key Words: Abstraction process, Absolute value function, Construction theory.

INTRODUCTION

The process of constructing knowledge in one's mind has always been a subject which attracts the attention of researchers in the field. Even though it is studied to define the suitable learning environment and conditions for this process–since how the knowledge is constructed in the learner's mind is not observed-no consensus has been reached among researchers in this respect. "The Constructivist Learning Theory"- one of the theories effective on teaching mathematics - adopts the notion that the individual constructs the knowledge him/herself. This aspect has directed the researchers to study and explain the process of knowledge construction - that is "abstraction" - in more detail.

The issue of abstraction is an important one in mathematics education, yet there is no consensus upon the abstraction concept (Ohlsson & Regan, 2001; van Oers, 2001). The subject of this study is about the abstraction of the knowledge of the absolute value function. *Abstraction*, in the simplest way is known as "*ascending from concrete to abstract"*. The concept of abstraction has primarily been a subject of interest for epistemologists, then as the studies upon the process of learning have increased, it has also been a field of research for educationists. As for Hershkowitz et al., abstraction is defined as follows;

"Abstraction is as an activity of vertically reorganizing previously constructed mathematics into a new mathematical structure" (Hershkowitz, Schwarz & Dreyfus, 2001).

Abstraction starts from the raw knowledge that the individual has previously constructed, and keeps ready in memory to use in a new activity. There are two major models (empirical and dialectical) of abstraction advanced in the literature. *The empirical abstraction* model starts to take shape by recognizing the similarities

between different contexts, and results in emerging of a new concept out of these similarities (Mitchelmore & White, 2004). There is an ascending development from concrete to abstract. In view of *the dialectical model*, it is needed to explain the concept of dialectic. The term *dialectic* refers to the definition "thought is in an unceasing motion and change, and the evolution of thought takes place as a result of inner conflicts" (Hershkowitz et al., 2001). In this model of abstraction, a concept is reflected upon, and with each step an even more abstract form of the concept is reached. On the contrary to the empirical model, in the dialectical model there is an advance from abstract to more abstract.

As the *process of abstraction cannot be observed directly* (Dreyfus, 2007), it has been necessary to define observable actions that can give information about the process. In defining the abstraction process, Hershkowitz et al. (2001) has referred to the major observable epistemic actions as *recognizing, building-with* and *construction*, and hence named their model as "RBC". *The RBC Abstraction Model* is based on the activity theory, and comprises three epistemic actions.

Recognizing refers to a familiar structure (Bikner-Ahsbahs, 2004). A previously constructed structure-already used in other situations - is related to this action (Schwarz, Dreyfus, Hadas & Hershkowitz, 2004). Recognizing occurs when the student realizes that the construct that is familiar from a previous activity is connected to or relevant for the mathematical situation in the present activity. It may occur in at least two ways, by analogy and by specialization (Dreyfus, 2007).

Building-with refers to the process of combining familiar pieces of knowledge into a new context. It includes recognizing (Bikner-Ahsbahs, 2004). In other words, building-with is defined as using mathematical structures to achieve a given goal (Schwarz et al., 2004). It reflects recognizing the familiar structure, and using it to solve the new problem. Actually, recognizing and building-with are nested actions where they complete each other. Most often, it is not possible to separate one action from the other.

Construction is the process of structuring new knowledge, also defined as processes of reorganizing and restructuring. Constructing is the process of restructuring and reorganizing what is recognized and known to construct a new meaning (Bikner-Ahsbahs, 2004). According to Ohlsson and Lehtinen (1997), the process of construction - as the central epistemic action of abstraction comprises vertical reorganized knowledge, and requires theoretical thinking. Constructing is observed when the individual uses the structures he recognizes in solving the problem, given to teach a new mathematical concept.

The most significant difference between building-with and construction is that in the former action, existing constructs are used to solve a problem or explain a situation, and in the latter one, a new mathematical concept (or generalization) is constructed. Realizing a new aspect of an existing mathematical concept is also interpreted as construction. If the students solve a standard problem, they are likely to recognize and build-with previously acquired structures. If they solve a non-standard problem, they might get in the process of construction (Hershkowitz et al., 2001).

According to the above mentioned explanations, the epistemic actions are not independent from each other. There are various relations in between the three actions. As discussing these relations in detail would lead to a more through study over the abstraction process, it is needed to include them hereunto.

Recognizing and building-with are often nested within constructing actions. Recognizing can take part in the other two actions. Regarding the three epistemic actions underlying a student's behavior, the action of constructing does not merely follow recognition and building-with in a linear fashion and yet they have a nesting composition. For example, a student cannot get to the building-with and construction stages if he cannot "recognize". Also, a student who can "recognize" has to perform both actions of recognizing and building-with in order to "construct". This mechanism is called *the dynamic nesting of the epistemic actions* (Hershkowitz et al., 2001).

There have been many studies made upon the abstraction process. Some of these studies are about defining the abstraction process, some are about the factors that are effective on the process, and some are about the epistemic actions. In order to analyze the abstraction process, Hershkowitz et al. (2001) have carried out a study with a 9th grade student, concluding that abstraction has occured during problem solving, and that the student has solved some of the problems by recognizing and building-with, and that for some particular problems has needed help from the interviewer to implement construction.

In the study on absolute value functions $(y = |f(x)|)$, Özmantar and Monaghan (2007) have examined the abstraction process in an enviroment where it was possible to communicate with friends, and guidance from the tutor was obtained. In this study, they have put forth the necessity of the four important factors in the abstraction process. These are: *(i) Mediation through man and material, (ii) Guidance of the tutor for mathematical interpretation, (iii) The suitable dialectical environment on student development* and *(iv) The presence of a thing to be abstracted.*

Regarding the factors effecting the abstraction process, Monaghan and Özmantar (2006) have examined the process of constructing one of the factors by utilizing the other over the functions of $y = f(x)$, $y = f(|x|)$, $y = |f(x)|$ and $y = |f(|x|)|$.

Altun and Yılmaz (2008) have studied the abstraction process of "Greatest Integer Functions" in the light of RBC model with a case study of two junior high school students. The major aim of the study has been to design and discuss a learning environment for high school students to enhance the quality of Greatest Integer Function teaching. With this study, Altun and Yılmaz have shown that students can abstract the knowledge of greatest integer functions, and that the previously constructed knowledge of piecewise functions has provided a suitable basis throughout the process.

Functions play an important role in high school mathematics. In the curriculum, 24 hours have been allocated for the concepts of relations, functions and operations in 9th grade, 22 hours for the exponential and logarithmic functions in 11th grade, and 16 hours for the functions, piecewise functions and absolute value functions in 12th grade (Ministry of Education, 2008). This study focuses on *absolute value functions*.

There is no particular purpose in choosing the *Absolute Value Functions* for the study topic. Our primary objective is to create a learning environment where the students can construct meaningful mathematical knowledge, and to apply the designated teaching. It is also our aim to discover clues to enhance the quality of teaching through the process later on by reporting the teaching. The study is conducted to teach absolute value functions at an environment created in regard to the three above mentioned main actions.

The study has been carried out taking into account the perception of mathematics defined as the knowledge and skills acquired during problem-solving and interpretation processes based on modelling of reality (De Corte, 2004).

METHOD

Research Model

This research is a "case study" and in this aspect a qualitative one**.** A case study is an empirical research method which studies a phenomenon within its real life framework, in which boundaries between the fact and the content are not clear, and which is used when more than one evidence or source of data is available (Yıldırım & Şimşek, 2006).

In case studies and qualitative designs, the researcher does not only observe the subject research as in quantitative designs, but participates in the study in person to analyze both the subject and the participants.

The researcher interviews the participants one by one, thus he/she is a part of the process. In this study, the researcher has also undertaken the role of teaching, and therefore has been a *participant observer*.

Study Group

The study has been carried out with a student in the first grade of a high school who participated voluntarily. The mathematical achievement of the student has not been tested, but the school manager and his teachers have been interviewed with about the study. Having a 5 out of 5 as the final semester grade, the student has been reported to be successful at mathematics. The student has not been taught about Absolute Value Functions either at school or any other institution. His knowledge about functions has been consisted of domains, ranges, matching, real number pairs, the coordinate system, and matching the real pairs with the end points on the plane which have all been covered in the 8th and 9th grade curricula.

Data Collection

Qualitative data collecting methods such as observation, interview and document analysis have been used altogether, supporting "*data diversification*". Yıldırım and Şimşek (2006) cite that the basic principle in diversification is collecting data from different individuals and different environments with different methods in order to prevent the prejudices or misunderstandings later on during conluding the research (Koçbeker & Saban, 2005). A video camera and a computer have been used in data collection and analysis.

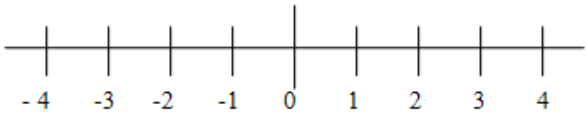
Audio and video recordings throughout the study have been made within the knowledge and permission of the student. At the beginning of the study, questions and explanations have been presented to acquaint the student with the context given in the problems. During the solution stage, new questions have been asked whenever needed to reveal the student's opinions. The student's verbal and nonverbal communication with the researcher have been observed through the study. Later on, all recordings have been analyzed in terms of constructivist learning principles and abstraction process stages.

Data Collection Tools

The data collecting tools used in the case study are the two worksheets containing the problems and function graphs regarding Absolute Value Function. In order to get the expected results out of the clinical interviews in selecting problems, it is required that the problems are ; *(i) discussible, (ii) open-ended, (iii) performing in the way that the student's mental abilities are revealed* (Tanışlı, 2008). The problems used in the study respectively are as follows:

For each problem, the coordinate system is already drawn with the axes designated.

- ***Tank Problem*:** The target for a recently developed tank which is tried during a military drill has been shown as a vertical line. During the shooting, if the tank makes a hit either to the right or to the left of the vertical line, the shot is accepted as a miss and the distance between the area hit and the vertical line determines the amount of error. The results of 5 shots are as below. They are +4.3, -2.6, 0, +3.8, -0.9. Mark these values on the graphic below. In case the number of shots increases considerably, design the shape of the graph accordingly and show it by drawing.



- ***Weighing Scale Problem*:** While teaching the measures, the teacher brings a weighing scale to the classroom and asks each student to guess the weight of their classmates. Afterwards, every student is weighed on the scale. Students find out the amount of mistake by deducting real weights from their estimates. For example, if the difference is -2 kg, then the amount of error is +2; if it is +2 kg, then the amount of error is also +2. They are trying to find the student who is least mistaken.

— In this case, according to the table below which shows Nisa's and Efe's estimates on three people (A, B, C), is it Nisa or Efe who is most mistaken?

	A	B	C
Real Weights	60	65	50
Efe's Estimation	63	66	45
Nisa's Estimation	61	60	52

— Explain how the margin of error (margin of mistake) has been calculated.
— Think that a lot of people's weights could be predicted. On the coordinate system, draw a graph for each of these people that show the amount of error, so that all kinds of amounts of mistake can be found out from the graph.

The questions prepared in accordance with the explanations given in "introduction", related to constructivist learning model should; (*i*) Keep the students busy with problem solving, (*ii*) Activate the students' pre constructed knowledge and experience as much as possible, (*iii*) Comprise the presence of a thing(s) to be abstracted.

Each problem-printed on A4 paper-has been given to the student one by one in the above order. The second problem is presented to the student only when the first one is solved. The problems chosen for the study qualify to provide a basis to understand the Absolute Value Function.

Analysis of Data

Data have been evaluated by descriptive analysis method. In this type of analysis, data obtained are summarized and interpreted according to the themes previously specified. In descriptive analysis, it is often seen that quotations are included in the evaluation to reflect the opinions of the observed or interviewed individuals intensely. The aim is to present the findings acquired in an edited and interpreted form to the audience (Yıldırım & Şimşek, 2006).

As the study adopts the RBC model framework, first, the audio and image recordings, accompanied with the worksheets have been converted to text in order to observe the epistemic actions of recognizing, building-with and construction. Secondly, the observation notes taken by the researchers during the exercises have been evaluated. Finally, comments have been made based on data to interpret the findings, explain the relations in between, and draw conclusions.

Validity and Reliability of the Study

The concepts of "validity" and "reliability" are essential and traditionally accepted in quantitative research. In qualitative research, it is suggested to use the concepts "credibility or trustworthiness" instead of "internal validity", "transferability" instead of "external validity", "consistency" instead of "internal reliability" and "confirmability" instead of "external reliability" (Yıldırım & Şimşek, 2006). In the qualitative research, validity infers to observing the studied phenomenon objectively and as it is (Kirk & Miller, 1986).

In this study, internal validity is provided by the long term interaction during the research, deep focus data collection, diversification, expert survey and participants confirmation. External validity is provided by description in detail and purposeful sampling. To provide the reliability of the study, the recordings and the observation notes have been surveyed, and interpreted by 2 different experts in terms of observability of the epistemic actions. It has been seen that the interpretations are consistent with each other.

FINDINGS AND COMMENTS

Can's (the student) process of constructing knowledge of "Absolute Value Function" is introduced below considering the epistemic actions of *recognizing, building-with* and *construction*. (C: Can (This is not the real name of the student), A: Researcher).

Can spent 10.12 and 10.32 minutes on the first and second problems respectively.

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Analysis of the Process

Before the first worksheet containing the military drill problem was given to the student, the researcher asked questions to check the student's pre constructed knowledge. The dialogue is as follows;

100A: Can, do you know what the analytical plane is?
101C: Analytical plane. Hmm, that is, two axes.
102A: Or the coordinate system.
103C: I know the coordinate system.

Referring to the student's answers above, it is seen that the student knows the coordinate system, and *recognizes* the knowledge related to this system. Afterwards, the worksheet was given to the student. He was asked to read the question carefully. The student thought upon the problem for a while to understand it. The student could not understand what the target line is and therefore started a dialogue with the researcher.

107C: Target line?
108A: For the tank, now the target is identified as a vertical line (The researcher shows the vertical line). This target will be hit (Points the target line). Here will be hit but not all missiles strike.
111C: They will not.

As seen from the dialogues the student apprehended the target line, and not to be mistaken, marked the target line distinctly on the sketch (Figure 1).

113C: It is shown as… During the shooting, if the tank makes a hit either to the right or to the left of the vertical line, the shot is accepted as a miss.
114A: Show me an example.
115C: For example I can hit there. I hit here. It is a miss.
118A: How much?
119C: Here (Points at the distance to the vertical axis), the distance is the amount of error. Distance to target is 0.4.

The student made a hit on the coordinate system he previously recognized using the knowledge of plotting a point, and told the amount of error corresponding to the hit. Using the expression "distance to target" shows that he *built-with* the recognized knowledge referred in the previous dialogue. The researcher asked the student to make the other sample hits as well as the hits he will set in order to find the amount of errors.

125C: For example here (Marks correctly) (Figure 1).
126A: Yes, in this hit, what is the amount of error?
127C: -2.5
128A: Now will you say -2.5 to it?
129C: As it says the distance between this line and the point hit determines the amount of error, it should be 2.5, not -2.5.
130A: Mark the other hits.
131C: Here is zero (Marks correctly) (Figure 1).
133C: +3.8 falls here
135C: -0.9 is somewhere here

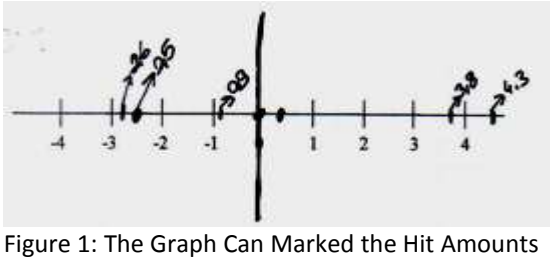

Figure 1: The Graph Can Marked the Hit Amounts

The markings that Can made correctly on Figure 1 in respect to the problem, have shown that he recognized the pre-constructs related to the problem, and that he understood the problem as well.

137C: (Returns to the question) We said "Mark these values on the graph", "In case the number of shots increases considerably, design the shape of the graph accordingly and show it by drawing".

139C: The point hit.

142A: Minus, when hit +4.3?

143C: I will mark here.

144A: How much is the amount of error then?

145C: 4.3. I will mark there. I mean here.

151C: -2.6 stays here. The amount of error of this will be again positive because it says distance. And it stays here.

The markings that the student made correctly according to the researcher's request have shown that the student *built-with* the previously recognized knowledge. In other words, the student knows how to mark ordered pairs in a plane, and that he uses this knowledge to *built-with*. It has been seen that the student noticed that the amount of error is positive when he says "…*The amount of error of this will be again positive because it says distance. And it stays here* (151C)".

155C: It says "In case the number of shots increases considerably, design the shape of the graph accordingly and show it by drawing."

156A: What would happen if it increased?

157C: 1.7 stays on this. If we think of the amount of error like that again, 1.7 and -3.2. And that is here.

158A: If it hits again and again?

159C: Again and again? Uhm, when the number of hits increase a lot… It will not change… I mean I saw it will not change, that is it goes directly proportional all the time.

In this part of the dialogue, it has been observed that the student began to realize how the graph will be shaped. Using the expression "*it goes directly proportional*" in line 159C shows that he built-with previously recognized knowledge into new knowledge constructs. Later on, the student joined the marked points by a ruler, and continued the dialogue as follows;

166A: Yes. What can you say for the end points?

167C: They go infinite.

170A: Does it look like any graph that you recognize?

173C: No.

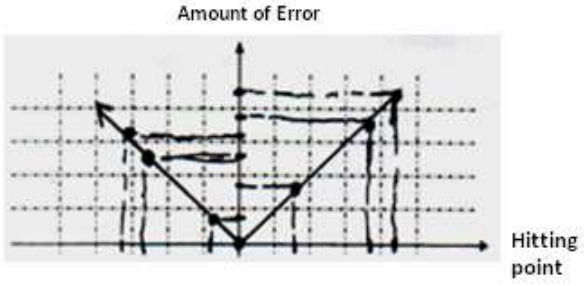

Figure 2: The Graph of "Tank" Question

The student sketched the graph correctly, and replied the researcher's question regarding the end points of the lines as "*go infinite*" (167C). When the researcher asked if he recognized this graph before, he said that he did not. Solving this problem, the student *constructed* a new knowledge that he never came across before or had any opinion about.

In order to consolidate the constructed knowledge of absolute value function, the second question was given to the student. For the student to comprehend the problem better, the researcher gave examples about himself, and the below mentioned dialogue took place.

203A: Now, how much do I weigh? What do you think?
204C: Hmm, 75 kg.
205A: Yes, I am 73 kg. You' ve been mistaken by 2 kg on my weight. The difference between is called 'the amount of mistake'. For example, I guess you weigh 62 kg. How much do you weigh?
210C: 65.
211A: Yes, I've been mistaken by 3kg. You estimated my weight more and I estimated yours less. The amount of mistake is a value related to the distance to the actual value.

As seen from the dialogues above, it has been observed that the student apprehended the problem better. Later, the researcher asked the student to find the amounts of mistake for the given table. The student found out who was mistaken more by looking at the table.

216C: A weighs 60, C weighs 50.
220C: There…(Points out the correct place) Yes then A, Efe is mistaken by +3, Nisa by +1, we skip to B. Efe is mistaken by +1, Nisa said 60, it is - 5 but we accept -5 as + . We write down +5.
222C: Efe again by +5, Nisa is mistaken by +2 here. If we add these, we will find how much they are mistaken.
224C: Efe is mistaken as +9 in total, and Nisa is mistaken as +8. This shows up Efe is mistaken more.

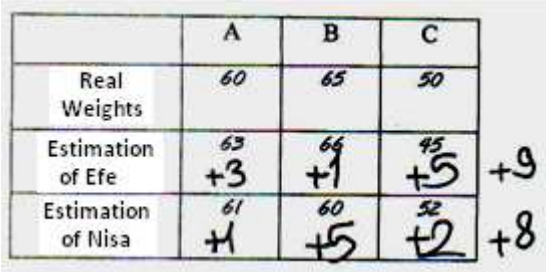

Figure 3: The Finding of Amount of Mistake

The student calculated which student was mistaken more by using the information on the table correctly. Figure 3 shows the student's operations while finding out the amounts of mistake. It has also been seen that the student constructed the knowledge that amount of error will be positive when he says *"Nisa said 60, it is - 5 but we accept -5 as + "* (220C).

226C: It says "All kinds of amounts of mistake can be found out from the graph". We will draw such a graph that from this graph all kinds of amounts of mistake can be understood.
227A: Efe guessed 63 as 60. Where do you think this corresponds onto the graph?
228C: Amount of mistake is 3, amount of error is +3. It corresponds here. The joint of these (Points the correct place in the coordinate system).
234C: +1, +3. Here for example it is normally -5 but because it says +5 to -5, it is there.
236C: It falls somewhere here (Points the correct place in the coordinate system). In this situation the amount of error is again +5.

Giving the amount of error correctly (228C) again – that is the amount of error cannot be negative-the student proves that the constructing action has occured. After evaluating Efe's guesses, the student continued with Nisa's, completing them all correctly. Noticing that no data came up to correspond to origin, the researcher asked a new question to the student to draw his attention on this point.

239A: Alright, how much do I weigh? What do you think?
240C: 80.

241A: You guessed right. How will you mark it?
244C: Like this… on zero (Shows the origin that is the right point).

The student has marked the origin without any hesitation. This has led to the opinion that the student had pre-constructed knowledge about the origin.

245A: In your opinion, how will the graph of these values do?
246C: The graph of these…(Thinking).
247A: Probably it will be useful to write down a few more examples, right?
248C: Yes, right there.
249A: Let's suppose I was 73 kg, and you guessed 75 kg. Where does it correspond to?
252C: It corresponds to 2 to 2.
253A: 2 to 2. OK, I guessed your weight?
254C: I was 66 and you said 62.The difference corresponds to -4.The amount of error to +4. And that falls to there.
256C: A graph in this shape. As it is understood, it is going to be something like decreasing like this and increasing like this. Let's draw that, too. Yes, and this one is in this shape (Implying the graph in the previous question).

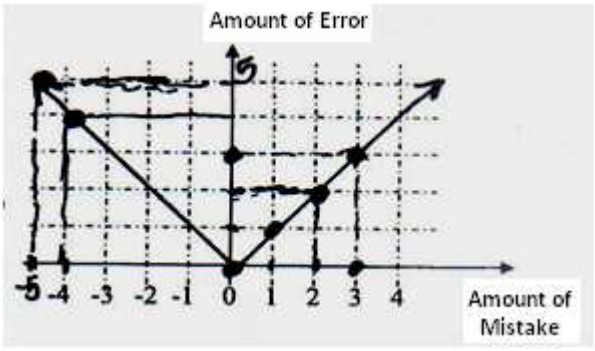

Figure 4: The Graph of "Weighing Scale" Question

The student correctly sketched the graph of amount of error with given amounts of mistake (Figure 4). A few more examples were given as the already given examples were insufficient to draw the graph. It is seen from the statements in 256C that the student knows there are decreases and increases in graphs, and that he uses this knowledge while drawing the graph. The student realized that the graphs he drew in both problems resembled each other a lot. The researcher continued the interview to make the student think upon both graphs.

261A: What is common between these graphs?
262C: Here if distance is concerned in a case, the function is always increasing properly and decreasing properly. Yes this part is y=x (Showing the part in the first zone).
263A: Yes, Where does y=x correspond to?
264C: There (Points correctly).
265A: We can't say the same thing to the part in the second zone, can we?
266C: No we can't. What we will say here is y=-x.
267A: y =-x, here. See, this function is called absolute value function. It is shown as y = $|x|$*. If we write down the two situations together* $y = |x| = \begin{cases} x, x \geq 0 için \\ -x, x < 0 için \end{cases}$ *does this equation represent the graph?*
272C: Yes it does.

Line 262C has shown that the student recognized straight line graphs, increasing and decreasing functions and/or the concepts. Practicing on all of the data, knowledge of absolute value has been constructed together

with the researcher. Moreoever, in order to confirm that the knowledge is constructed, the researcher continued the dialogue with the student, talking over the definiton written.

273A: Why do you say it represents?
274C: Because if x<0, –x is correct, it comes out of the absolute value as –x .
275A: If x<0 why do we write down "-" in front of it?
276C: It is negative. It will be positive. To come out as positive. That. Being negative.
278A: Absolute value function is such a function. Have you ever seen an absolute value function?
279C: No I haven't. This is more like… I understood it from the previous question… That distance can never be negative.
280A: Yes, to express such case, such functions are being used.
281C: Good. I mean, it settles in my head better with this. When I see something like this, it can come directly to my mind.

It is seen with this second exercise that the study subject has been consolidated in the student's mind.

DISCUSSION AND CONCLUSION

The main objective of this study was to suggest, implement and discuss an education model that would serve the purpose of teaching Absolute Value Function. To this end, a student who has not yet met the concept of Absolute Value Function has been taught by addressing two related questions in order. Afterwards, it has been examined as to see whether the abstraction process of the knowledge of Absolute Value Function has occured during the teaching.

The questions used in the teaching–together with some limitations have been suitable and sufficient to construct the knowledge of Absolute Value Function by the student. The study can be evaluated in respect to the aim and the aspects taken into consideration during planning as such:

The Compatibility of the Teaching with the Constructivist Theory

In this study, teaching has been based on problem solving where the student has shown interest for both problems and made effort to get results. Eventhough the student has not attended any military drill, he is familiar with the terms "military drill-tank-target " that he hears in daily life. By this means, the problem is qualified to be evaluated as a real life problem.

Yet this situation does not fully coincide with the term "modelling of reality" that De Corte (2004) uses in defining mathematics. For modelling reality, the research should be based upon mathematization (Gravemeijer, 1990). Together with this, the student should be experiencing some difficulties in solving the problem, and then by working upon the problem should be defining the absolute value function and drawing its graph.

Nevertheless, we can say that a constructivist learning environment has developed because the study was student-focused, the teacher guided and allowed the student to "think", and created opportunities for the student to construct the knowledge on his own in the end.

The second problem (weighing scale question) has been addressed with the intention of letting the knowledge structures built via the first problem to be used, and to remove the brittle structures. The situation in the second problem could be created in the classroom. Instead of given estimations of Efe and Nisa, students in the classroom could be weighed, and that would probably be a better case. Other researchers may try this option. Even as it is, the characteristics of constructive learning prevail the study.

The Realization of Abstraction

It is understood in this study that the concept of Absolute Value Function was abstracted in a certain point. The correct and incorrect applications of the behaviours like recognizing, building with and constructing (Dreyfus,

2007) which are defined as observable epistemological actions of abstraction process were observed and reported separately in both problems. In the first problem the students abstracted although in a fragile manner absolute value function by using his prior information, for instance coordinate system. The second problem was asked for supporting the first problem and for removing the fragile parts formed in the first problem and the difficulties experienced in the first problem were not seen in the second problem. The expression of the student such as 'as one can understand, it will be something that increase in this way and decrease in this way (256C)' showed this explicitly. This showed us that student used the new structure in the form of absolute value function which was constructed in the first problem.

It was understood that the concept of absolute value function was abstracted according to the definition which was provided for abstraction by cognitive psychologists (Mitchelmore & White, 2004) as 'relating mathematical objects according to their features and obtaining a more advanced mathematical object'. The explanations regarding the abstraction process came out persistent with the studies of Herskowitz and others (2001) who supported dialectic approach; Monaghan and Özmantar (2006), Dreyfus (2007) and Yeşildere and Türnüklü (2008) and the dialectic nature of abstraction was verified in this study. The non linear structure of recognition, build with and construction which are known as the epistemological actions of abstraction and nested within each other (Dreyfus, 2007; Yeşildere & Türnüklü, 2008) was corrected in this study.

This study points out that using authentic sitiuations or real events in teaching can increase the quality of education. Similar studies carried out on functions lay out the need for reordering the subject order in existing high school programs as linear, quadratic, trigonometric, periodic, exponentiali logaritmic, sign, full value, partial functions (Ministry of Education, 2008) according to order which requires to get configured on each other.

Another result of this study lays out the conribution of real and extra ordinary problems to construction of more quality mathematical knowledge. It is seen that while organizing teaching, chosing appropriate problems is an important factor for on the result. Instead of starting teaching by giving a definition as in traditioanal teaching, studying on real events and problems and making them mathematical make abstraction easy. This kind of a study cause to strength structures acquired before by causing to use them constantly. In addition to all of these advantages, since the problems examplified in this study decided according to the thinking styles of the students, genearlly compatible with group work rather than classroom applications and there are some difficulties in implemeting this to the general. In this aspect of the study, it is though that there is an urgent need to carry out similar studies for teaching with bigger groups.

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THE IMPACT OF CONSTRUCTIVE FEEDBACK-BASED JOURNAL WRITING ON TEACHERS' PROFESSIONAL IDENTITY DEVELOPMENT

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ABSTRACT

Providing feedback has been considered to greatly improve language learners' overall competence in a wide variety of contexts. However, one area that has been least studied is providing feedback to language teachers and investigating the probable positive contributions to improving their professional prospects. Therefore, this study aimed at investigating the impact of constructive feedback-based journal writing on teachers' professional identity development. To this end, twenty-two EFL teachers participated in this study. A standard questionnaire was administered as both the pretest and posttest after the treatment. The analysis of the collected data was carried out through one paired-samples t-test. The results indicated that in spite of revealing slight improvement for the posttest over the pretest, constructive feedback-based journal writing did not significantly developed teachers' professional identity. Although, the reported results were not statistically significant, more investigation is merited to further shed light on the implications of this less-searched sphere of language teaching.

Key Words: Constructive Feedback, Journal Writing, Reflective Teaching, Professional Identity.

INTRODUCTION

The issues of constructive feedback, journal writing and identity have separately been the central focus among many scholars. Amalgamation of these concepts seems worth contemplating upon as appropriate grounds for the investigation of their pedagogical outcomes. Teachers exploit numerous styles whilst teaching in the classroom which may have salient effects on their intrinsic potentials and students' achievements.
Teachers sometimes implement strategies which they have not utilized before. Meanwhile, journal writing seems to shed some light on the professional attributes of teachers. It is also assumed that constant constructive feedback in line with the two concepts addressed in this study seem to play a crucial role in bringing about some positive instructive changes on the profession of teachers at different stages within the time of classroom conduct. Hence, this study is a direction toward these steps to generate a framework in general and to investigate each concept from the operationalized point of view in particular to arrive at a firm conclusion.

Constructive Feedback

Constructive feedback has been of great interest to both Second Language (SL) and Foreign Language (FL) researchers likewise. In the same way, a growing body of research has investigated the potential efficacy of Written Constructive Feedback (WCF) and its roles in language learners' writing development in different ways.

The effectiveness of WCF has been controversial regarding whether error correction is beneficial to the learning process or not. Feedback has proved to be effective in promoting language learning (Sheen, 2007; Lee,

1997), yet on the other hand, as Truscott (1996) claimed, it could be obstructive or even detrimental. In an extreme view on feedback, Truscott (1996) argued that the application of feedback on the learners' writing should be totally avoided as it hinders and harms writing development. According to Truscott (1996), "grammar correction has no place in writing courses and should be abandoned" (p. 328).

On the contrary, more recent studies support the positive contributions of constructive feedback (CF) tolanguage learning and in particular writing skills (e.g., Bitchener & Knoch, 2008; Sheen, 2007). Appropriate feedback also enables learners to notice the "gap" between their interlanguage and the target language resulting in more focused andaccurate learning. Additionally, in accordance with general research on language learning, CF studies have specifically focused on the ways CF can alter and promote "learning processes" and "linguistic competence" (Sheen, 2010b, p. 204).This, in turn, enables language learners to concentrate their attention on syntactical structures of their language products resulting in better learning of linguistic forms. Lee (2003) and Yates and Kenkel (2002) argue that the main concern nowadays is not to whether provide CF for the learners but rather "when and how to provide feedback on the students' errors" (p. 349). Similarly, Schmidt's (1990, 1995, 2001) Noticing Hypothesis suggests that noticing the gap between interlanguage and the target form is a prerequisite of learning, as long as conscious awareness of the input is present. Thus, CF provides learners with clues indicating what is wrong and draws their attention to erroneous forms resulting in better learning.

Russell and Spada (2006) further stated that CF is helpful for L2 learning. Erel and Bulut (2007) refer to various studies (e.g., Ferris & Roberts, 2001) for"motivating" and "encouraging" effects of WCF on learners and state that, "it isbelieved ... that if a teacher indicates a written grammatical error on a student'spaper and provides the correct form in one or another way, the student will realizethe error and will not repeat it in his/her future writings" (p. 398).

Additionally, Ferris and Roberts's (2001) experiment with different types of WCF substantiated the efficacy of CF on improving learners' writing accuracy.Numerous studies show the effectiveness of CF in promoting writing as well as grammatical accuracy of the learners. Ashwell (2000) also states that teachers believe that correcting the grammar of student writers' work will help them improve the accuracy of subsequent writing.

Research evidence on error correction in L2 writing classes shows that students who receive error feedback from teachers improve in accuracy over time (Ferris &Roberts, 2001). There is also research evidence which proves that students wanterror feedback and think that it helps them improve their writing skill in the target language (Leki, 1991; Ferris & Roberts, 2001; Chandler, 2003).

Similarly, Leki (1991) and Zhang (1995) in their studies found out that the learners themselves greatly appreciate teacher-provided CF regarding their writings. This clearly shows that "L2 students have positive attitudes towards written feedback" (Kaweera & Usaha, 2008, p. 86).

According to Lyster and Ranta (1997), different types of CF have been identified including explicit, metalinguistic, elicitation, repetition, recast, translation, and clarification requests. For more information refer to Appendix A.

Feedback to Teachers

It seems that the provision of feedback to teachers, which is one dimension of the present study, can also lead to better and effective education and instructional objectives. Bear on the issue, Scheeler, Ruhl, and McAfee (2004) believe that teacher preparation programs are under scrutiny for their role in the troubled American educational system. Thus, teacher educators must encourage teachers to use effective teaching practices. One technique for increasing the use of effective practices is providing feedback to teachers on both newly acquired and ingrained teaching behaviors. To determine attributes of effective performance feedback, a systematic search for empirical literature was completed. Analysis of some previous studies indicates that attributes of feedback falls into the categories of (a) nature of feedback, (b) temporal dimensions of feedback, and (c) who gives feedback. Through this review, attributes of feedback were classified as either promising or effective

practice in changing specific teaching behaviors. It was found that only immediate feedback was identified as an effective attribute. Promising practices for feedback to teachers included feedback that was specific, positive, and/or corrective. These findings, recommendations and directions for additional research in feedback and teacher preparation are discussed.

Colvin, Flannery, Sugai, and Monegan (2009) state that educators face ongoing pressure to improve student outcomes, especially with regard to academic achievements and social behavior. One viable strategy for supporting and improving instructional practices is to conduct classroom observations and provide performance feedback. Researchers have shown performance feedback to be effective in the workplace, institutions, and educational settings. The present case study on a high school teacher provides preliminary promising information of the relevance and effectiveness of the combination of a classroom observation and a performance feedback process that focused on the relations among 3 key variables: classroom instructional settings, instructional practice, and classroom student behavior. The current investigators used a process based on the observational data that identified when students were off task and pinpointed the corresponding setting categories and the teacher's instructional actions. The authors provided performance feedback to the teachers on the basis of these findings. Then, the teacher made changes in the identified setting categories and teacher actions, resulting in substantial gains in class engagement and a reduction in problem behaviors.

Teacher Education

The issue of teacher education enjoys a multidimensional scope for consideration; however, its programs, selves, standards, and behaviors seem to energize a remarkable degree of professional identity development. Likewise, it can be said from another point of view that the constant provision of feedback on the side of teacher can have profound constructive impact on the behavioral traits of them. Relatively speaking, Hoban (2004) concludes that the quality of existing teacher education programs is currently being debated in many countries and at many educational levels. He examines the nature of teaching and challenges the common mechanistic approach to teacher education design. If teaching is a complex profession, then a more integrated and dynamic approach to designing teacher education programs is needed. In this regard, he proposes a four-dimensional approach for thinking about a conceptual framework to guide teacher education design. These four dimensions include: (a) links across the university-based curriculum; (b) links between schools and university experiences; (c) socio-cultural links between participants; and (d) personal links that shape the identity of teacher educators. It is argued that a conceptual framework based upon the consideration of these four dimensions is likely to ensure quality in a teacher education program. Moreover, According to Cochran-Smith (2005) new teacher education has been emerging with three closely coupled pieces. It is constructed as a public policy problem, based on research and evidence, and driven by outcomes. Illustrating and critiquing each of these pieces, it is said that the new teacher education is both for the better and for the worse. He concludes that education scholars who care about public education must challenge the narrowest aspects of the emerging new teacher education, building on its most promising aspects and working with others to change the terms of the debate.

Journal Writing

According to Esbenshade (2002), journal, diary, or log writing is an ongoing written account of observations, reflections, and other thoughts about teaching, usually in the form of a notebook, book, or electronic mode, which serves as a source of discussion, reflection or evaluation. The journal may be used as a record of incidents, problems, and insights that occur during lessons. Journal writing can be in the form of computer word processing (individual), electronic mail (group), and even through 'talk'- by speaking journal entries into a record for later analysis.

According to Brock et al., (1992), journal writing enables a teacher to keep a record of classroom events and observations, without such records, the teacher often has no substantial recollection of what happened during a lesson and cannot use the experience of successful teaching as a source for further learning .Moreover, according to McDonough (1994), it seems that adult educators write journals for many different reasons prompted by many different purposes. We may want to capture an experience, record an event, explore our feelings, or make sense of what we know. We may want to narrate something of importance so that others can

see what we saw in it. Sometimes we write primarily for ourselves, sometimes for others. Journal writing is as varied as those who engage in it.

Ferrell (2007) believes that journal writing can be viewed through many different perspectives: as a form of self-expression, a record of events, or a form of therapy. It can be an amalgamation of these and other purposes. Journal writing can be used to energize what we do and how we do it. As a vehicle for learning, it can be used in formal courses, our professional practice, or any aspect of informal learning. Writing reflective journals is considered to be one of the main procedures for stimulating critical reflection skills of teachers. According to Cole et.al (1998) many different topics from classroom experiences can be explored through journal writing, for example:

- Personal reactions to things that happen in the classroom.
- Questions or observations about problems that occur in teaching.
- Descriptions of significant aspects of lessons or events.
- Ideas for future analysis or reminders of things to take action.

Given these specifications, the researchers see journal writing as a process of recoding ideas, classroom experiences, one's personal reactions, questions and observations about the events, description of events or classroom aspects all for the purpose of responding reflectively and responsively to these issues.

Reflective Teaching

Reflective teaching has been defined as a reflection process that helps teachers to think about what happened, why it happened, and what else could have been done to reach their goals (Cruickshank, 1981). It has been found to be significant because it implies a more systematic process of collecting, recording and analyzing our thoughts and observation as teachers, as well as those of our students, and then going on to making changes.

The simple essence of reflection is stepping back and thinking about one's activities or thoughts. A literature review of reflective teaching supplies us with a display of explanations of what the construct means or involves. Dewey (1933) views reflection as "active, persistent, and particular careful attention of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusion to which it tends" (p.9). Milrood (1999) also conceptualizes reflection as "the process of mirroring the environment non-judgmentally or critically for the purpose of decision-making" (p. 10). Along the same line, Schon (1987), while depicting reflection as an act of displaying, distinguishes between two types of reflection. The first type of reflection is reflection on action which occurs after a teaching occurrence to allow mental remodification and analysis of the actions and occurrences, while the second type of reflection is reflection in action which happens during the act of teaching, interpreting, analyzing, and providing solutions to the intricate situations in the classroom. Scholars reiterate on the importance of reflective teaching. They also envisage the concept of reflectivity from diverse perspectives. Empirical findings of recent studies indicate teachers are positive to enhance reflectivity whilst practicing in their classrooms too. In fact, reflection is a passionate desire on the part of the teachers to modify problematic classroom situations into opportunities for students to learn and develop. In Dewey's (1933) terms, reflection is thought to be a purposive attempt which resolves intricate classroom dilemmas into educative experiences which lead to energize student and even teacher growth and learning. According to him, students, in such a context, become more sensitive and responsive to new and broader educational opportunities. Indeed, effective reflection in teaching takes students out of educational ruts and makes them more impelled towards learning. He also holds that through reflection, teachers can react, examine and assess their teaching to make logical decisions on essential changes to improve attitudes, beliefs and teaching practices which lead to better student performance and achievement. Also, reflective teaching comes to help meaningful thought and discussion among individuals about teaching and learning that will stimulate suitable change in curriculum and pedagogy.

From the discussion posed above, reflection, then, is a kind of self-examination to judge whether things have been carried out in a suitable and realistic way and to go further and make meaning of one's actions by questioning causes and attitudes. In other words, reflection signifies being immersed in deliberation and self-criticism with the purpose of cultivating ones' teaching practices.

Although there is little, if any, empirical research considering the link between this concept and student achievement outcomes (Akbari, 2007), multiple professionals in the field (Schon, 1987; LaBoskey,1994; Zeichner & Liston, 1996; etc.) have examined, mostly at the theoretical level, the advantages of reflective practices for teacher effectiveness; the construct is greatly believed as one of the most essential schooling factors affecting student achievement gains (Sanders, 2000; Ferguson, 1998; Goldhaber, 2002). The importance of the findings of the study by (Akbari, 2008) lies in the fact that almost all the claims referred to the influence of teacher reflectivity on student achievement outcomes have been theoretical and this study casts experimental light on the issue. Thus, the results of the study indicate that teacher education programs should inform pre-service and even in-service teachers with the components of reflective approach to teaching if they want to amend effective teachers, who, in turn amplify student achievements.

According to Farrell (2003), the overall findings of the above mentioned studies propose that reflective practice helps to free teachers from impulsive and ordinary behavior. It aids teachers to generate their daily experiences, allows them to act in a decisive critical and intentional style, and elevates their consciousness about teaching, enables deeper understanding and encourages positive change. These studies additionally indicate some points relating reflection and sense of efficacy. Lowery (2003), for instance, sees reflectivity and sense of efficacy as quite close concepts and believes that reflective teaching increases teachers' confidence, autonomy, and self-efficacy. Likewise, Iran-Nejad and Gregg (2001) maintain that reflection is one type of self-regulation. Thus, they believe, there is a strong likelihood that involving in reflection will strongly affect teacher's self-efficacy since self-efficacy is closely related to self regulation.

As a result of engagement in reflection, teachers become better observers of classroom conduct, which arouses a consciousness of their teacherly rulings and the reasons behind their decisions. This makes their practice more and more explicit as they initiate to realize the motivation for their more instinctive decisions (Nolan & Huebner, 1989).This understanding informs the teachers' classroom access and lessens their cognitive dissonance making them less inclined to trust in traditional practices if those practices do not produce the desired educational outcomes (Deutsch, 1996). This lack of reliance on conventional practices leads to the replacement of unproven opinion with grounded belief (LaBoskey, 1994) and makes teachers not only the consumers of knowledge, but also primary producers of new knowledge. It, in turn, leads to progressions in teacher intellectualism, practitioner self-management, an augmentation in practitioners' power to stay current in their field, and a constructivist paradigm of life-long learners (Kelly, 1993; Nolan & Huebner, 1989).

Relatively speaking, reflectivity on the part of the teachers, besides its impacts on practitioners, is thought to have some effects on students, too. It is also argued in the literature that a teacher's engagement in reflective teaching energizes students' ability to be critically reflective (Yost et al., 2000). As teachers become more attentive of reflective practices, they initiate to model this reflective behavior for their students. Therefore, they are more likely to encourage the same behavior in their students (Nolan & Huebner, 1989). Accordingly, writing reflective journals is one of the most famous tools of reflective teaching.

Reflective Journal Writing

Reflective journal, diary, or log writing is an ongoing written account of observations, reflections, and other thoughts about teaching, usually in the form of a notebook, book, or electronic mode, which serves as a source of discussion, reflection or evaluation. The journal may be used as a record of incidents, problems, and insights that occurred during lessons. Journal writing can be in the form of computer word processing (individual), electronic mail (group), and even through 'talk'- by speaking journal entries into a record for later analysis.

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Professional Identity

Teacher professional identity is how teachers define themselves as teachers (Lasky, 2005). In other words, one's answers to such major questions as *who am I?, What kind of teacher do I want to be?,* And *how do I see my role as a teacher? (*Korthagen, 2004) constitute their professional identity.

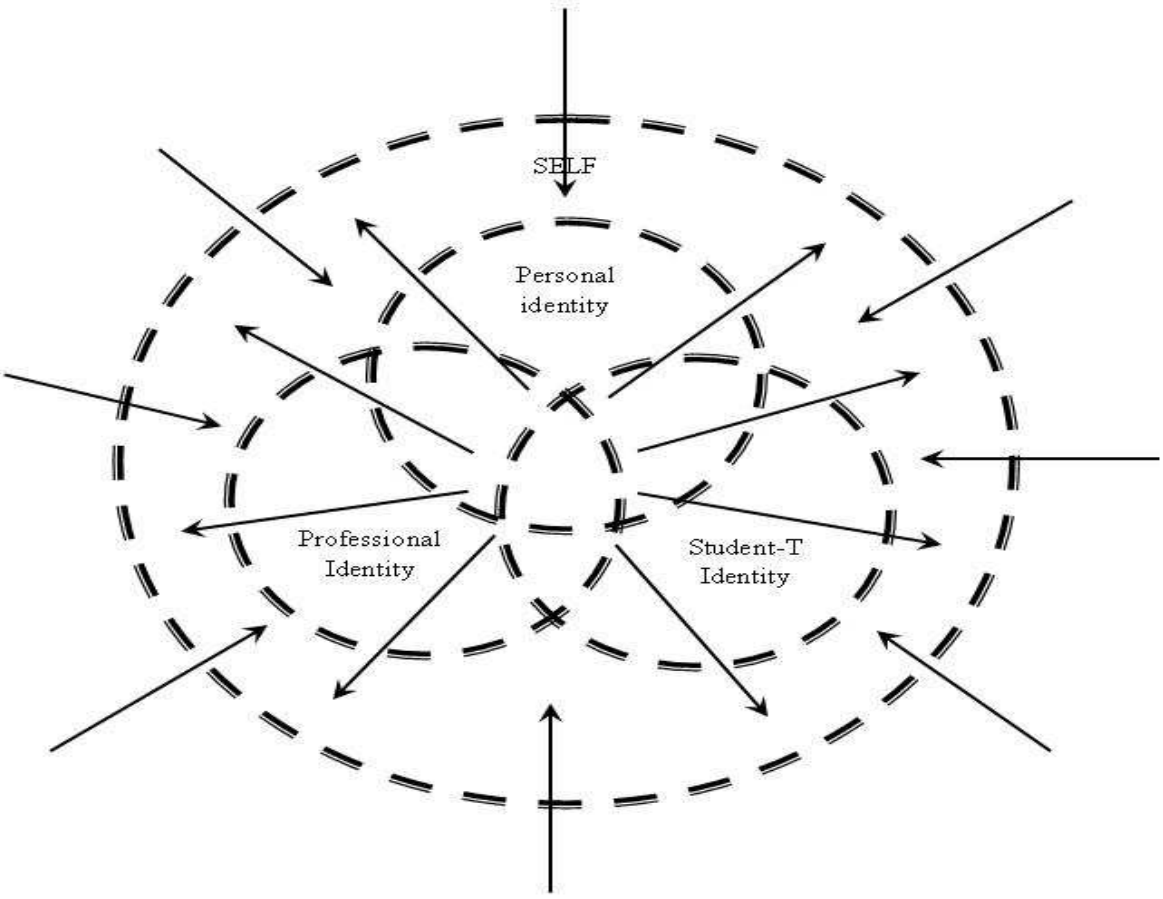
Questions regarding self and identity have existed almost since the emergence of philosophy. More to say, Vakili (2010) reports that major philosophical figures such as Plato, Descartes, Locke, Hume, and Kant have attempted to answer questions such as *Who am I?, Who could I have been?, Who will I become?, What is it to be a person? and How do we recognize who is who?.* There is not, however, a unique answer for these questions and most answers are illuminated by each philosopher's view about the world and the nature of reality and knowledge (Stanford Encyclopedia of Philosophy, 2007). For example, positivist and post-positivist philosophers would attribute self and identity features to nature and development, meaning that the unfolding of a person's identity is in a way beyond their control or the control of society (Gee, 2000-2001). Modern thinkers, nevertheless, assign a much more basic role to a person's culture, history, and agency in the formation of a self or identity. Finally, postmodern philosophers resist the concept of a unique stable self or identity proclaiming that these are multifaceted and in constant creation/recreation through discourse (Zembylas, 2003). Postmodernists go as far as considering self and identity as continuously varying states of mind and refer to them as *subjectivity* or *intersubjectivity*.

Traditionally, the terms self and identity are not clearly distinguishable from one another. Nevertheless, in this thesis project self is understood as emerging from the incorporation of multiple identities, which are to a great extend intertwined with the social context and morality.

Vakili (2010) sees professional identity as the concept or internal depiction that a person has regarding his or her performance as a language teacher. This depiction is interdependent of the context, culture, live experiences, and individual choices.

Therefore, agency plays a central role in Professional Identity (PI) construction, an agency that is exercised in and out of dialogical interactions with others. Knowledge, language and discourse are the tools that teachers have to recreate their professional identities in different and emancipatory ways. To understanding, personal and student teacher identities emerge in the same way as professional identity and are as significant as professional identity in defining the teacher self.

The following figure represents the researcher's understanding of how the teacher self is constructed. Due to the multiplicity of identities and the intricacy of self construction processes in current times, the diagram 1 exclusively illustrates the discursive teacher self that emerges as a result of the researcher's interaction with the participants of this study during the interviews. The teacher self that emerges is discursively co-created by the researcher and participants. It is the participants' subjective understanding of who they are as language teachers and how their life experiences have shaped their selves as language teachers.



Figur 1: Schematic representation of the teacher Self (Vakili, 2010)

The outer circle of the diagram illustrates the teacher self, the one that emerges as the result of the dialogical interaction between researcher and participants. The three inner circles represent the identities on which the present study is focused: personal, professional, and student-teacher identities. Personal, professional and student teacher identities are interrelated and exert similar influences on the continuous construction of the teacher self. The axiological framework is placed at the centre of the diagram since it can be considered as entailing the core values that nurture our identities and, thus, our selves. It is our axiological frameworks towards which we look when evaluating our selves. The axiological framework likely helps to hold together our multiple identities in order to shape them into a coherent self.

Each of the circles in the diagram is made up of a double line of short dashes to emphasize the dynamic nature of the axiological framework, identities, and the teacher self. He continues that the teachers' axiological frameworks, identities, and selves are continuously being constructed and reconstructed, influencing each other and the social context. This influence is represented by the arrows pointing outwards. The arrows pointing inwards represent the different contextual issues that exert influence on the construction of the teacher self. In many occasions, contextual influences trigger the transformation of certain values that constitute the axiological framework. These contextual issues, such as colleagues, teacher development programs, family life, or children, may be present throughout different moments of participants' narratives.

Professional Identity Development

Beijaard, Meijer and Verloop (2004) reported on their review of a number of studies corresponded to that of teacher professional identity. In this paper, they classified the reviewed studies in three groups, namely studies concentrating on teachers' professional identity construction, studies concentrating on attributes of teachers' professional identity, and studies pertaining to professional identity as represented in teachers' stories. It was found that in these studies the construct of professional identity had been defined in different ways, the role of context in construction of professional identity had been somehow overlooked, and the perspective predominating research in this area was one of cognitive from among their recommendations for future research were more attention to contribution of context to formation of professional identity and adopting perspectives other than cognitive in exploring this construct. Those interested in understanding about what developmental process research on teachers' professional identity has gone through in the last two decades are recommended to study too, to this end.

In another relevant study by Ten Dam and Blom (2006), contributions of school-based teacher education to development of professional identity were investigated. The main research question directing this study by Dam and Blom was whether there was a stimulating context for student teachers to develop their own professional identity, and the theoretical framework underpinning the study was the sociocultural assumption that learning to become a teacher means developing a professional identity. Hsiu-ting (2008) also explored the contributions of reflective practices in teacher education to formation of professional identity. In addition, according to Hsiu-ting (2008), it was asserted that a direct outcome of this process is teachers' becoming pedagogically and theoretically informed.

In a similar study, Flore and Day (2006) investigated reconstruction of teachers' professional identities in the early years of teaching and the factors affecting the ways in which the participant teachers' identities were shaped and reshaped. The general findings of the analysis were presented in terms of three major influences upon construction, deconstruction and reconstruction of the participants' professional identities. The first theme which emerged from the analysis of the data was teachers' past experiences as pupils. It was seen that the participants' former teachers and their observation of diverse teaching styles when they were students served as a frame of reference based on which they made sense of teaching. Thus, it was concluded that such prior experiences had considerable effects on beliefs and ideas they brought to their teaching. In the conclusion of the article, they provided a brief summary of the way diverse contextual factors impact on teachers' professional identity.

From the findings it is implied that the relatively weak influence of pre-service programs might be energized by a stronger focus upon opportunities to experience and reflect upon personal biography and the cultural contexts of schools. Induction processes, also, need to concentrate on the development of teachers' construction of identity through exploring of links between personal biography, reflective practice in the classroom, student feedback, peer support and increased awareness of continuing professional development within supportive school cultures (Flores & Day, 2006).

Teacher Professional Identity

Basically, it can be simply hypothesized that teachers value the concept of professional identity and have various perceptions of the notion of professional identity. Moreover, they are likely to promote their professional identity development in mainstream education. Empirical findings also support this idea, too. For example, Beijaard, Verloop, Vermunt (2000) investigated secondary school teachers' current and prior perceptions of their professional identity. The teachers currently saw their professional identity as consisting of a combination of the distinct aspects of expertise. Most teachers' current perceptions of their professional identity reportedly differ significantly from their prior perceptions of this identity during their period as beginning teachers. On the basis of their current perceptions of their professional identity, five groups of teachers could be distinguished. These groups have different learning experiences throughout their careers for each aspect of expertise. Also, teachers from different subject areas do not undergo the same changes in their perceptions of their professional identity. They reported the differences among the groups in teachers' current

perceptions of professional identity were not related to contextual, experiential, and biographical factors that might influence these perceptions.

Likewise, Beijaard, Meijer, and Verloop (2004) concluded that the recent research on teachers' professional identity can be divided into three categories: (1) studies in which the focus was on teachers' professional identity formation, (2) studies in which the focus was on the identification of characteristics of teachers' professional identity, and (3) studies in which professional identity was represented by teachers' stories.

The Role of Journal Writing in Identity Development

Francis (1995, p.234) mentions that critical friends can "stimulate, clarify, and extend thinking...and feel accountable for their own growth and their peers' growth". Groups and individuals link critical friendships in some way to observations ofclasses. In this way, they believe the critical friends can have an open dialogue which is grounded in their observations and experiences. Colleagues can make each other engaged in systematic reflection and, therefore, direct each other's professional self- development**.** Practicing teachers are much occupied in their daily teaching and other related duties, and the amount of time any one teacher is willing to devote in his or her professional self-development will naturally vary.

More to say, for practicing teachers to be able to reflect on their work, time is a very important consideration. Time is important for teacher self-development. Golby and Appleby (1995, p.158) point out that "teachers do not readily confront their problems with a reflective approach". Elbaz (1988, p.173) claims that that teachers "have a common concern to reduce the complexity of the situation, to accept neat and obvious accounts of the causes of the problems. Analytical reflection, therefore, takes time and only progresses at, a rate which individual teachers are ready to reflect critically.''

If various groups of teachers readily accept each other's perceptions of their teaching and support these perceptions regardless of what outsiders say, as Nias (1987, p.140) points out, "also inhibit change; by definition there is seldom dissent or creative tension". Furthermore, (Ur, 1993) says individuals and groups in a process of professional self-development need to be challenged by external input for a more enriched reflection.
With respect to professional identity, it can be seen, as Beijaard, Meijer and Verloop (2004) believe, that the notion of professional identity has been perceived subjectively among scholars; nevertheless, a thorough understanding of the concept will have a significant effect on the behavioral aspect of teacher's conduct mainly in classrooms and it seems to have gradual amendments in the process of their workshops. Furthermore, Black and Wiliam (2008) and Stiggins (2008b) support provision of constructive feedback to students in general and to teachers in particular.

In the light of the aforementioned studies and the positive contributions of journal writing for teachers and with respect to the fact that so far, most studies on feedback have only been concerned with learners' improvement in different educational contexts, little attention, if any, has been paid to the probable effects of providing feedback on improving teachers and teaching conditions. Therefore, the present study was embarked upon to investigate the impact of constructive feedback via journal writing on teachers' professional identity development through the following research question:
RQ. Does constructive feedback-based journal writing has any significant effects on developing EFL teacher's professional identity?

METHOD

Participants

The participants of the study were twenty-two male and female EFL teachers holding either B. A. or M. A. in TEFL teaching at secondary high school and educational centers affiliated to IAU South Tehran Branch.

Instrumentation

To conduct the study, the following instruments were employed:

1. Professional identity questionnaire developed by Beijaard, Verloop, and Vermunt (2000). See Appendix B.
2. Journals developed by the participants.

Procedure

Having selected the participants, the researcher sought their participation in the study. They first received the questionnaire to measure their perceptions of professional identity. Then, they were asked to develop a journal each session on the main issues of the teaching-learning situation following the Presentation-Practice-Production (PPP) model, which is a kind of instructional sequence or a model of lesson planning; reporting on classroom management, error correction, on the spot decisions, etc.

Their journals were collected every session; examined by the current researchers. Necessary constructive feedback in the form of recommendations and comments would be offered in the form of written notes at the end of each journal. This process continued for at least ten sessions. Finally, the teachers received the same questionnaire to measure their perceptions of professional identity after the treatment.

Data Analysis

Having collected the data, a paired-samples t-test was run to investigate whether constructive-based journal writing has been effective in developing teachers' professional identity after the treatment.

RESULTS AND DISCUSSION

The research question to be investigated was:
Does constructive feedback-based journal writing has any significant effects on developing EFL teacher's professional identity?

To answer the question, a paired-samples t-test was run to probe the effect of constructive feedback-based journal writing on the professional identity of the teachers before and after the treatment. As showm in Table 1, the teachers show a higher (M = 21.24, SD = 1.92) professional identity on the posttest compared with the pretest (M = 20.49, SD = 1.72).

Table 1: Descriptive statistics of pretest and posttest of professional identity

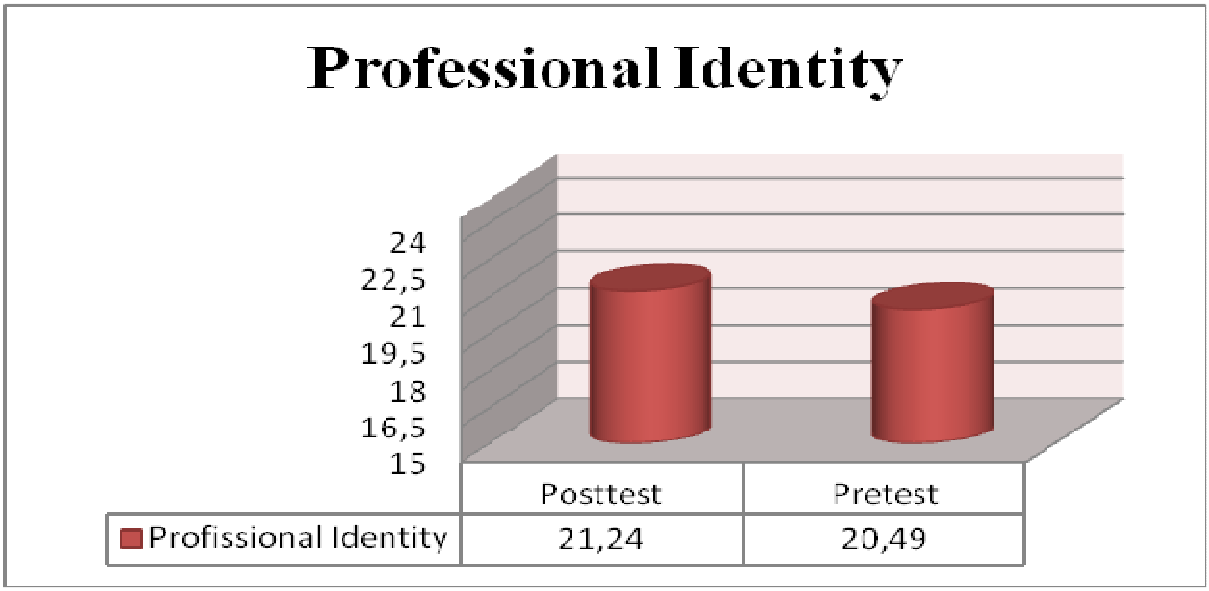
		Mean	N	Std. Deviation	Std. Error Mean
Professional Identity	Posttest	21.24	22	1.923	.410
	Pretest	20.49	22	1.722	.367

The results of the paired-samples t-test presented in Table 2 (t (21) = 1.54, P = .137 > .05; r = .31 representing a moderate effect size) indicate that the differences between the means observed in Table 1 are not statistically significant. Therefore, there is no statistically significant difference between the teachers' professional identity before and after receiving constructive feedback on their journal writing.

Table 2: Paired-Samples t-test Pretest and Posttest of Professional Identity

Paired Differences					t	df	Sig.(2-tailed)
Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
			Lower	Upper			
.748	2.270	.484	-.259	1.754	1.545	21	.137

The following figure shows the mean scores of the participants in the pretest and posttest of the professional identity questionnaire.



Figur 2: Pretest and posttest of professional identity

The purpose of this study was to investigate the probable effectiveness of constructive-based journal writing on EFL teachers' professional identity development. The results of the paired-samples t-test on the collected data revealed that despite the fact that the participants' posttest results showed slight improvement over their pretest, the difference was not statistically significant.

The reported results are in accordance with Vakili's (2010) findings corroborating the effectiveness of certain factors in improving teachers' depiction of self. Additionally, Beijaard, Meijer and Verloop (2004) reported a number of studies corresponding the positive attributes of teacher professional identity. In this paper, they classified the reviewed studies in three groups, namely studies concentrating on teachers' professional identity construction, studies concentrating on attributes of teachers' professional identity, and studies pertaining to professional identity as represented in teachers' stories.

Some factors can also be deemed to have contributed to the reported results. First, teachers' educational background might have altered the intended results. Teachers' point of view can be another factor influencing the results. Additionally, cultural and socio-affective factors can be taken into account as affecting teachers' choice of teaching strategies.

CONCLUSION

This study aimed at investigating the effectiveness of constructive feedback via journal writing on the EFL teachers' professional identity improvement. Twenty-two EFL teachers participated in this study. The results of the analysis on the collected data through one paired-samples t-test showed that the constructive-based feedback through journal writing was not effective in improving teachers' professional identity.

Although the findings of the study were not statistically significant, the major implication of the study was that the teacher education program could act out as a vehicle to establish connections between theory and practice and, in this way, assist teachers to shape their professional identities. Another finding which also postulated positive effects of the program on the student-teachers' professional identities was that the students and teachers were given the space to voice their opinions and make contributions to the school programs and

activities like teachers or less professional teachers. It can also be mentioned that reflective participation of student-teachers in diverse real-life activities was seen to be a major impetus for teachers' conceptualizing education as a social and cultural practice and, hence, constructing their professional identities.

Based on qualitative content analysis and discourse analysis of the gathered data they, it was concluded that the interaction among participants and the reflective practice they had throughout the course provides a rich opportunity for them to make sense of their teaching profession and co-construct their second language teacher identity.

Additionally, In the studies reviewed, the concept of professional identity was defined differently or not defined at all. According to Beijaard, Meijer, and Verloop (2004), in future research on teachers' professional identity, more attention needs to be paid to the relationship between relevant concepts like *self* and *identity*, the role of the context in professional identity formation, what counts as "professional" in professional identity, and research perspectives other than the cognitive one that may also play a role in designing research on teachers' professional identity.

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Appendix A

Characteristics of Lyster & Ranta's (1997) categories of corrective feedback

Corrective Feedback Type	Definition	Example(s)	Nature of Error Indicated	Target-like Reformulation Provided	Elicited Output
Explicit Error Correction	Explicit provision of the target-like reformulation	You should say visited.	Yes	Provided directly	None or repetition
Metalinguistic Feedback	Comments, information or questions (that may or may not contain metalanguage but do not include the reformulation) related to the ill-formedness of the utterance	There's a mistake. It's past tense. Did you use the past tense?	No Yes Yes	No Provided indirectly through metalinguistic hint at correct reformulation Provided indirectly through metalinguistic question concerning rule governing reformulation	Identification of error and/or reformulation Reformulation Metalinguistic response, yes/no response, or reformulation
Elicitations	A prompt for the learner to reformulate	Try that again. How do we say that in the past tense? Yesterday we …	No Yes Sometimes	No No No	Reformulation Reformulation Reformulation
Repetitions	Repetition of all or part of the utterance containing the error, often accompanied by a change in intonation	Yesterday we visit my aunt.	Sometimes	No	None or repetition
Recasts	Implicit reformulation of all or part of the learner's utterance	Yesterday we visited my aunt. I visited my aunt last week.	Yes Yes	Reformulation provided Reformulation provided	Repetition Repetition
Translations	Target language translation of unsolicited use of the L1.	***	Yes	Reformulation provided	Repetition
Clarification Requests	An utterance indicating a problem in comprehension, accuracy or both.	Pardon?	No	No	Repetition, reformulation, or meaning elaboration

Appendix B

EFL teacher's professional identity questionnaire

Subject matter field 1.As a teacher, I think about the necessity of keeping pace with new developments	Always 100%	Often 70-90%	Sometimes 40-60%	Rarely 1-40%	Never 0%
2. Relevance to students of having a knowledgeable teacher					
3.I think teachers cannot permit themselves to make mistakes					
4.I find out/think subject matter is not the only basis for a teacher					
Didactical field 5. In my teaching, I observe the importance of taking into account the students' level					
6. I think there are many ways to teach and learn the same thing					
7.I think about the importance of students' ways and strategies of learning					
8.I think planning and organization are the basis for teaching					
9. As a teacher, I think to motivate and interest students by changing learning activities are important					
10. I think about the necessity of being alert by listening and observation					
Pedagogical field 11. I think about the Ways of approaching students (positive, open, with respect, etc.)					
12.Carrying out small scale research indicates: Good/safe classroom climate as a necessary condition for teaching					
13. Being alert for signs of students/ showing involvement					
14. I think students' situation/well-being is starting point for the lessons					

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A CONCEPTUAL FRAMEWORK EXAMINING THE ANTECEDENTS OF CAREER DECISIVENESS USING MOTIVATION SYSTEMS THEORY

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ABSTRACT

An extensive body of vocational research has been dedicated to the topic of career-decision making behaviour. Work is integral to human functioning, and all psychologists need to understand the role of work in people's lives. Understanding factors influencing work choices and helping individuals effectively make career decisions is the focus of vocational psychologists. The external changes, such as shifts in the economy and labour force, as well as initiatives within the field are challenging the assumptions within vocational psychology. Under such circumstances, it becomes more important to study career decisiveness and more importantly examine the process of career planning which eventually leads to career decisiveness. So there is a need to assess attitudes, expectations, and emotions about one's career in the form of Career Future Inventory to measure career choice or career decisiveness. Career decisiveness (CD) has been an instrumental tool for vocational psychologists and a phenomenon of interest to parents, faculty, school counsellors, and others who advise young adults on their career choices. The current study shall investigate the antecedents and consequences of career decisiveness using the Motivational Systems Theory (MST). The major rational of applying MST is to understand career choice has its impetus both on the individual and contextual factors.

Key Words: Career decisiveness, motivation systems theory, career planning attitude.

INTRODUCTION

India seems to have an advantage in terms of abundant supply to its work force owing to its demographic characteristics (India has over 550 million people who are 25 years or younger -Census report 2012).Despite this advantage,the employability level of the upcoming workforce has been questioned by experts. The country has a huge shortage of skilled people and this talent deficit is already hampering the manufacturing and services sectors' growth prospects. India's education system has been unable to support the rising demand for skill sets (Holtbrugge et al., 2010). The main reason for this shortage of qualified applicants is large differences in the level of education at universities and colleges across the country. While some have an excellent reputation, others can hardly provide sufficient education to prepare students for jobs in MNCs. (Holtbrugge et al., 2010). To add on to this difficult situation, the economic situations prevailing for the last few years have reduced the opportunity for meaningful employment for many.

Forecasts of slowing economic growth in India, as part of the current global downturn, raised the unfortunate possibility of increase in unemployment and job loss (Swan & Tanner ,2009). The authors further stated that during the recession, companies were forced to preserve financial flexibility and do more with less. In doing so, employers drastically reduced their workforces, and discovered that they could generate more productivity and innovation from their people if they had the right person in the right job. With no intention of returning to pre-recession workforce levels, employers have become more specific about the combination of skill sets that they are looking for, not only seeking technical capabilities in a job match, but also for the person that possesses the interpersonal and cultural fit that will drive their organization forward (Budhwar et al., 2006; Raman, Budhwar,& Balasubramanian, 2007).

Given this backdrop, vocational education and career planning in India has assumed critical importance in the last few years (Agarwal, 2009). Miller & Marvin, (2006) stated that the reality of the current economy is that the job market is more volatile and jobs are less permanent. The authors conducted a study to understand the

importance of career planning among students and working professionals. They found out that majority of the individuals change jobs each year, and majority of them need some career planning assistance. The study also found out that the need for good career and labor market information for all age group is very important.

Career planning is the fundamental step in the course of career development, the process of general and vocational decision making (Gunket et al., 2010). Career theorists have agreed that to attain Career Decisiveness , the most desirable state of career decision making requires immense amount of planning and a level of career maturity (attitude and competency) that is characterized by an exploration of one's ability, knowledge of available careers, employment, and training opportunities (Gottfredson, 1981). In such a situation, it becomes a matter of concern to understand and investigate the factors that foster adequate career planning skills among individuals . At the same time also assess the positive consequences of having Career Planning skills . With the help of this kind of study, one could understand the factors that are required to make effective career choices . Such a study would be helpful to career counselors in providing career related to guidance to individuals.

LITERATURE REVIEW

MST and Career Planning attitudes (CA,CO, PJK)

Gutteridge (1973) noted that without a career plan, individuals often become discouraged with their career progress and disillusioned with their job situations. In particular, the threat of personal obsolescence, as documented by Bridges (1994), makes Career Planning particularly important to business professionals and managers. In a global economy driven by technological change, the average business school graduate can expect to change jobs seven or eight times (Bolles, 2002; Peters, 1999). Clearly, students will be required to take more responsibility for their own career development and to learn the competencies necessary to manage the career planning process successfully (Ball, 1997; Ball & Jordan, 1997).Empirical field research, studies at the college level, and the popular Career Development literature all support the importance of systematic career planning as a prelude to successful job searches and long-term career management (Broscio & Paulick, 2003; Folsom & Reardon, 2003). Gould's (1979) study of 277 managers and professionals provides an early example of the empirical literature. He found that individuals with the most successful careers (based on salary and position level) reported more extensive career planning.

Considering the same need, Rottinghaus, , Day and Borgen (2005) developed and validated a new 25-item measure of positive career planning attitudes called Career Future inventory (CFI). Results from a sample of 690 undergraduates from a large mid-western university revealed three subscales: Career Adaptability, Career Optimism, and Perceived Knowledge. Career daptability (CA) was defined as the way an individual views his or her capacity to cope with and capitalize on change in the future, level of comfort with new work responsibilities, and ability to recover when unforeseen events alter career plans. Career Optimism (CO) was defined as a disposition to expect the best possible outcome or to emphasize the most positive aspects of one's future career development, and comfort in performing career planning tasks.3. Perceived Knowledge of Job Market (PJK) assessed perceptions of how well an individual understands job market and employment trends.

Motivational Systems theory (MST) was built upon the theory of individuals as self-constructing living systems (Ford, 1987) and is based on an integrative review of motivational theories (Hirschi, 2009). MST proposed that thriving and achievement was facilitated by the interaction of goals, capability beliefs, context beliefs, and emotions (Ford & Smith,2007). Goals, are thoughts about desired and undesired potential future states; In case of career oriented studies representation of goals has been in many forms. In the career development domain, several studies have revealed that goals impact career planning variables like career maturity, career adaptability (Hirschi and Läge, 2007; Creed, et al., 2005;). Capability beliefs find their relevance from Bandura 's (1967) concept of self efficacy. Essentially, they are whatever the person is thinking about when they consider whether they have what it takes to successfully accomplish a goal. Studies have shown individuals with greater career decision making self efficacy are more prepared and concerned about their career (Roger et al., 2008; Creed et al., 2006; Creed et al., 2004). Context beliefs are evaluative thinking about a goal which may also reflect judgments about whether elements of the context are likely to facilitate or constrain efforts to make

progress toward that goal. (Ford and Smith 2007; Ford 1987). In case of career related studies they are generally summarized as how supportive one's environment is perceived to be in terms of available social support and opportunities. This aspect is mostly accounted for by perceived social support (Hirschi 2009; Knoack et al 2008). Emotions are complexly organized patterns of several psychological and biological processes, including an affective (neural–psychological) component (Ford, 1994). In the context of career related studies, it is mostly operationalized as positive emotional disposition or better termed as optimism (Creed et al., 2002; Hirschi, 2009). Optimism was defined as a generalized tendency to expect positive outcomes (Scheier and Carver, 1993). A number of studies had investigated optimism in the career area (Creed et al., 2002; Patton et al., 2002). Studies found that students who endorsed higher levels of Optimism showed greater career planning and exploration, were more decided about their career and had more career goals, while those high in pessimism (reverse of optimism) reported less career knowledge, were more indecisive and achieved more poorly academically.).

There are various advantages of using MST in case of career orientation studies. In case of career choice or career decisiveness, it is important to explore self and the environment . Super (1957) . MST provides an appropriate theoretical lens to understand the same. It enables one to assess the effect of different socio-demographic (social context) and human capital variables (goals, emotions and capability beliefs) collectively . MST provides all the three aspects in the form of Capability beliefs (Personality factor), Optimism (Cognitive factor), and Goals (Motivational factor) . As such, it provides a more complete picture of possible predictors than if just single components (e.g., self-efficacy beliefs) were examined.

Career planning and Career Decisiveness

Career decisiveness has been identified as an important construct in the study of career decision making (e.g., Dickinson and Tokar, 2004; Osipow, 1999). It has been stated as an individual's certainty about the career decision (Osipow et al. 1987). The author defined career decision-making as the thought processes by which an individual integrates self-knowledge and occupational knowledge arrive at an occupational choice. It is in fact a complex process involving a range of processes, and a lot of phases or states. (Osipow, 1999). He further stated that the end state or result of which is Career Decisiveness..The exact reverse of career decisiveness is described as career indecision. Typically, career indecision simply has been defined as the presence of difficulty with making decisions. There are plethora of studies documenting the impact of career planning attitudes on career decisiveness.

Ganster and Lovell (1978) used a quasi-experimental design to assess the impact of career planning attitude on career decisiveness. The sample consisted of both students taking a business management class and students enrolled Career Courses in a career development seminar. Robinson (1995) reported on a pretest-posttest study of the effects of a career course on the career maturity of undergraduates. The measuring instrument was the Career Development Inventory (CDI; Super et al., 1981). Salter (2009) used a pre-posttest design to compare two different instructional approaches in a college career development course with 52 lower division students. A standard career course plan was used for one group and a special curriculum that included purposeful infusion of the five critical components (Brown & Krane, 2000) into course activities was developed for the other group. The outcome variables of interest were career decision making self-efficacy, career decidedness. Peng (2001) examined the effectiveness of two different career education courses on college freshmen career decidedness. The study suggests that career education courses have a positive impact on career decision making. Gunkel, Schlaegel, Langella, Peluchette (2010) studied firstly the degree to which career adaptability, career optimism, and career knowledge predict career decisiveness in China, Germany, and the US; and secondly, the effect of the five personality traits on the determinants of career decisiveness, on career decisiveness. Similar work was done to understand the impact of career planning attitudes on career choices like Creed et al., 2009; hirschi 2009; Hirschi 2010Macilven et al., (2013);HirschiZiebel (2010);

RESEARCH GAPS

Following are the gaps identified in the literature

Given the positive impact of CFI (as a career planning attitude) on Career Decisiveness (as a proxy for Career Choice) , the existing literature has not paid adequate mention to this subject. Therefore there is a need and scope to explore the predictors of CFI . The CFI scale development paper by Rottainghaus et al., (2005) provides impetus to conduct more research in the same field as very few studies have been done using the same scale, excepting the study by Gunkel et al., 2010, where the authors tried to understand the impact of CFI on Career Decisiveness. There has been hardly any study conducted to understand the antecedents of CO or PJK like CA. Aspects like having a positive attitude about one's career or understanding the job market trends which are captured by the CO and PJK respectively are equally important for career decisiveness (Gunkel et al., 2010; Rottinghaus et al. , 2005; Santos, 2003; Savikas 1997 ;Schiever et al., 1985) .When examining the antecedents of career choice, both the personal and contextual dimensions need to be considered (Hirschi, 2009; Creed et al 2006; Savikas, 1997;. Super, 1957). However most of the earlier studies on career choice, had not looked into all the aspects of individual and contextual factors together – for e.g. – goal orientation and social support (Creed et al.,2009) ; goal instability (Creed et al., 2011; Santos, 2003) ; goals orientation , social support and self efficacy , (Hirschi et al ., 2010) social support and self efficacy (Hirschi et al., 2010) social support (Choi et al., 2012 Noacke et al ., 2010: Hurtington et al., 2002). The studies that investigated the individual factor on career choice has mostly used either personality traits (Gunkel et al., 2010; Hirschi et al., 2010) or motivational factors in the form of Goal orientation or Goal decidedness (Creed et al ., 2011; Creed et al., 2009;Santos 2003) or cognitive style in the form of Optimism (Creed et al., 2006;Patton et al., 2004; Creed et al., 2002) singularly . Studies using Social Cognitive Career theoretical framework like (Roger et al., 2008 ; Creed et al.,2006; Creed et al ., 2005; Patton et al.,2004, have used all the aspects of individual and contextual factors in making career choice . Despite this these studies were found valid only when the study design was cross- sectional - Roger et al., 2008 ; Creed et al.,2005; Patton et al., 2004. Findings from a study by Creed, et al. (2006) on high school students in Australia were less supportive of the process model of SCCT. The authors suggested that a causal linkage between the two variables as hypothesized by the SCCT process did not hold valid . Early self-efficacy status might not buffer a person from future career decision-making conflicts , so SCCT model will not hold valid in case of longitudinal studies (Hirschi et al. 2009; Leung 2008).So in such a case Motivational Systems Theory provides an ideal theoretical lens as it captures both human capital (personality-capability beliefs , motivational factor-goal decidedness, cognitive style- optimism) and contextual factors (social context beliefs) in a holistic fashion. However, very few studies have used MST to understand Career Decisiveness, except the work done by Hirschi, (2009). Literature was found stating that the process of career choice is not the same across nations. The relative influence of various factors on the career choice of students has been found to vary across cultures (Agarwala 2008; Ozbilgin et al., 2005). Aspects of CA , CO and PJK had different impact on different countries (Gunkel., 2010) . In such a given situation , a study especially in a collectivist culture needs to be conducted. (Choi et al .,2010;Lee 2007;).

Summarizing the various gaps addressed above, following are the objectives of the study.

PROPOSITIONS

1. Relationship between Optimism and Career Adaptability

Optimism is commonly associated with two of the Big-Five personality traits, namely emotional stability and extraversion (Costa and McCrae, 1997). Neuroticism is mainly characterized by anxiety, though self consciousness, impulsiveness, and vulnerability are also meaningful components. Often, Neuroticism is measured through its inverse, Emotional Stability or Resilience, which is the overall level of adjustment in the face of stress and pressure (Lounsburyet al.,, 2004). Extraversion is defined primarily by a tendency towards being outwardly expressive - containing facets related to gregariousness (i.e., Friendliness, Cheerfulness, Sociability), but also has facets related to dominance and energy (i.e., Activity Level, Excitement Seeking, Assertiveness) (Hastings and O'Neill, 2009). Research implies that a more favourable emotional disposition in terms of emotional stability and extraversion is related to more career planning and exploration among

adolescents (Rogers et al., 2008; Hirschi et al., 2010). Individuals who have a high positive effect will be more flexible to changes in career plan. Gunkel et al., (2010) found that emotional stability is negatively related to Career Optimism, Career Adaptability (Rottinghaus et al., 2005) while checking convergent and discriminant validity of CFI, related the dimensions of emotional stability and extraversion with CFI dimensions. Again Hirschi (2009) related emotions with Career Adaptability. On the basis of the above observation, the following hypotheses are framed:

P1A. Individuals having greater Optimism will have greater Career Adaptability.

P1B. Individuals having greater Optimism will have greater Career Adaptability

2. Relationship among Self efficacy , Career Adaptability, Career Optimism and Perceived Knowledge of the Job Market

Studies have shown that conscientious individuals report higher levels of self-efficacy for a wide variety of tasks (Colquitt and Simmering, 1998; Gellatly, 1996; Martocchio and Judge, 1997). It was found that higher self efficacy promote the development of adolescent career adaptability (e.g., Patton et al., 2004;Creed, , Prideaux et al., 2005; Hirschi 2009) and also other career planning measures. Hirschi et al., (2010) showed that conscientiousness may be related to certain vocational behaviors, e.g. Occupational interest, career indecision, and job satisfaction. They further state that this dimension relates to the career exploration variables such as self-exploration, career information seeking, stress regarding career exploration, and career search self-efficacy. Individuals who are high on self efficacy would be more optimistic about their careers and would be very open to changes in career plan as they believe in their potential. At the same time such individuals would be constantly seeking information about the job market and employment trends . Based on the above observations, following hypotheses can be framed:

P2 A. Individuals having greater Self efficacy will have greater Career Adaptability.

P2 B. Individuals having greater Self efficacy will have greater Career Optimism.

P3 C. Individuals having greater Self efficacy will have greater Perceived Knowledge of the Job Market.

3. **Relationship among Perceived social support , Career Adaptability, and Career Optimism**

Research showed that perceived support from the social environment is crucial for successful adolescent vocational preparation .Involvement of family, peers, network, and teachers have been related to Career Exploration among high school students (Karke, 2010). The role of social context becomes more important in collectivist cultures as cited by most career researchers (Choi, et al, 2010). Researchers have investigated both personal and environmental factors to explain differences in individual career development. In particular, fixed family factors (e.g., socioeconomic status , parent education level) have been included with personal variables in an effort to focus on the important role families play in adolescent career development (Hurtung et al 2002; Creed and Patton, 2003; Friedman et al., 2003; Hirschi, 2009). Thus observing the above findings, the following hypothesis is framed suited for the Indian context mostly-

P3 A. Individuals having greater Perceived social support will have greater Career Adaptability.

P3 B. Individuals having greater Perceived social support will have greater Career Optimism**.**

4. Relationship among Goal Decidedness, Career Adaptability, and Perceived Knowledge of the Job Market

Goals are explained, in terms of career goal decidedness and specification. Goal clarity was related to more career exploration and planning in other studies with adolescents (Santos 2003; Rogers et al., 2008). Individuals who are likely to set higher career related goals and engage in more career planning and exploration. Again Creed et al., (2011) using a longitudinal study examined the relationship between goal orientation and career aspiration As a result they are more focused and hence would attain more information about the market, and more likely to be flexible in case of career plans .On the basis of the above observation, the following hypotheses are framed:

P4 A. Individuals having greater Goal decidedness will greater higher Career Adaptability.

P4B. Individuals having greater Goal decidedness will have greater Perceived Knowledge of the Job Market.

5. Relationship among Career Adaptability, and Career Optimism, Perceived Knowledge of the Job Market and Career Decisiveness.

Career adaptability, Career Optimism and Career knowledge of job market appear to be an essential basis for successful career planning (Rottinghaus et al. 2005; Gunkel et al 2010). These factors have been found to be correlated with other career planning tools like career exploration, career identity (Rottinghaus et al., 2005). Again successful career planning has been stated as the primary factor impacting career decisiveness (Gunkel et al.,2010).

P5 A. Individuals having greater Career Adaptability will have greater Career Decisiveness.
P5 B. Individuals having greater Career Optimism will have greater Career Decisiveness.
P5 C. Individuals having greater Perceived Knowledge of the Job Market will have greater Career Decisiveness.

CONCLUSION

The current study will identify the factors that foster positive career planning attitude and its impact on career decisiveness looking at the motivational systems theory using a longitudinal study design. Because of usage of a longitudinal study design and MST, both process and content theories of career would be incorporated as cited by various career theorists. As a result of which the study would add to the current body of literature on career theory by providing a holistic view on both individual and contextual factors on career choice using a process approach to career theory. Again under the individual factors both personality (Capabilty beliefs), cognitive style (optimism) and motivational factors (goal decidedness) would be incorporated. as a result , it would help to forecast which factors foster effective career planning attitudes. Again which particular dimension of CFI-CA, CO , PJK impacts career decisiveness most. Since the study would be conducted in India, this would also look at the applicability of Motivational systems theory in the Indian context. Results could prove useful to those who are involved in developing and administering programs for career planning and development, whether in colleges and universities, employment agencies, or corporations. Appropriate support could be provided for students in order to strengthen their adaptability and knowledge about careers, which would result in a higher optimism and career decisiveness. This is especially important given the current economic downturn and the pessimistic media coverage about the job market.

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EFFECT OF COOPERATIVE LEARNING MODEL ON SCIENCE AND TECHNOLOGY LABORATORY PRACTICES LESSON

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ABSTRACT

Laboratories are the settings which provide facilities enabling students and teachers to gain unique experiences that are hard to get in other ways. Science lessons learned through experiments improve students' motivation and enable them to learn science persistently. What is important in science learning is that students face a wide variety of materials in conducting science laboratory processes. Using these materials in laboratories requires a high degree of readiness. At this point, it is very important to determine which method we will apply to students and with which approach we can improve their success. The aim of this study is to demonstrate the effect of learning together model which is used in implementation of cooperative learning model on academic success, attitudes towards the lesson of students who attend the science and technology laboratory lesson. Sample of the study consists of a total 43 students from two classes in second – grade in the department of primary school teaching who attended the science and technology lesson during 2010 – 2011 academic year. With the method of cluster sampling, one class was determined as experiment group and the other as control group. Learning together method used in the implementation of cooperative learning model was applied to experiment group and proof based method used in traditional laboratory applications was used for control group. Data were gathered with data collecting instruments called Prior Knowledge Test (PKT), Experiment Achievement Test (EAT). Experiment Retention Test (ERT) and Science and Technology Lesson Attitude Scale (STLAS). Data analyze showed a significant difference favor of experiment group between control and experiment groups in view of academic success, retention of knowledge and attitudes towards science.

Key Words: Cooperative Learning Model, Learning Together Method, Proof Based Method, Retention of Knowledge, Science and Technology Laboratory.

INTRODUCTION

Scientific knowledge included in Science is the one that originates from the information people have acquired to meet their necessities during their interaction with natural environment since they came to life, and that has been transferred from one generation to another for centuries and tested and prove to be reliable (Taşdemir et al., 2005). With this aspect, science is the actual source of technology and has an important role in the development of countries and economic revival. Thus, countries pay a special attention to science education in

order not to fall behind in scientific and technological developments and to maintain advancement with the purpose of bringing up individuals who can contribute to technology (Coştu et al., 2005).

Laboratory activities have had a special and central role in science education for long time. Science lecturers have suggested that it gives benefit to students to make them engage in laboratory activities (Hofstein & Lunetta, 2003). Laboratory experiments conducted on science education enable students' concrete experiences in order to learn both science terms and methods (Bybee, 2000). In science education, students are observed to gain manipulative skills and the knowledge and abilities like experiments, observing and concluding, critical thinking, implementation, analysis and synthesis, scientific interpretation, the way scientists work, kinds of scientific methods, relation between science and technology, curiosity, interest, taking risk, cooperation and objectivity (Yıldız et al., 2006).

Experiments in science education are carried out in order to make students clearly realize what they haven't known yet and recognize the accuracy of the knowledge acquired in many ways. Science lessons learned through experiments add to motivation of students (Friedler & Tamir, 1990).They enable students to be insistent on science education. In science education, students face a wide variety of materials in the application of such important science laboratories (Aksoy, 2011). At this point, it is very significant to determine which method we will apply to students and with which method we can improve their success (Coştu et al., 2005; Aydın, 2011; Şimşek, 2012).

In recent years, studies on this subject of Hofstein and Lunetta (2003) discuss on the adequacy of the practices and include suggestions related to applications must be done in 21 century in the literature. There are many studies belonging to the problems posed by conventional laboratory applications (Hamurcu, 1998; Gezer & Köse, 1999; Güven, 2001).

These problems are as follow: the number of students higher than should be (Akgün, 2000; Yaman & Öner, 2003), physically insufficency of laboratories in schools (Ayas et al., 2002; Harvey, 2007; Kırıkkaya & Tanrıverdi, 2009), the teachers who took the role of method editor in laboratory applications didn't have enough knowledge and skills (Lang et al., 2005; Panichas, 2006) and laboratory method carried out was wrong or insufficient (Chiappetta & Kaballa, 2002; Özmen & Yiğit, 2006). In the researchers conducted in parallel with this, it was observed that many challenges were encountered during laboratory studies, and that students weren't completely qualified in understanding the relation between the observations in laboratory and theoretical information and finally that laboratories were much far away from enabling a meaningful learning place (Nakhleh & Krajcik, 1993). Besides, it is told in the studies carried out that the reason why laboratories drew away from being meaningful learning places derives from the fact that laboratory applications weren't structured properly and in a sufficient way (Doymus, Şimşek & Karaçöp, 2007; Aksoy, 2011). Thus, as in theoretical lessons, the necessity of applying new approaches in laboratory studies has become the center of attention of researchers.

Active learning is the leading one among new education strategies. Problem based learning, inquiry based learning, project based learning and cooperative learning models rank as part of active learning. One of active learning strategies is cooperative learning model. Cooperative learning is one of widely encountered models in the areas of theory, research and education applications besides it calls much attention to teachers and researchers (Graham, 2005; Maloof & White, 2005; Şimşek, 2009).In parallel with this, it is seen that a big increase has taken place in today's use of cooperative learning model, which is more beneficial that other learning models (Webb et al., 2002; Siegel, 2005; Doymuş et al., 2010).Cooperative learning can be defined as a learning model in which students help each other's learning on academic topics by forming small coed groups, self-confidence of individuals grow, their skills for communication develop, power of solving problem and critical thinking rises and they actively attend the education period (Eilks, 2005; Lin, 2006; Hennessy & Evans, 2006; Prichard et al., 2006; Şimşek, 2007; Doymuş, 2008).

It is stated that if cooperative learning is used in both theoretical and laboratory applications, it enables students to actively take part in teaching processes and paves the way for advanced academic and social skills (Carpenter, 2003; Doymuş et al., 2009; Şimşek, 2012).

Cooperative learning model has many ways of application. Besides cooperative learning models give place to different learning experiences, they vary in view of education philosophy they adopt, the way they cooperate and their evaluation and reinforcement processes. During cooperative learning activities, researchers developed many methods in order to create positive learning environment, contribute to the success of students and help teachers. Among these, commonly used methods can be summed up as Learning Together, Team-Game-Tournament, Reading-Writing-Application, Jigsaw, Group Investigation, Cooperative-Cooperative, Students Team Achievement Division and Academic Controversy (Hines, 2008; Doymuş, Şimşek & Karaçöp, 2009).

One of the commonly used cooperative models in science education is learning together method (Maruyama, 1991) .The most important aspect of learning together method is that there is one-shared group aim, thoughts and materials are shared and there are divisions of labor and group rewards.

When the circumstances which are stated in literature belonging to laboratory applications being vital in science education are considered, the necessity of the fact that science laboratory implementations should be structured in terms of today's education insight appears. First level which students face science laboratory practices is primary level. Firstly, teachers at this level should be trained on laboratory practices. Thus, in this study, teacher candidate students in the department of primary school teaching were chosen. When the fact that the candidate teacher students are considered to develop their skills for laboratory practices, importance of this study becomes more visible.

The aim of this study is to find out the effect of learning together method used in the implementation of cooperative learning model on the academic success, retention of knowledge and attitudes towards the lesson of students who attended science and technology lesson. During this process, answers were sought for the following research questions.

1. Is there any significant difference in the academic success and retention of knowledge between the students who are in the group in which learning together method is applied in science and technology lesson and those of students in the group in which experimental practices based on proof based method are conducted?

2. Will the attitudes to science and technology lesson of students who are in the group in which learning together method is applied be different from the manners of other students who are in the group in which experimental implementations based on proof based method is applied?

METHOD

In this section, there are research model, sample, data collection instruments and implementing of research.

Research Model

In different teaching environments, use of quasi-experimental research design is proper while the effect of teaching materials or teaching methods is being researched (McMillan & Schumacher, 2006). In this design, classes are taken into researches for educational purposes as they are (Karasar, 2005). Thus, the study was carried out within pretest-posttest design randomly selected groups by quasi-experimental structure. It is as in Figure 1;

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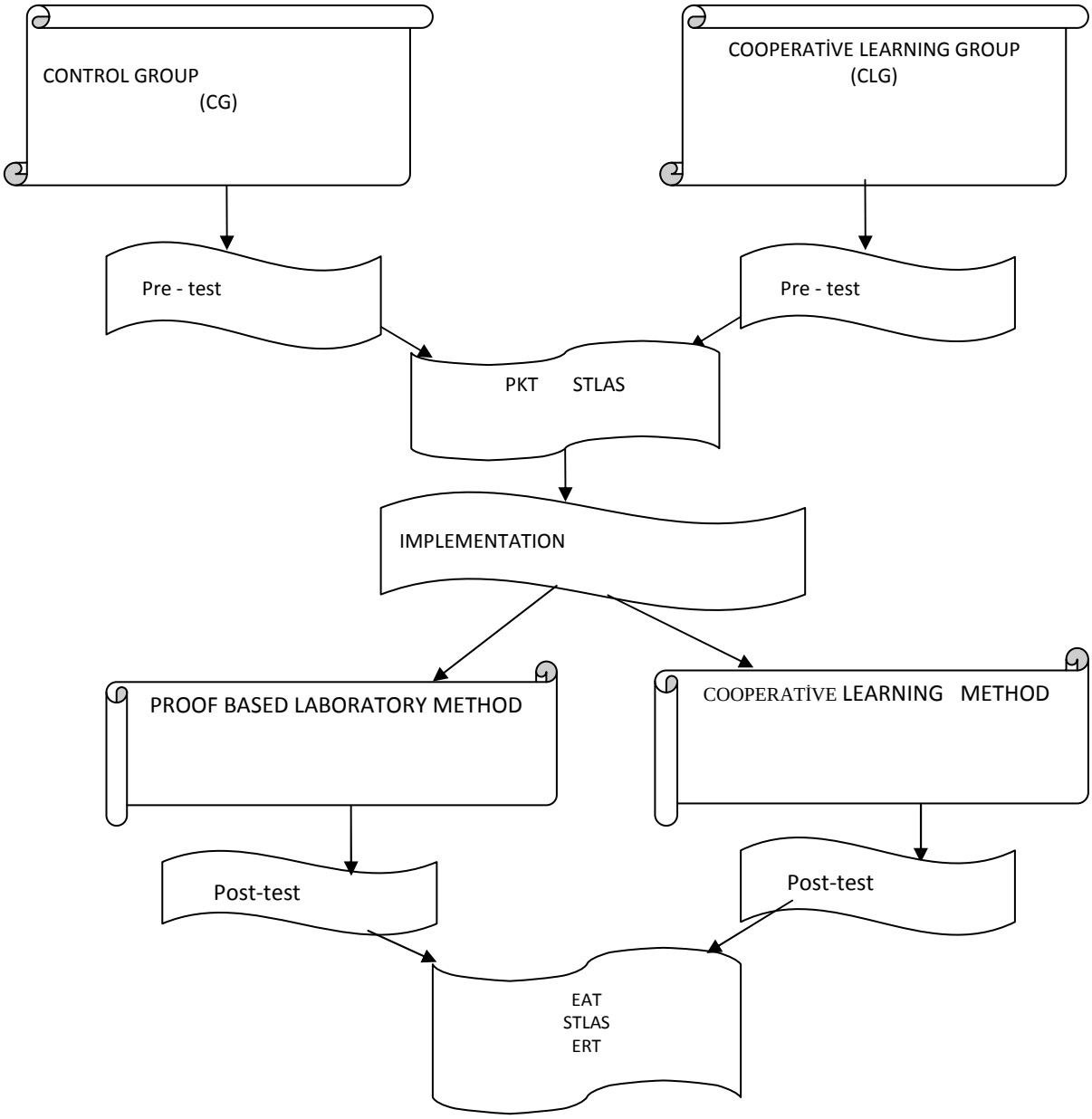

Figure 1: Design of research

Sample

The study was carried out with the attendance of a total 43 second-grade students from two different classes who attended to science and technology laboratory applications lessons in the department of primary school teaching of the faculty of education in a university during 2010-2011 school year. One of these different classes was determined as experiment group (n=21) applied learning together method used in the application of cooperative learning model and the other one as control group (n=22) applied proof based learning method used in traditional laboratory applications.

Data Collection Instruments

Research Data for both groups were gathered by using; Prior Knowledge Test (PKT) for the determination of prior knowledge of students before the application of related methods; Science and Technology Lesson Attitude Scale (STLAS) for the attitudes towards science and technology lesson and Experiment Achievement

Test (EAT) for the measurement of academic achievement levels of students during laboratory practices. Besides, one month after the experiment, Experiment Retention Test (ERT) was used to determine retention of academic knowledge of the groups attending to the study including the experiments done.

Prior Knowledge Test (PKT)

In the study, a multi-choice PKT was created from questions made up of 50 items including main subject in science and technology lesson which is thought to effect students' understanding the experiments carried out in science and technology laboratory. With PKT, it was aimed to understand on what level prior knowledge of students was for the subjects who were fundamental for understanding the experiment to be conducted in science and technology laboratory. In order to see the reliability of PKT, questions prepared were applied to third-grade students from school teaching department didn't join research but had taken this lesson before and reliability coefficient of the test was found as (Cronbach Alpha) α=0,79. For the validity of PKT, thoughts and ideas of lecturers and academics who teach on science and technology lesson in the department of primary education were gathered. Lecturers and researchers stated that the test was in the quality for evaluating the attainment on the subjects thought to effect on students' understanding the experiments to be conducted in science and technology laboratories. In the PKT, each right answer was equivalent to 2 points; every wrong or blank left answer was equal to 0 point.

Science and Technology Lesson Attitude Scale (STLAS)

This scale was prepared by the researcher in order to determine the attitudes of students studying in the department of school teaching in the university towards Science and Technology lesson. In the first stage, as a result of reviewing publications on occupational experiences, a 50-question repository was prepared. And then, with the purpose of determining the comprehensibleness of these questions, a scale was given to 35 of the students from the department of school teaching in the university and it was marked and a Likert- type scale was created which had 5 points with 15 items chosen as a result of questioning these people's views while the scale was being prepared, reliability, understandability of the questions and the fact that they are in the quality of easiness and include a wide variety of variations were tried to be taken into account. Answers choices for the scale were as follow; completely agree, agree, uncertain, don't agree and don't agree at all. The subjects were asked to give 1 point for "don't agree at all", 2 points for" don't agree", 3 points for "uncertain", 4 points for "agree" and 5 points for "completely agree".

This scale was given to those who studied in second, third and fourth grades in the department of school education and 320 people who accepted to take part in this scale. For internal consistency of the scale, Cronbach alpha method was used. With this scale and that question was suitable for existing in this scale. With this purpose, each item was observed for its correlation to total score and Cronbach alpha coefficient was 0,78 and it was found that it was consistent in itself.

Experimental Achievement Tests (EAT)

Experimental Achievement Tests were divided into 5 groups. Each of them represents an experiment. These groups are; 1) Representing the buoyancy of water (EAT-a), 2) Representing the examination of temperature change when heating the different liquids in the same amount (EAT-b), 3) Representing the experiment of pressure effect on boiling point (EAT-c), 4) Representing the experiment of finding the unknown resistance by benefitting from Ohm's law, (EAT-d) and 5) Representing the experiment of ray reflections to concave mirror at different directions (EAT-e). The experimental achievement tests created from 10 multiple-choice questions with 5 options. All of these questions in the test are related to experiment that is going to happen during that week in science and technology laboratory. Each of the prepared question types aimed a different attainment measurement related to experiments in the laboratory. EAT's applied to students who know about the experiments' subjects and test's reliability parameters' were determined with the (Cronbach Alfa) order;

For EAT-a; α=0,69
For EAT-b; α=0,64
For EAT-c; α=0,65
For EAT-d; α=0,67
For EAT-e; α=0,61

Science and Technology Teachers' opinions related the subject were considered about the developed EAT's validity in the Research Section. Experts remarked the high validity. Also to collect to qualitative data in the EAT's which made every week open-ended questions which involved that week's experiment were asked. Categories were created for the open-ended questions of EAT and results were evaluated by getting percentage frequencies.

Experiment Retention Test (ERT)

Experiment Retention Test (ERT); It was consisted of 25 multiple-choice questions with 5 options consisting the experiments in the science and technology laboratory in research. It's aimed on determining the more permanent method between learning together method and proof based learning method for students' academics knowledge after 1 month with the prepared experiment retention test. All of the multiple-choice questions are related to experiments in the science and technology laboratory. ERT created in this way was applied to third year's students of science who saw the experiments included in the field of the research, and test's reliability coefficient was determined as (Cronbach Alfa) 0.68. Opinions of instructors and researchers who were working at science and technology teaching department were asked to determine ERT's validity. Feedback given by instructors and researchers indicated that the test could measure attainment related to experiments.

Implementation

In the study, PKT and STLAS was applied as pretest in order to determine whether there is a difference in terms of prior knowledge and attitudes towards science and technology courses belong to science and technology laboratory applications course between the experimental group made the experimental implementation based on learning together method with the control group made the experimental implementation applied proof based learning method. After pretests were applied, experiment and control groups started to apply. Implementing was made as 2 class hour in a week by researchers and took 5 weeks for the both groups.

Teaching Through the Learning Together Method

The students in the classroom that was chosen as experimental group in which use the experimental applications based on learning together method were carried out were separated into five groups one of which composed of five the other four of which composed of four students for each. The groups were requested to get a name and choose a head of group among themselves. Later on, each group was handed in group forms. In these forms were determined; name of the group, the number of members, the experiments that would be done each week, the study subjects that were allocated to each member and the responsibilities that were to be fulfilled by each members before coming up for the experiment to be carried out that week. Every other week, the members of each group were handed in the subjects concerning to his/her duties related to science and technology laboratory practices class and each member were put under individual responsibilities. This was realized by means of heads of groups. One of the group members was responsible for the theoretic knowledge about the experiment and one another for the set up and the others were responsible for the experiment to be carried out and concluded. Then each week, each of group members was given various pre-experimental assignments about the experiment and commanded to hand in their assignments as reports. The groups were made complete each individual responsibility before they turned up to the classroom environment. At the beginning of the classes, some oral examinations were held about that week's experiments before the students started to the experiment in order to detect the level of students' readiness. If found any during the oral examinations, the deficiencies were compensated. The group member, failing to fulfill his/her individual responsibilities, was mentioned that his/her own and his/her group success would be affected negatively and the deficiencies were completed by the researcher. Then, the group members were requested to present the assignments that each of them was responsible to prepare and to discuss on them. Meanwhile, by making the inter group interaction to be high; the researcher had the reports presented effectively. After group members completed the report presentation, the researcher casted lots for a group and requested them to make a presentation before the classroom. The other groups were allowed to ask question to the presenting group and in this way the deficiencies that were detected were assessed. Later on, it was come to the phase that each group would conduct the experiments by letting each member fulfill his/her own responsibilities in the lab.

First in this phase, the first student conveyed the theoretic information about the experiment to his/her other friends and controlled their learning. Later, setting up the system, the other student introduced the materials to be used in the experiment and explained their features. In the end the experiment practice was concluded after the individual performance of the rest of group members. Observing the groups along the experiment in the lab, provided the groups with necessary precautions, help and support. Completing the experiment each group was requested to speak, discuss and repeat the whole process among them. Along this process as well, the researcher walked through the groups observing their assessment levels and provided help where needed. Every week, the same experiment with each group was conducted with the participation of one instructor and one assistant. After the experiment conducted first week, the application of other weeks' experiments was carried out by different group member by swopping the responsibilities.

Teaching Through the Proof Based Learning Method

For the control group; students were divided into 5 groups. Some of them had 4 and the others had 5 students. Students put in these groups randomly. They were requested to come to laboratory by preparing from lab implementation lesson book for every week's implementation through 6 weeks. Researcher transferred pure information, how to set experiment machinery, at the end of experiment what results to get to the students before the experiment. Researcher lectured by tendering education materials and doing an exhibition experiment in this process answered the students' questions. After he finished his lecture about the subject, researcher shaped the groups to do their own experiments. After the experiment was finished, groups finished their works by preparing their reports about the experiment. For both workgroup, after 5 experiments EAT and ERT applied as the last tests. Also one month later from the work ERT was applied.

Data Analysis

In this section, data was evaluated by using SPSS packet program. Evaluating of data and analysis are declared in an order;

1. Descriptive statistics and independent samples t-test was performed for the scores obtained from PKT, EAT and ERT of students participated in the study.
2. Qualitative analysis of students' written responses to open-ended questions of the EAT were made and formed categories of students' views. Percentages of these views were calculated.
3. MANOVA was made for data obtained from STLAS's pre-test and post-test

FINDINGS AND RESULTS

Evaluations of data that come from the data collection instruments, which used during the research, are interpreted in an order.

Descriptive statistics and independent samples t-test for the scores obtained from PKT applied to students participating in the study are given in Table 1.

Table 1: Result of independent simple *t* test analysis of the PKT

Groups	N	X	Sd	t	P
Experiment	21	26,19	9,009	1,001	0,450
Control	22	28,55	11,096		

According to results of Table 1; it says that there was no significant difference between the experiment group made the experimental implementation based on learning together method with the control group made the experimental implementation based on proof based learning method ($t = 1{,}001$; $p > 0.05$). The levels of students' prior knowledge in subject that will be the basis to understand experiments to do science and technology laboratory in experimental and control group are closer to each other at the beginning. EAT's data is given in the Table 2.

Table 2: Results of independent simple *t* test of the EAT

Test	Groups	N	X	Sd	T	p
EAT-a	Experiment	21	32,48	11,170	1,528	0,134
	Control	22	27,27	11,153		
EAT-b	Experiment	21	34,86	4,757	4,367	0,001
	Control	22	26,09	8,059		
EAT-c	Experiment	21	33,33	5,704	3,981	0,001
	Control	22	25,82	6,616		
EAT-d	Experiment	21	32,24	5,458	3,353	0,002
	Control	22	26,55	10,800		
EAT-e	Experiment	21	32,00	7,043	2,968	0,005
	Control	22	25,82	6,616		

[a]:Max point=40

According to results of Table 2; It shows that there was significant difference among EAT-b, EAT-c, EAT-d and EAT-e in term of the results of the answers given to DBT of the students for each experiment [EAT-b (*t*=4,367; p=0,001), EAT-c (*t*=3,981; p=0,001), EAT-d (*t*=3,353; p=0,002), EAT-e (*t*=2,968; p=0,005)]. It is seen that this differences in favor the experiment group. But it shows that there was no significant difference in EAT-a [EAT-a (*t*=1,528 p=0,134)].

The reason for the success of students in the experiment group made the experimental implementation based on learning together method may be referred to the increase the relationship among the students in due to the method, formation of a positive classroom atmosphere, providing the convenience of the students in understanding of the experiments of this atmosphere and remedying incomplete information. The results of these experiments are coherent with Maloof & White (2005), Barrier (2005) and Doymuş et al.,(2007)'s work results. Both of the groups showed the same success in Eat-a. The reason for this, it can be said that the EAT-a-related applications can be accomplished with a small amount of theoretical knowledge.

The frequency and percentage of students' answers given to open-ended questions of EAT are indicated for each of the experiments in below.

EAT-a: What are the things depend on buoyancy applied to substance in a liquid? The answers of students are given in the table 3 for this question.

Table 3: The frequencies and percentage of students' response to open-ended questions of EAT-a

Groups	Students' Answers	f	%
Experiment	*- Density of liquid and volume of substance's sunken part	21	100
	- No answer	-	-
Control	* Density of liquid and volume of substance's sunken part	19	87
	- Density of substance	2	9
	- No answer	1	4

*Scientifically correct answers

According to table 3, %100 of students in the experiment group made the experimental implementation based on learning together method and %87 of students in control group gave the right answer by writing depending on density of liquid and substance's sunken part.

EAT-b: What does temperature change depend on when the same amount heat is given to different amounts of water mass and when the same amount heat is given to same amounts of different liquids? All groups' answers are given in the table 4 about this question.

Table 4: The frequencies and percentage of students' response to open-ended questions of EAT-b

Groups	Students' Answers	f	%
Experiment	*When the same amount heat is given to same kind of substances, small mass one would have more temperature change than the other. Temperature change is inversely proportional with mass. *When the same amount heat is given to equal mass of different kind of substances, because their specific heats are different, temperature change is different.	19	90
	-No answer and wrong answers	2	10
Control	* When the same amount heat is given to same kind of substances, small mass one would have more temperature change than the other and when the same amount heat is given to equal mass of different kind of substances, because their specific heats are different, temperature change is different.	15	68
	- No answer and wrong answers	7	32

*Scientifically correct answers

According to findings in Table 4, when %90 of students in the experiment group, %68 of students in the control group answered question correctly, %10 of students in experiment group and %32 of students in control group couldn't answer or answered wrongly.

EAT-c: How would you explain the effect of pressure on boiling point? Both groups' answers are given in the table 5 to this question.

Tablo 5: The frequencies and percentage of students' response to open-ended questions of EAT-c

Groups	Students' Answers	f	%
Experiment	* Pressure change causes to change on liquid's boiling point. If the pressure increases, liquid's boiling point increases	10	48
	* Decreasing the pressure on the liquid makes liquid's boiling point decrease	5	24
	* If we want to makes liquid's boiling point decrease we reduce the pressure on the liquid	6	28
	-No answer and wrong answers	-	-
Control	* If the pressure increases, liquid's boiling point increases, if the pressure decreases, liquid's boiling point decreases	10	45
	* Liquid's boiling point is inversely proportional with pressure.	7	32
	- No answer and wrong answers	5	23

*Scientifically correct answers

According to table 5, all of the students in experiment group answered correctly but %77 of the students in control group answered correctly.

Eat-d: How can you find resistance by benefitting from Ohm's law? Both groups' answers to this question are given in the Table 6.

Table 6: The frequencies and percentage of students' response to open-ended questions of EAT-d

Groups	Students' Answers	f	%
Experiment	* As the proportion to the current intensity passing from conducting of the potential difference in between the two ends of the conductors in most of the conductors is constant, I can find the resistance by dividing to potential difference observed in the voltmeter and measure the current intensity after installing the electric circuit	15	72
	- No answer and wrong answers	6	28
Control	*I find the current intensity passing from the electric circuit. I find the resistance by dividing to the current intensity to potential difference	12	55
	- No answer and wrong answers	10	45

* Scientifically correct answers

According to Table 6, %72 of students in experiment group, %55 of students in control group answered correctly. It is seem that both of the groups' students' rates are lower than the other experiments' rates. I consider that the reason of this is experiment's measuring set values couldn't be read correctly so there were mistakes in the mathematical operations.

EAT-e: How do the lights sent in different directions to concave mirror reflect? Both groups' answers to this question are given in the table 7.

Tablo 7: The frequencies and percentage of students' response to open-ended questions of EAT-e

Groups	Students' Answers	f	%
Experiment	* The light sent in principal axes direction return with the same way after reflect from concave mirror * The light sent to mirror's peak with principal axis by an angle reflects with the same angle * The light sent parallel to principal axis reflects by passing focal point	20	95
	- No answer or wrong answers	1	5
Control	* The light sent in principal axes direction return with the same way after reflect from concave mirror. The light sent to mirror's peak with principal axis by an angle reflects with the same angle. The light sent parallel to principal axis reflects by passing focal point.	18	82
	- No answer or wrong answers.	4	18

* Scientifically correct answers

According to table 7, %95 of students in experiment group, %82 of students in control group, answered correctly. It shows that the correct answer rates of both groups' students are high. The reason of this can be the lights sent in different directions to concave mirror are easily watched.

To determine retention of knowledge of both experiment and control group's students, EKPT was applied. The data obtained from this test are given in the table 8.

Table 8: Results of independent simple *t* test of the EKPT

Groups	N	X	Sd	T	p
Experiment	21	75,71	8,701	8,372	0,001
Control	22	55,23	7,316		

According to table 8, there was a significant difference favor of the experimental group in terms of retention the academic knowledge gained in Science and Technology laboratory between the experiment groups made the experimental implementation based on learning together method with the control group made the experimental implementation based on proof based learning method ($X_{experiment}$=75,71; $X_{control}$=55,23) (*t*=8,372 p=0,001). The cause of this significant difference is, learning together method keeps the students active, makes student to join into the events, helps them to combine their own knowledge and helps them to understand the subject better. These results conform with researches' results that related to active based lab setting (Sachs et al., 2003; McKee et al., 2007).

STLAS was applied also before and after the implementation to determine difference in students' attitudes towards Science and Technology Lesson and the Manova analysis results are given in the table 9.

Table 9: Results of Wilks' Lambda obtained from MANOVA according to pretest and posttest's data of STLAS

		Value	F	Hypothesis df	Error df	p	Partial Eta Squared
Group	Wilks' Lambda	0,615	12,505	2,000	40,000	0,001	0,385

According to table 9, it seems that there is a statistical difference between experiment and control groups in score of STLAS. [Wilks Lambda= 0,615 and $F_{(2,40)}$ = 12,505, p<0,05]. To determine this difference's direction one-way ANOVA results were examined.

Table 10: Results of one-way ANOVA according to pretest and posttest's data of STLAS

Dependent Variable		Mean's Square	X	*F*	*P*
Pretest	Experiment	239,223	49,810	3,722	0,061
	Control		45,091		
Posttest	Experiment	1851,617	62,810	23,460	0,001
	Control		49,682		

In table 10, it seems that there isn't a significant difference between experiment group and control group according to pretest's data of STLAS [STLAS for pretest $F_{(2,40)}$ = 3,722, p = 0,061]. According to these results, it is said that both groups' attitudes toward Science and Technology Lesson were same.

According to posttest' data of STLAS in the same table, There is a statistically significant different between the groups [$F_{(2,40)}$ = 23,460, p= 0,001]. According to findings of posttest, it shows that experiment group's attitudes scores towards Science and Technology Lesson are higher than the control group [$X_{experiment}$=62,810, $X_{Control}$ = 49,682]. According to these results, it is said that using learning together method influences students' attitudes in a positive way.

CONCLUSION AND RECOMMENDATIONS

The findings obtained from this research aimed to find out the effect of learning together method used in the implementation of cooperative learning model on the academic success, retention of knowledge and attitudes towards the lesson of students who attended science and technology lesson showed that learning together method has more positive effects than proof based learning method in term of students' academic achievements, retention of knowledge and attitudes towards science and technology lesson.

These results conform with the results that states active based education' lab settings'; to make students participate the events, to make students understand the subject better, make the knowledge transfer into the requested behavior, increase students' motivation and abilities. (Aladejana & Aderibigbe, 2007; McKee et al., 2007).

According to student's attitudes towards Science and Technology Lesson. Learning together method groups' students gained more positive attitudes than the proof based learning method groups' students. The cause of this is; students' helping each other and active participating to lessons in groups implemented learning together method.

These results conform to the other researches' results that researched the effect of l learning together method's attitudes and found positive effects. (Okebukola, 1986; Altıparmak & Nakipoğlu, 2005; Venman,et al., 2002; Gök et al., 2009; Zakaria et al., 2010; Aksoy, 2011).

As a result, it can be said to affect in a positive way the students' academic achievements, laboratory experiences and skills the use of learning together method in laboratory applications. Considering the data of students' academic achievements, retention of knowledge and attitudes towards Science and Technology Lesson;

This Method;

1. Will be useful about not only science and technology laboratory also about physics, chemistry and biology laboratory fields in the future works.
2. Using in different subject fields and experiments will be more useful for students' academics and laboratory abilities.

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REDUCING DEPRESSION AMONG IRANIAN GIRL PUPILS: EFFECT OF COGNITIVE-BEHAVIORAL THERAPY (CBT)

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ABSTRACT

Depression is one of the most common psychological disorders. In recent years, cognitive-behavioral group therapy has received more attention for treating depression. The main purpose of present study is to examine the effect of Cognitive-Behavioral Therapy (CBT) on reducing depression among girl pupils of Junior high schools of Tehran city. The method of research is quasi-experimental. Multiple Cluster Sampling technique was employed to select 16 pupils and then they were randomly divided to each of control and case groups. After participation of experimental group at CBT meetings, all of the participants took pre-test and post- test. Data were analyzed using dependent t- student test. The findings revealed that there is significant difference between two groups at pre- post test results regarding Back Depression Inventory. The findings of present study provide empirical supports for the effects of CBT on girl pupils' depression reduction at junior high schools.

Key Words: Group counseling, cognitive-behavioral approach, depression.

INTRODUCTION

Depression is one of the most common emotional disorders in human being at present. Pupils of guidance schools girls in particular are at an age and stage in the course of life that makes them more vulnerable to emotional disorders than others (Lewinson., Rohde & Seeley, 1998; Sheras, 2001). To explain the causes of depression, several theories such as biological model, psychological dynamics, behavioral, cognitive and existentialism have emerged. Meanwhile, the use of cognitive style - impact of human cognition on emotional status – has been considered more than other theories (Ellis, 1987). The main principle of group counseling is that the foundation of many emotional disorders such as depression should be searched on relationship between individual with others and therefore this method can increase pleasurable experiences, improve social relationships, resolve conflicts and finally reduce emotional disorders (Peterson & Halstead, 1998). Cognitive Behavioral Therapy (CBT) is based on the theory that there is a relationship between a person's thoughts (cognitions), actions and mood (Beck, Rush, Shaw, & Emery, 1979). People who suffer from depression generally present negative thoughts, isolation, decreased pleasant activities and difficulties in interpersonal relationships. CBT is a highly structured therapy that focuses on teaching patients how to use cognitive techniques to identify maladaptive negative thought patterns and replace them with more adaptive and healthy ones. It also focuses on behavior and its effect on mood, and works with increasing the patient's pleasant activities in order to improve their mood. Scientists and doctors have begun to take seriously the risk of depression in children and adolescents. Before puberty, boys and girls are equally likely to develop depressive disorders. By age 15, however, girls are twice as likely as boys to have experienced a major depressive episode (Cyranowski, Frank, Young, Shear, 2000). Depression in adolescence comes at a time of great personal change–when boys and girls are forming an identity distinct from their parents, grappling with gender issues and emerging sexuality, and making decisions for the first time in their lives. Depression in

adolescence frequently co–occurs with other disorders such as anxiety, disruptive behavior, eating disorders or substance abuse. It can also lead to increased risk for suicide (Weissman et al, 1999; Shaffer, 1996). Up to 25% of adolescent girls experience an episode of major depression, at least twice the rate found with adolescent boys. In addition to reducing the suffering associated with depression, prevention efforts with this high-risk population have the potential to avert short- and long-term functional impairment, reduce the risk of associated mental and physical health problems, and provide mental health services to teens who may not otherwise receive help. The effectiveness of such programs depends upon the ability to reach at-risk girls and provide effective intervention, and to accomplish these goals in ways that are sustainable in community settings such as schools (Wolfe, Dozois , Fisman , and DePace , 2008) . Considering these findings, the hypothesis of this study is whether group counseling with Cognitive-Behavioral Therapy (CBT) method can reduce emotional depression among girl pupils of Junior high schools.

METHOD

In this quasi-experimental research, sample population were girl pupils of Junior high schools in Tehran city in the academic year of 2008 - 2009. After random selection of 4 educational districts (2 schools from each district and 3 classes from each school) a Multiple Cluster Sampling technique was employed. A sample size of 288 patients using the Beck Depression Inventory were screened. From those students who scored between 21 and 30, 16 pupils were randomly selected and divided into two control and experimental groups (each group with 8 pupils). Multiple Cluster Sampling technique was employed to select 16 pupils and then they were randomly divided to each of control and case groups.

Data collection tools

Beck Depression Inventory: This test, based on 21 key signs of depression is prepared by a famous psychiatrist, Beck in 1967 and has been reviewed and revised in the years to follow. A lot of research on the psychometric properties (reliability and validity) and the appropriate use of this test were carried out. For example, analytical study of Groth-Marnat (1990) for internal consistency of this tool has been reported to have a correlation coefficient between 0/ 73 to 0/92 with a mean of 0/86 (5). In Iran, research by Hossainnajad-Enari (1997) and Farahbaghesh (2004) revealed that reliability and validity of Beck Depression Inventory is high.

RESULTS

After selection of two groups, pupils in the experimental group participated eight sessions (each 90 minutes) of group counseling with Cognitive-Behavioral Therapy (CBT) method. Then, for each of the subjects a pre- post test was conducted and for data analysis t - student test was used. Table 1 shows score for control and experimental groups' depression test and Table 2 indicates results of t-test for depression in both groups and in both pre-and post-test.

Table 1: Experimental and Control groups scores at depression test

Experimental group								
Subjects	1	2	3	4	5	6	7	8
Pre-test	22	30	21	24	30	21	27	22
Post- test	13	22	18	27	22	20	19	18
Control group								
Subjects	1	2	3	4	5	6	7	8
Pre-test	26	23	24	27	25	29	23	25
Post- test	29	13	25	26	27	26	20	28

Table 2: t- test results for experimental and control groups for depression index

Index	ΣD	ΣD2	t (0/05 & df= 7)	t (0/01 & df= 7)	t
Experimental group N: 8	38	308	1/895	2/995	3/145
Control group N: 8	8	142	1/895	2/995	0/632

According to table 1, after participation of experimental group in CBT, their post-test scores decreased significantly compared to their pretest. But, since the girls of control group did not participated in CBT, there is not much change in their depression condition and significant difference between pre - post test scores. Also, the results of statistical analysis of table 2 shows that t-test for experimental group (145 / 3) is larger than the t-table with error probability of 0/05 (1/ 895) and t- table with error probability 0/01 (2/955) and therefore can be concluded that there is a significant difference among averages. Moreover, as t for the control group (0/632) is smaller than t- table with error probability of 0/05 (1/895) and t-table with error probability of 0/01 (2/995), therefore in this group, there is no significant difference among averages. Overall, these findings reveal that CBT can significantly reduce depression among girl pupils and therefore the research hypothesis is confirmed.

CONCLUSION

As was stated earlier the present study is an attempt to investigate the effect of group counseling with CBT method on girl pupils of Junior high schools in Tehran city. Since the comparison of pre-test scores of Beck Depression Inventory at two control and experimental groups does not show a significant difference in the stage before the group counseling, we can deduce that significant differences in post- test scores between two groups is only because of training course of CBT method and psychological intervention. In fact, the findings confirm the hypothesis developed in the present study and showed that firstly, group counseling approach with regards to CBT method can effectively reduce depression among girl pupils of junior high school and secondly, subjects were trained under group counseling have further improvement in their depression compared to control group and this difference was significant.

Research findings in recent years by researchers such as Peterson & Halstead (1998) Rosselló & Jiménez-Chafey (2006) and Habigzang et al (2009) confirm the findings of this study. Also, in Iran the findings of Khodayarifard & Parand (2006) and Taraghijah & Hamdieh (2008) support the findings of present research. However, although CBT method for treatment of depression has led to much research, but most research in this area have some methodological limitations such as lack of comparison with other therapy methods, inadequate number of research subjects under investigation, and treatment's short time (Gibson, & Mitchell, 1990). However, whereas the application of group counseling approach with use of CBT method can be of great benefit for emotional disorders in educational environment, it is highly recommend that through holding special classes for school counselors, this method be employed and receive due attention in the process of teaching and learning.

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LANGUAGE LEARNERS' ATTITUDES AND BELIEFS: BRIEF REVIEW OF THE RELATED LITERATURE AND FRAMEWORKS

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ABSTRACT

Learning a language is influenced by a variety of factors. Two of the most important of which are the learner's attitude and perception toward the target language. These are the concepts which have been the focal points of sociolinguists as far as learner behavior is concerned. Therefore, this study was conducted in an attempt to provide an account of the previous studies conducted on attitude and perception and their impacts on learners' learning abilities. Motivation, as a determining factor in learning, in relation to language performance is going to be discussed as well. Additionally, different frameworks for the classification of learners' belief will be discussed and relevant conclusions will be drawn.

Key Words: Attitude, Perception, Belief, Motivation, Integrativeness.

INTRODUCTION

In order to get a deeper insight into the minds of language learners there is no more certain way than to study their beliefs. As in the area of language teaching, there has recently been an increasing emphasis on the styles and variables of learners. Additionally, learners' attitudes and beliefs are to join the growing body of research in the field. When learners step in a language classroom, they bring all their personality features including their beliefs, attitudes, and language styles to the learning environment. Almost all of the scholars admit that how successful people are in learning a language is exactly and directly influenced by what they think and how they evaluate the target language, the target language speakers, culture, and of course, the learning setting. Though merely investigating the attitudes and beliefs of learners may not guarantee any success, they, in turn, can be the guidelines for the next steps taken, as learners play the main role in any learning environment.

The concept of learners' attitudes has been the focus of attention in explanation and investigation of human behavior offered by social psychologists. Attitude is usually defined as a disposition or tendency to respond positively or negatively towards a certain thing such as an idea, object, person, or situation. Students have positive or negative attitudes towards the language they want to learn or the people who speak it. Having positive attitude towards tests is also claimed to be one of the reasons which make students perform better on the tests (Malallaha, 2000). A large number of studies have also investigated the relationships between attitude and proficiency in the language (Bachman, 1990; Malallaha, 2000; Coleman, Strafield, & Hagan, 2003). Additionally, Gardner (1985) believes that attitude and other affective variables are as important as aptitude for language achievement.

Attitude and Language Learning

One core aim of education is to convey factual knowledge about subjects, but another is to encourage students' interest in these subjects. To further encourage mastery of factual knowledge and skills, education

systems rely on examinations. However, research has raised the possibility that exams could have the unintended side effect of undermining the other core aim of education, that of encouraging student interest.

Research has shown that people's goals can powerfully influence how they react to a task (Lamb, 2004). Therefore, fulfilling a task can be inextricably related to the goal of the participants in that matter. Furthermore, students may wish to take proficiency tests because of their practical benefits, for example finding a job, or the possibility of living in a foreign country. Some applicants of these kinds of proficiency tests may only wish to assess their mastery in a foreign language. Barron and Harackiewicz (2000), for example, have summarized research on college students which suggests that individuals with mastery goals are more likely to enjoy a task, while individuals with a performance goal are more likely to do well at it. However, these differences are not absolute. Under some circumstances, performance goals can actually lead to greater interest than mastery goals (see for example, Barron & Harackiewicz, 2001).

The reaction and attitude toward a task can also be determined by the degree of the participants' motivation (Oxford & Shearin, 1994). According to Holmes (1992), in learning a foreign language, students can be motivated by the people who speak the language or the context in which the language is spoken. The Amount of the anxiety of the learners in foreign language learning situations may account for the changes in motivation of language learners (Johnson & Johnson, 1998) and ultimately changes the students' positive attitudes. According to Brown (2000), second language learners, benefit from positive attitudes, and negative attitudes may lead to decreased motivation. Nevertheless, he believes negative attitudes can be changed, often by exposure to reality for example, by encounters with actual persons from other cultures. Positive attitudes on the part of language learners can cause the development of an integrative motivation and this can consequently facilitate second language progress.

Berwick & Ross (1989) assessed the motivation of university students at the beginning and end of their freshmen year. Their analysis indicated a limited development of an orientation towards personal growth through widening of their horizons and a desire to study abroad. While they supported the idea that it was difficult to bring students back from the pressure of exam. They also maintained that the curriculum was at fault, by not being relevant to learners' needs and motives for language study. They contrasted this *motivational vacuum* with the extraordinary interest in language learning among adults in Japan and emphasized that universities must do much more to motivate students in this direction and make the students more relieved toward the concept of university examinations.

In a comparative study, Okada, Oxford and Abo (1996) found that the motivation of American learners of Japanese was far greater than that of learners of Spanish and concluded that motivation must be higher when one tries to learn a more difficult language because greater persistence and determination are needed to cope with the stress of a difficult situation. Conversely, EFL learners in Japan consider English as a difficult language to learn and so, such persistence and determination must also be present in order for language learning to be successful. In Japan everyone has to learn English, so teachers have to search for ways to motivate these less able students.

The type of task is also a determining factor with respect to the formation of attitudes and reactions towards the tasks. The students who sit for school or university exams would display lower motivation in comparison to students who learn the material without any assessment and test at the end of the curriculum. Test anxiety is a crucial factor in testing circumstances which results in lower motivation in pre-test conditions. Anxiety theorists have suggested that test anxiety is caused by individuals' perception of the test as a form of pressure to do well. These theorists further suggest that test anxiety is determined by individuals' personal interpretation or cognitive appraisal of the situation (Sarason & Sarason, 1990). The anticipation of a forthcoming exam is likely to be de-motivating for most students because it directs their attention towards the consequences of being graded rather than the inherent interest of the subject (Harackiewicz, Manderlink, & Sansone, 1984). According to Vallerand and Reid (1984), motivation can be boosted after the exam if the students receive positive feedback on their performance. They suggest when individuals learn in order to achieve grades; the information they process is likely to be seen as useful only for that specific task. Thus, after the test is

completed, the materials will no longer warrant retention. In their study, Grolnick and Ryan (1987) asked children to learn material in order to be tested on it; others were asked to learn the material simply for the sake of learning. When the students subsequently reported on their experiences, those who had learned in order to be tested, reported feeling more pressure. In addition, they recalled less information and showed less conceptual understanding (see Benware & Deci, 1984). Grolnick and Ryan (1987) referred to the lack of integration and recalling of material as an unwelcomed phenomenon in which material is forgotten when it is no longer functionally relevant. Extending this analysis in terms of ongoing motivation, it could be assumed that when individuals are immersed in a task where there is considerable pressure to perform well, their motivation is high, but as soon as the task has been completed, this motivation would be lost. Peacock (1997) examined the effect of authentic materials on the motivation of EFL learners. His research described a classroom research project to investigate whether authentic materials increased the classroom motivation of learners, a claim often made but rarely, if ever, tested. A definition of motivation relevant to teachers was adopted-learner interest, persistence, attention, action, and enjoyment. Two beginner-level EFL classes participated, and both used authentic and artificial materials alternately. Results from two observation sheets and a self-report questionnaire indicated that while on-task behavior and observed motivation increased significantly when authentic materials were used, self-reported motivation only increased over the last 12 of the 20 days of the study. However, learners also reported authentic materials to be significantly less interesting than artificial materials.

To substantiate the theoretical assertions about the relationship between attitude and language learning, extensive studies have been carried out to examine the effect of attitudes on language learning and the relationship between attitudes and language success. Truitt (1995) found in a study regarding the attitude of language learners that students' beliefs and attitudes towards language learning may vary based on cultural background and previous experiences. Thus, it can be argued that positive or negative attitudes do not develop accidentally but have some reasons for their emergence. Malallaha (2000) investigated the attitudes of Arab learners towards English language and discovered that they have positive attitudes towards the English language and their proficiency in tests was positively related to their attitude towards English.

Perception and Belief

The recognition of the role of learners' epistemological beliefs across various disciplines has contributed to a growing body of evidence which suggests that they play a central role in learning experience and achievements (Schommer, 1990) and have a profound influence on learning behavior and learning outcomes (Weinert & Kluwe, 1987). Interdisciplinary research shows how one's belief systems, social cognitions and metacognitions are a great force in intellectual performance (Schoenfeld, 1983), and that learners may be directly influenced by their perception of success in learning and levels of expectancy with realistically high expectations helping to build confidence, and low (or unrealistically high) expectations leading to de-motivation and disappointment (Puchta, 1999).

The study of perception and beliefs in both foreign and second language acquisition is important, as it has been noted that successful learners develop insights into beliefs about language learning processes, their own abilities and the use of effective learning strategies in the classroom and the context beyond that (Oxford, 2003). It has been argued that while some beliefs may have a facilitative effect on learning, others can hinder it. Supportive and positive beliefs help to overcome problems and thus sustain motivation, while negative or unrealistic beliefs can lead to decreased motivation, frustration, and even anxiety (Puchta, 1990).

Therefore, it can be claimed that an awareness of learners' beliefs is central to EFL classroom pedagogy. In an attempt to better understand the nature and role of beliefs in EFL context, various studies have taken up different approaches to their investigations. These can be more generally categorized as *cognitive* and *sociocultural* approaches. The main goal of these research efforts has been to identify psychological characteristics of individuals, such as their valuing and expectation of success and their orientation to their goals, and to try to quantify the relationship of these identified qualities to academic achievement.

For instance, Pintrich (2003) makes clear that as students move to higher levels of education, their motivation in study drops. Wigfield, Eccles, and Rodriguez (1998) attribute these changes in motivation to the perceptions of students about ability and intelligence. Students, in developmental stages, conceive that ability and intelligence are immutable. Therefore, they become less intrinsically motivated and they have lower expectation of success. There is also increasing consensus that these changes result from the interaction between developmental processes and institutional contexts, for example, the way that larger classes and fewer individual task-based lessons in schools conflict with young adolescents' need for more control over their lives, with negative consequences for their low academic motivation (Anderman & Maehr, 1994). Lamb (2004) carried out a study on the motivation of Indonesian adolescents towards learning English. His study aimed to track changes in students´ reported motivation and learning activity and to identify internal and external factors which might be associated with the changes. It was found that the learners' initially very positive attitudes towards the language and expectations of success were maintained over this period, whereas their attitudes toward the experience of formal learning tended to deteriorate. He attributed the findings of the study to the cognitive and developmental perceptions of the students towards the concept of formal learning.

Yang (1999) carried out a study to investigate the relationship between EFL college students' beliefs about language learning and their use of learning strategies. The study found that language learners' self-efficacy beliefs about learning English were strongly related to their use of all types of learning strategies, especially functional practice strategies. Also, learners' beliefs about the value and nature of learning spoken English were closely linked to their use of formal oral-practice strategies. The results of this study suggested cyclical relationships between learners' beliefs and strategy use and their final success in learning English.

Horwitz (1988) investigated the beliefs of a number of first semester foreign language learners at the University of Texas. The students were from different nationalities. Her learners appeared to somewhat underestimate the difficulty of language learning; 43 percent of them said that if you spent one hour a day learning a foreign language, you would become fluent within two years, and a further 35 percent that it would take three to five years. 50 percent believed in the existence of foreign language aptitude, and 35 percent said that they had that aptitude. Horwitz (1988) proposed that these gaps between teacher and learner beliefs probably result in "negative [language-learning] outcomes" (p. 292) for learners. Horwitz also suggested that a gap between teacher and learner beliefs can lead to reduced learner confidence in and satisfaction with the class and to unwillingness to participate in communicative activities (p. 290). In her final conclusions, she asserted that "Teachers will likely encounter ... many unanticipated beliefs, some enabling and some truly detrimental to successful language learning ... foreign language teachers can ill afford to ignore those beliefs if they expect their students to be open to particular teaching methods and to receive the maximum benefit from them" (p . 293).

Mantle-Bromley (1995) investigated the beliefs of 208 seventh grade middle school students taking first-year French and Spanish in Kansas. Mantle-Bromley's results indicated that some of her students' beliefs about language learning differed from commonly held teacher beliefs. In her study, learners believed in the existence of foreign language aptitude.

In the following sections, frameworks for the classification of learners' beliefs will be discussed.

FRAMEWORKS FOR THE CLASSIFICATION OF LEARNER BLIEFS

Byram's (2004) Resultative and motivational hypothesis

According to Byram (2004), studies on the connection between attitude and language learning yield two viewpoints: resultative and motivational hypothesis. The resultative hypothesis claims that "experience of success influences attitudes to language, country and people" (p.53).

Byram in his encyclopedia of language teaching and learning refers to a study conducted by Savignon (1972) on an 18-week French course at an American college which tried to evaluate the efficacy of different methods of teaching. Savignon asserts that "it is achievement which influences attitudes towards French study" (p.54).

Byram continues that deterioration in learners' attitude can be the result of language exercises in the settings "bereft of content, i.e. without information about the target language culture" (p.54).

A viewpoint taking the opposite stand to resultative hypothesis is motivational hypothesis which considers successful language learning a result of attitudes "as stable of, motive-like constructs" (Byram, p.55). Motivational hypothesis is then of two orientations: integrative and instrumental. The former is the interest in the other group and the latter is a concern with usefulness of a professional or subject-related kids. Cooper and Fishman (1977, cited in Warrington and Jeffery, 2005) mentioned a third type of motivation called "developmental motivation". They asserted that developmental or personal motivation is related to personal development or personal satisfaction. This is about activities such as watching movies and reading books in English.

Byram reports on the findings of two studies on Indian learners of English (Lukmani, 1972) and Chinese students living in USA (Oller, Hudson, & Liu, 1977b). As the studies reveal, marking integrative orientation, above instrumental, as the first concern in the priorities list of the learners, is a problematic issue.

Gardner's (1985) Socio-Educational Model

The controversial views on the interrelationship between success and attitude ended in the emergence of socio-educational model. Gardner's socio-educational model is based on the idea that L2 learning is "acquiring symbolic elements of a different ethnolinguistic community" (Gardner, 1979, p. 193 cited in Ellis, 2004). The proponents of the model believe that the relationship between learners' attitudes and their proficiency is an indirect one, unlike that between integrative motivation and proficiency which is described as more direct and, therefore, stronger.

Gardner believes that the learner's attitude towards L2 and their integrativeness have the strongest impact on the level of motivation. To Gardner, motivation can be divided into three components: the effort to achieve a goal, the desire to learn a language and satisfaction with the task of learning that same language.

The most recent version of Gardner's socio-educational model is presented in Masgoret and Gardner (2003). The model draws dividing lines between attitudinal and motivational variables. Integrativeness and learner's attitude towards the learning situation are categorized as attitudinal factors, differentiated from motivation, integrative, and instrumental orientation. Masgoret and Gardner (2003) define integrativeness as openness to identify, at least to some extent, with other language communities. They also claim that high levels of integrativeness increases learners' motivation. They believe that a learner's attitudes towards the learning situation can be elicited through their evaluation of the course, the teacher, the materials and/or teaching environment. To elaborate on motivation, they call it a goal-directed behavior and again consider it as a combination of three components: expanded effort, the desire to be proficient in the foreign language, and the affect experienced when learning the language. Here again, the proposed division for motivation clearly echoes the three components distinguished by Tremblay and Gardner (1995), except for the "satisfaction" element that was changed into "affect", a broader term. Masgoret and Gardner (2003) also confirm Tremblay and Gardner's observation that the learner's integrativeness and attitude towards the learning situation have a great impact on their motivation and consequently also on their achievements.

Though Gardner (1985) puts great emphasis on the importance of learners' attitudes toward the target language community, there is a more moderate view that rejects the idea of attitude as an unchangeable, fixed trait but states that attitude can develop within complex elements.

Ellis (2008) claims that one of the ways social settings can influence L2 acquisition is through affecting learners' attitudes. Learners take different attitudes towards "the target language, target-language speakers, the target-language culture, the social value of learning the L2, particular uses of the target language, and themselves as members of their own culture" (p. 287). Regarding the resultative vs. motivational hypothesis, Ellis holds a middle view and believes that "learner attitudes have an impact on the level of L2 proficiency achieved by individual learners and are themselves influenced by this success" (p. 287).

Baker (1988) described attitudes as follows:

1. 1. Attitudes are cognitive (i.e. are capable of being thought about) and affective (i.e. have feelings and emotions attached to them)
2. Attitudes are dimensional rather than bipolar – they vary in degree of favorability/un-favorability.
3. Attitudes predispose a person to act in a certain way, but the relationship between attitudes and actions is not a strong one.
4. Attitudes are learnt, not inherited or genetically endowed.
5. Attitudes tend to persist but they can be modified by experience (Ellis, 1994, p. 199).

Brown's (2007) ideas about attitudes are not very different from those of Baker's (1988). He believes that attitudes "develop in early childhood and are the result of parent's and peers' attitudes, of contact with people who are different in any number of ways, and of interacting different factors in the human experience" (p. 193). He touches on Gardner and Lambert's (1972) extensive studies on the effect of attitudes on language learning; "they defined motivation as a construct made up of certain attitudes" (p. 193). To elaborate on the issue, Brown points to the large-scale studies that John Oller and his colleagues (1977b) conducted on the relationship between attitudes and language success. In their studies, the relationship between Chinese, Japanese, and Mexican students' achievement in English and their attitudes towards self, the native language group, the target language group, their reasons for learning English, and their reasons for travelling to the United States were investigated. The findings enabled the researchers to categorize "a few meaningful clusters of attitudinal variables" that showed positive correlation with proficiency. Brown continues that "each of the three studies yielded slightly different conclusions, but for the most part, positive attitudes toward self, the native language group, and the target language group enhanced proficiency" (Brown, 2007, p. 193).

However, Wenden (1985, cited in Al-Tamimi & Shuib, 2009) presented a more inclusive definition of the term "attitudes". According to him, "attitudes" encompasses three components: *cognitive, affective,* and *behavioral.* "The cognitive component is related to the beliefs and ideas or opinions about the object of the attitude. The affective factor is about the feeling and emotions that one has towards an object, likes or dislikes, with or against" (p. 33). And finally, the behavioral component is made up of one's consisting actions or behavioral intentions towards the object. Regarding Wenden's theory of attitudes, Van Els et al. (1984, cited in Al-Tamimi & Shuib, 2009) claims that "it does not really matter whether all or only one of the three components are measured; the relationship between the components is so close that sufficient information on an attitude can be obtained by measuring only one component, no matter which" (p. 33).

Attitudes can be measured indirectly through measurements such as the Semantic Differential Techniques or directly using self-report questionnaires (Ellis, 1994).

The learners' attitude towards learning a particular L2 is shaped by the intersection of their attitudes about their own ethnic identity and those about the target-language culture. These attitudes influence (and definitely not determine) both L1 maintenance and L2 learning. Eliss (2004, p. 320) summarizes learners' attitudes in the following table.

Table 1: Learners' attitudes

	Attitudes towards native culture	Attitudes towards target culture
Additive bilingualism	+	+
Subtractive bilingualism	-	+
Semilingualism	-	-
Monolingualism	+	-

Key: + = positive attitudes - = negative attitudes

Kumaravadivelu (2006) refers to social psychologists ideas about attitudes, they believe that attitudes are a matter of individual differences, in other words, different individuals have different attitudes towards "the

same stimuli" (Eiser, 1987 cited in Kumaravadivelu, 2006, p. 39). In addition, attitudes are considered to be a social factor, that is, they are influenced by the events in the external world.

Attitude is clearly an individually-driven trait but as Malcolm (1987) asserts at least two external factors contribute to its development: environmental and pedagogic. The environmental factor includes "social, cultural, political and economic imperatives that shape the L2 educational milieu" (p. 39). The pedagogic factor refers to how the interaction between teachers, learners, and the learning situation develop positive or negative attitudes in the learner. Tucker and Lambert (1973) claim that L2 development is influenced by teachers' attitudes more than parental or community-wide attitudes. Most of the scholars in the field conclude that "a positive attitude to language learning is a necessary but not a sufficient condition for success" (p. 39).

Lightbown and Spada (2006) define motivation as "a concept that explains why people behave as they do" (Csizer & Dornyei, 2005, p. 20).

Robinson and Ellis (2008) believe in a modern aim of cognitive describing a speaker than the traditional model of describing language system. As they put it, linguistic theory and description, which were sent to isolation by structuralism, will receive more attention at the beginning of the twentieth century. Linguists' concern at that time was language structure, and they excluded external factors such as world-view or level of civilization of the speakers from their studies. By the end of the century, though, the language systems were replaced by speaker's cognitive system. Robinson and Ellis believe that the new trend will be developing language theories with "L2 and internal variation at their centers" (p.91) and the most important point to them will be linguistic attitudes – "the feelings that different language and attitudes evoke" (p.91). They believe that, despite the great deal of empirical data about attitudes, we still cannot place attitudes into a cognitive model with the rest of language structures.

Dörnyei and Ottó (1998): Process Model of L2 Motivation

Dörnyei (2001) proposed a process-oriented model of motivation consisting of three phases. The first phase is "choice-motivation" which refers to getting started and to setting goals. The second phase is "executive motivation" and is about carrying out the necessary tasks to maintain motivation. The third phase "motivation retrospection" is about students' appraisal of and reaction to their performance.

As Dörnyei and Ottó elaborate on their motivation model, they, partly inspired by Heckhausend and Kuhl's (1985) Action Control Theory, developed Process Model of L2 Motivation. The model is designed to explain both the dynamics of motivational change in time and to synthesis many of the most important motivational conceptualizations to the date (1998). As they report, some previous theories on motivation have gone through a reductionism paradigm and have selected certain motivational variables as the main components and then placed some other factors in within their subsumed areas. Among the theories, as cited in Dörnyei and Ottó's article, are Expectancy value theories which "assume that motivation to perform various tasks is the product of two key factors: the individual's *expectancy* of success in a given task and the *value* the individual attaches to success in that task" (p. 44). This framework includes several sub-theories which try to elaborate on cognitive processes that shape the individual's expectancy: attribution theory refers to how an individual processes past achievements experiences; self-efficacy theory is related to people's judgment of their abilities to do certain tasks; and self-worth theory believes in the highest human priority as the need for self-acceptance.

However, before presenting the process-model of L2 motivation, Dörnyei (1994) developed a completely different classification of motivation. Dörnyei divided motivation into three factors: learner-related factors, subject-related factors, and classroom-related factors. The *learner-related factors* are about a learner's anxiety and self-efficacy, "his/her self-perception of his/her accent in the second [or foreign] language and causal attributions" (p. 9). He labels integrativeness, extrinsic, and intrinsic motives as *subject-related factors*. And the *classroom-related factors* refer to learners' opinions about class objectives, teaching styles, feedback, student roles and learning strategies.

Yang (1999): Metacognitive Versus Motivational Beliefs

Yang (1999) distinguishes metacognitve from motivational beliefs. Metacognitive beliefs are made up of three elements: what learners know about *themselves*; what learners think about the *task*; and their knowledge about learning strategies. Motivational beliefs also consist of three components: a learner's belief about their *ability* and *expectation* about learning the foreign language; the *goals* set by the learner and their *interest* in the language learning task; and the learner's *emotional reactions* to learning the foreign language.

Yang's sub-classification is based on Pintrich's (1989) classification model of motivational beliefs. Pintrich analyzed the concept motivation within the realm of expectancy-value theories which identify motivation as a combination of certain beliefs about the outcome of actions with the value placed upon those outcomes.

Long before Dörnyei and Ottó (1998) put forward their dichotomy of motivation (expectancy and value), Pintrich (1989) presented his subdivision of motivation with three components: expectancy (beliefs about one's own ability), value (learning goals and importance, utility and interest attributed to learning the target language), and affect (emotional reactions to the task). Additionally, clear similarities can be drawn between Pintrich's original discussion of motivation and the model developed by Yang.

As Brown (2007) reminds us, teachers need to bear in mind that everyone has both positive and negative attitudes. Negative attitudes usually emerge from one's indirect exposure to a culture or group through books or media and they often can be changed by exposure to reality.

CONCLUSION

In the light of the aforementioned research studies in this paper, it became evident that attitude and perception play significant roles in enabling learners to learn effectively. As it was stated, learners' motivation, the type of task at hand, cultural background and previous experiences are all contributive to the way learners behave toward and perceive learning strategies and their ability in maintaining higher levels of learning. Regarding teachers, it is noteworthy to state that, they need to have a clear understanding of the language being taught and student beliefs, because learners with realistic and informed beliefs are more likely to behave productively in the class, work harder outside the class, and (crucially) persist longer with language study; this must be taken into consideration particularly due to the fact that when students' beliefs and performance do not match, they become frustrated and disappointed with the class and with themselves resulting in hindrance in the intake of the material. Therefore, it can be concluded that having positive or negative attitudes towards a certain language and the way learners perceive that language can exert considerable influence upon their performance on the language itself.

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AN EXPLORATION OF UNDERGRADUATE ENGINEERING, EDUCATION, ART'S AND SCIENCES STUDENTS' CHEMISTRY LABORATORY ANXIETY LEVELS

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ABSTRACT

This study examined the difference among undergraduate engineering, education, and arts and sciences students' chemistry laboratory anxiety levels and aimed to describe the causes of these differences. Chemistry Laboratory Anxiety Instrument (CLAI), developed by Bowen (1999) and adapted into Turkish by Azizoğlu and Uzuntiryaki (2006), was used as the data source. There are four dimensions of the scale which are: using equipment and working with chemicals, working with other students, collecting data, having adequate time. 295 college students were participated in the study. Participants consist of three different faculty students (engineering, art-science, and education faculty). SPSS and AMOS statistics programs were used to analyze students' anxiety levels. MANOVA was performed to explore the relation between gender, faculty and chemistry anxieties (i.e using chemicals, peer work, data collection, and time management) of undergraduate students. Results of the study have shown that gender has no significant effect on students' chemistry laboratory anxiety levels. However, there is a significant difference among different faculty students' anxiety levels. These variations were tried to be explained by conducting semi-structured interviews with lowest and highest anxious students.

Key Words: Anxiety, Chemistry laboratory anxiety, Undergraduate students.

INTRODUCTION

In last few decades, there is consensus on that personal and motivational variables have an impact on learning (Gaudry & Spielberger, 1971). Anxiety is one of these variables that have positive or negative effects on learning. Number of publications on this issue has continued to accelerate since the second half of the 20th century (Spielberger, 1972). Anxiety is given importance in the literature because it is usually experienced by the entire society. Huge numbers of people are suffered by inappropriate and excessive anxiety (Rachman, 2004). Anxiety can be defined as the tense, unsettling anticipation of a threatening but ambiguous event (Rachman, 2004). Not only psychologists but also educators are concerned with this problem. Educators are interested in the effects of anxiety on the learning process.

Over the last few decades, a significant amount of the research has been conducted on the effects of anxiety on learning and retention (Gaudry & Spielberger; 1971). Education literature highlights many types of anxiety. Math, test, science and laboratory anxiety are usually investigated types of anxiety among the researchers. Science anxiety is a debilitating interaction of emotion of fear, and tension during the interaction with science concepts. Science anxious students felt relaxes in their non-science programs, including their mathematics courses (Mallow, 1994). Science anxiety indicated as a career filter; students avoids from entering certain fields as they have fear of participation in the prerequisite science courses (Udo, Ramsey, and Mallow, 2004).

Students' perceptions about science were related with their attitudes towards laboratory (Havdala & Ashkenazi; 2007). On the other hand, enhancing science courses with laboratory activities increase students' attitudes success and interests towards these courses (Aydoğdu, 2000). Researchers and policy-makers worldwide have consensus on the value of laboratory work (Woolnough & Alsop 1985). However, the effectiveness of the laboratory works are being debated (Tobin, Tippins & Gallard 1995). Laboratory activities are organized in order to reach science learning outcomes. These learning outcomes or objectives can be classified into two main groups: content and process. The former are concerned with the learning of scientific facts, concept, relationship; the latter are concerned with the learning of scientific enquiry process such as how to use a laboratory instrument, duration of a task (time), people with whom the student interacts, how to carry out a standard procedure etc. (Miller, Tiberghien, & Le Marechal, 2002). It is of utmost importance to recognize that affective variables, such as anxiety, affect learning and performance in laboratory situations (Bowen, 1999). General chemistry course and chemistry laboratory course are usually experienced by entire science major departments (e.g. engineering, biology, chemistry, physics, education, molecular biology-genetic etc.). Therefore, reducing stress in laboratory conditions may improve learning of complex laboratory and problem-solving skills (Bowen, 1999). The purpose of this study is to compare undergraduate chemistry and elementary education students' chemistry anxiety levels with those undergraduate students majoring in degrees from engineering and arts and sciences using CLAI item survey. Our main goal was to see if there is a statistically significant difference among students chemistry anxiety level. Udo, Ramsey, and Mallow (2004) indicate that science anxiety and science enrollments are assertively affected by role models (i.e. teachers). Thus, we claim that there is a strong correlation between teachers' characteristics and students' science anxiety and their science enrollment. To compare education students' anxiety scores with their counterparts in engineering and arts and sciences is worth to analyze since all students from three different colleges take chemistry courses and chemistry laboratories in the same manner during their undergraduate curriculum, but they feel different levels of anxiety. Education students' anxiety scores were taken into the center as education students are future teachers who will teach special science topics to the next generation. Present study also attempts to explain the causes of chemistry laboratory anxiety.

Following research questions will guide the present study.
Is there a statistically significant difference between undergraduate female and male engineering, education, and arts and sciences students' chemistry laboratory anxiety levels?

Is there a statistically significant difference among the engineering, education, and arts and sciences students' chemistry laboratory anxiety levels?

If there is a statistically significant difference among the engineering, education, and arts and sciences students' chemistry laboratory anxiety levels, how can these differences be explained?

Theoretical framework

College students' chemistry anxiety or chemistry laboratory anxiety has been studied by many researchers (Erökten, 2010; Jegede, 2007; McCarthy and Widanski, 2009). It is commonly emphasized in the literature that female students reflect more chemistry anxiety than male students. Students past experiences are thought as predictor for chemistry laboratory anxiety. In the recent study,not only anxiety but also causes of anxiety are valued by the researchers (Jegede, 2007; Tai, & Sadler, 2007). Chemistry experiments are generally performed by using experiment handbook or laboratory manual. Whether it is written in the manual or not, students have to participate actively in the experiment. This active participation process includes planning, designing, analyzing, interpretation and application by individually or sometimes collaboratively (Hofstein & Lunetta, 1982). Students have to interact with chemicals in Chemistry laboratory. As well cognitive domain, the affective domain,is also an important factor in education process (Azizoğlu & Uzuntiryaki, 2006). Anxiety is one of the major affective variables that affect learning. Researchers conducted several research to analyze students' reactions to the chemistry laboratory.

McCarthy and Widanski (2009) studied with 264 undergraduate students. Participants were asked to complete a survey that consisted of a series of demographic questions and the Derived Chemistry Anxiety Rating Scale.

The rating scale is made up of three subscales: learning-chemistry anxiety, chemistry-evaluation anxiety, and handling-chemicals anxiety. The F test results for chemistry-evaluation anxiety were significant; females reported higher levels of evaluation anxiety than males. The F test results for learning-chemistry anxiety and handling chemicals were not significant between different genders. The F test results for learning-chemistry anxiety and chemistry evaluation were significant, with participants who had never had chemistry; these students reported higher levels of this type of anxiety. The F test results for handling-chemicals anxiety were not significant. Females reported more evaluation anxiety than males did. This may be due to socialization. Females are often led to believe that science is the domain of males.

Anxiety is generally accepted as having negative effect on learning. Students' chemistry lab anxiety is utmost necessary. The interaction of anxiety with other affective variables such as attitude, self-efficacy etc. is also highlighted in the literature. Kurbanoglu and Akim (2010) conducted a study with 395 first year major undergraduates. Students were randomly selected from four universities' general chemistry and general chemistry laboratory classes. They used the same scale (CLAI) with the present study in order to measure laboratory anxiety. They aimed to examine the relationship among chemistry laboratory anxiety, chemistry attitudes and self-efficacy. Results of this study indicate that the self -efficacy has predicted chemistry laboratory anxiety in a negative way. Anxious students who hold high anxiety about chemistry laboratory generally feel incapable of doing laboratory activities. Therefore, self-efficacy is thought as a negative predictor of chemistry laboratory anxiety. Results also highlighted that chemistry laboratory anxiety was predicted by chemistry attitudes, negatively.

As previously indicated, not only anxiety but also causes of the excessive amount of anxiety is given importance in the literature. Jegede (2007) aimed to find out students' anxiety towards the learning of chemistry, classify the factors that cause the anxiety, examine the gender differences towards the learning of chemistry. He conducted a study with 300 secondary school grade students. The findings of the study highlighted that all of the students have high anxiety towards the learning of chemistry. Female students reported higher levels of anxiety than male. He reviewed the basis of students' anxiety as broad coverage of the syllabus, low awareness of career opportunities, their teacher and his teaching methods and lack of teaching aids. Well-qualified chemistry teachers and well-equipped chemistry laboratories are suggested to decrease students' chemistry laboratory anxieties. He also alerts that numbers of chemistry teachers are also limited in secondary schools. This is indicated as another factor that causes anxiety.

Tai, Sadler, & Loehr (2005) aimed to investigate the effects of high school chemistry experiences on students' the college chemistry success. They conducted the study with 1531 students who were taking introductory college chemistry courses for science and engineering majors at 12 different U.S. colleges and universities. Most notably, results of this study are that repeating chemistry labs for understanding was associated with higher student grades, however,when lab procedure is overemphasized students lab grades get lower. Results suggest that the high school teachers' and students' previous experiences have positive or negative effect on college students' future performance.

The current study also aims to compare three faculties' results in chemistry laboratory anxiety. The focus of the present study is to examine the difference among students of three different faculties' chemistry laboratory anxiety levels and find out the possible reasons for these differences.

METHOD

Sample

The purpose of the study is to investigate chemistry laboratory anxiety differences among three different faculties (i.e. engineering, art-science, and education faculty) in Ankara Therefore, the target population of this study is all engineering, art-science, and education faculty students in Ankara; however, it is not possible to reach all of these students. For this reason, Two-hundred and ninety-five college students of eight different departments at METU are defined as the accessible population. The sample from this accessible population is determined by using purposive sampling method. Participants were students from three different faculties (i.e.

engineering, art-science, and education faculty). The primary reason for selecting these faculties can be explained as general chemistry course,and general chemistry laboratory are common courses for all faculties. The distribution of art and science faculty included chemistry, molecular biology – genetics, and biology (25 %) departments. The distribution of education faculty involved elementary science education (ESE), and chemistry education (31 %), departments. Remaining of the participants were engineering students involved electronic, mechanic, civil engineering (44%) departments. General chemistry course and general chemistry laboratory are common for all departments. Students of chemistry engineering, chemistry education and elementary science education departments were taking similar chemistry courses at their first and second years. These courses consist of general chemistry, analytical chemistry, organic chemistry, inorganic chemistry, in addition to these courses students, were respected to take related laboratories such as; general chemistry laboratory, inorganic chemistry, organic chemistry laboratory, and analytical chemistry laboratory during their undergraduate education. ESE departments' curriculum is differed from other departments for one laboratory course. Sophomore ESE students covers analytical and inorganic chemistry experiments together in one laboratory course. The majority of participants were 23 years old and younger, with 43% between 18–20 years old, 50% in the range of 20-23 years old, and 7% in the range of 24-25 years old.

Instrumentation

In order to determine anxiety levels, that students have in college chemistry laboratories Chemistry Laboratory Anxiety Instrument (CLAI) was used. The instrument was designed by Bowen (1999) and adapted into Turkish by Azizoğlu & Uzuntiryaki (2006). The scale consisted of 20 items rated on a Likert-type scale. Respondents were asked to respond to each item using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Fifteen of the twenty items were positive statements (supports anxiety), however, remaining five items were negative statements regarding anxiety. 15 positive statements were rated as 5,4,3,2,1 from strongly agree to disagree on the contrary, remaining 5 negative statements were rated as 1,2,3,4,5. The original scale measures the following dimensions of chemistry laboratory anxiety: working with chemicals, using equipment and procedures, collecting data, working with other students, having sufficient time. Azizoğlu & Uzuntiryaki (2006) found four dimensions in their adapted version of this scale which are: using equipment and working with chemicals, working with other students, collecting data, having sufficient time.

Procedure

The study was conducted in the fall semester of 2011-2012 academic year. Timeline for the data collection is divided into three part; applying CLAI, analysing data, conducting interviews. Data collection procedure took five week. The general characteristic of the participants is their being taken chemistry laboratory. All of them had already taken the chemistry laboratory course or were just attending the course in that semester. Permission for participation of students was obtained from departments, and all students were volunteers. The scale was applied to the students in the classrooms. Before the application, all participants were told about the purposes of the study. Pearson correlation coefficient and structural equation modeling were utilized to determine the relationships between the dimensions of chemistry laboratory anxiety.

The scale was applied by the course instructors. It took about ten minutes for participants to respond all questions. Demographic items contained in the questionnaire asked participants about their age, gender, grade, department, and GPA. Initial data consists of 340 students' responding to the questionnaire. However, 35 of these 340 students were student at psychology departments, which is out of our target participants, and 10 of the students rated as 3 (uncertain) for all questions, therefore, we exclude these 45 participants from our data. Semi-structured interviews were used as the data source to explore the differences among students' anxiety levels and causes of these differences. 2 students who have lowest anxiety score and 2 students who have greatest anxiety score were interviewed. Interviews were audio recorded and were transcribed verbatim.

Interviews

Combining quantitative and qualitative methods enhance the comprehensibility and usefulness of results (Tobin, & Fraser; 1998). After analyzing quantitative data, we collected qualitative data based mainly on student interviews. Duit and Confrey (1996) propose that, interviews should be used to suggest complete picture of students reasoning patterns. Interview questions were written in open ended and non-biased

question forms enables students' to be free while responding the questions. Semi-structured interviews were conducted among students who took lowest and highest score from CLAI. Four students, two of them have lowest and two of them have highest anxiety score, participated in the interviews. Students in each group were of different genders and departments. Interviews took 20 to 40 minutes.

Data Analysis

SPSS 18 statistic program was used to explain the descriptive and inferential statistics. There are four dimensions of the scale. These dimensions were also analyzed with Confirmatory factor analysis by using the analysis of moment structures (AMOS) version 4 (Arbuckle and Wothke 1999) statistical software packages.

RESULTS

Validity Evidence

In an effort to confirm the factor structure of the scores obtained from the 20-item CLAI, Confirmatory factor analysis was employed using the analysis of moment structures (AMOS) version 4 (Arbuckle and Wothke 1999) statistical software packages. The maximum likelihood estimation method was used. As can be observed from the figure 1, four dimensions of the CLAI (using chemicals, peer work, data collection, and time management) were allowed to correlate to each other. Figure 1 demonstrates the model specification and the parameter estimates. In order to evaluate the fit between the hypothesized model and the data multiple goodness-of-fit tests were used. These are Normed Fit Index (NFI; Bentler and Bonett 1980), the Comparative Fit Index (CFI; Bentler 1990), and the Root Mean Square Error Approximation (RMSEA; Steiger and Lind 1980).

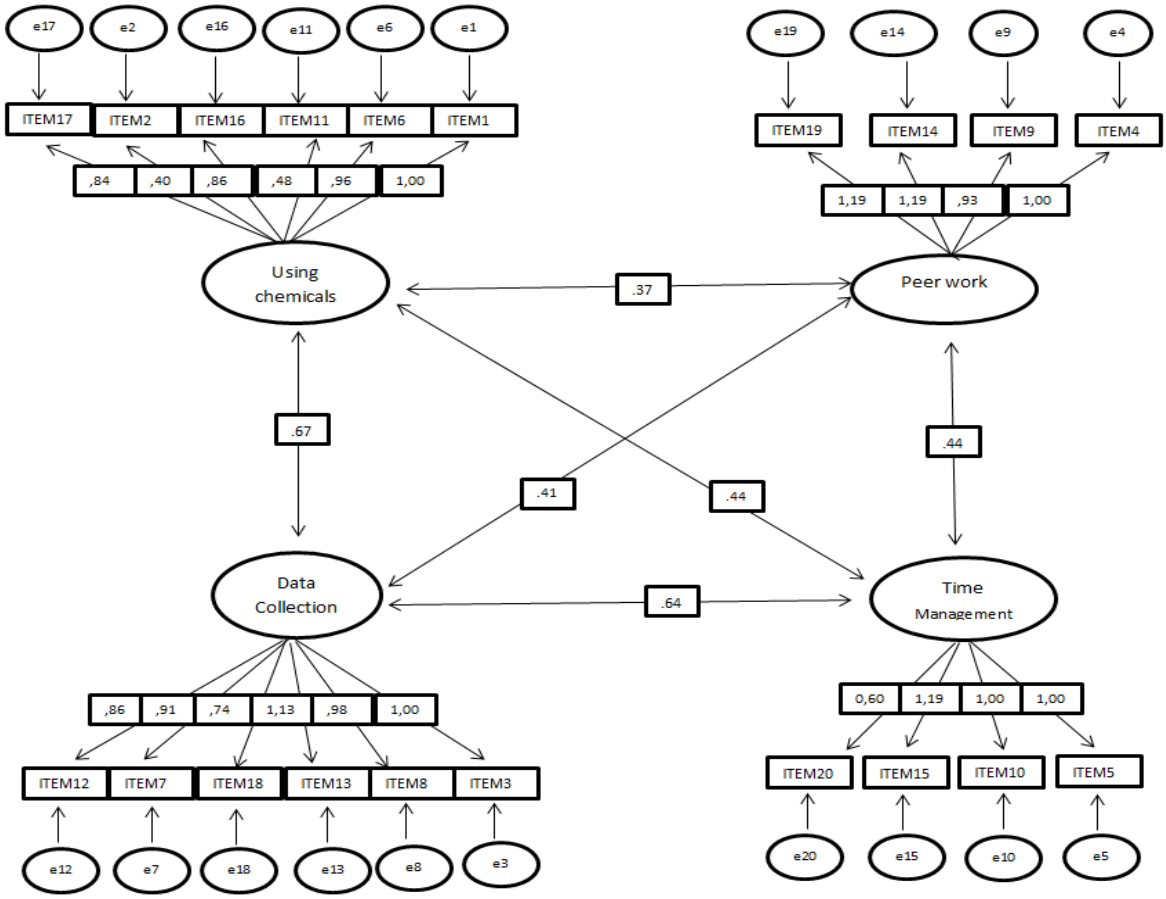

Figure 1: Standardized coefficients for the four-factor model of undergraduate chemistry laboratory anxiety scale. Normed FIT Index = .841; Comparative Fit Index = .890; Root Mean Square Error Approximation: 0.08.,

Results from the CFA suggested that the four-factor structure do not fit well to the sample data with all fit indices (NFI = .841; CFI = 0.890). An NFI and CFI greater than 0.90 indicates a good fit to the data (Kline 1998). So, our model indicates a close fit. Browne and Cudeck (1993) reported that the RMSEA of about 0.05 indicates a close fit of the model and 0.08 represents a reasonable error of approximation. For this study, RMSEA= 0.79, which indicated a reasonable fit. It is proposed that, RMSEA greater than 0.10, not using the model. There were no specification errors nor were any additional alterations of the model specified.

A one-way multivariate analysis of variance (MANOVA) was conducted to determine the effect of four dimensions of CLAI (UC, PW, TM, DC) on the two dependent variables, the gender and faculty CLAI scores. A one-way manova revealed non significant difference found among the four dimensions of CLAI on the dependent measures (Wilks ' Lambda = .974, F (8, 572) = .941, p =.482, η2 = .013), thus hypothesis 1 was confirmed. The multivariate η2 of .013 would be interpreted as a small effect with respect to Cohen 's (1988) standards.
Null hypothesis 1: There is no significant difference between chemistry laboratory anxiety scores of females and males.

A one-way manova revealed a non-significant difference found among gender (F (4,286)=1.998, p=.095; Wilks' Lambda=.973; η2=.027). Therefore, it was stated that there was no statistically significant difference between males and females regarding the combined dependent variables. The multivariate η2 of .027 would be interpreted as a small effect with respect to Cohen 's (1988) standards. When the results for the dependent variables were considered separately, gender has still no significant difference on dependent variables at Bonferroni adjusted alpha level of .125.

Null hypothesis 2: There is no statistical difference among engineering, arts and sciences, and education students' chemistry laboratory anxiety scores.

The results revealed that the null hypothesis were rejected (F (8,572)=2.628, p=.008; Wilks' Lambda=.930; η2=.035). Therefore, it was stated that there was statistically significant difference among engineering, arts and sciences and education students' chemistry laboratory anxiety scores considering the combined dependent variables. The multivariate η2 of .035 would be interpreted as a small effect with respect to Cohen 's (1988) standards.

Students Interviews

We conducted semi-structured interviews with arts and science students and education students in order to find out where the difference lies between these students' anxiety scores, which factors makes the difference and etc. Interview questions were organized by taking into consideration of four dimension of CLAI (i.e using chemicals, peer work, time management, and data collection). Students' academic backgrounds (Anatolian high school, teacher education high school (öğretmen lisesi), or science high school (fen lisesi)) and their science experiences had been asked at the beginning of the interviews. Although all types of high school have the same curriculum in Turkey, the use of the curriculum varies from school to school. I thought that the school type and educational students' background may influence their anxiety scores.

Researchers first asked the interviewees to read the interview results section of the present study to check whether the results were consistent with their explanations or not. Following sections includes student interviews, direct quotation from their explanation regarding chemistry laboratory method. Students' general complains about chemistry laboratory are broad coverage of the laboratory manual, lack of laboratory experiences in high school, lack of physical conditions, a limited number of laboratory assistant, having laboratory accident (e.g gas explosion) in the past.

To begins with broad coverage of the laboratory manual; both of the groups (low anxious and high anxious student) complained about the excess amount of experiments in the laboratory manual. Some of the experiments require two or more day to complete, so these experiments were omitted from the course content.

There were lots of scientific information in the manual,and some of the experiments were too long to be complete in laboratory hours. Some of the information and experiments were not useful for us. When we completed the laboratory and look at back, we cannot be able to use any of those experiments. I still do not understand why there was the excess number of experiments in manuals. I just confused which experiment will be performed in the laboratory which one of them will be omitted. Our manual was like a thick book. It is impossible to cover all the experiments in one semester. I think these manuals are too broad to be used as the lab manual. Some of the experiments require two or three day, we omitted them. (low anxious student-1)

Students past laboratory experiences affect their laboratory anxiety scores. If students had a chance to do experiments in elementary science or high school science, they generally report less anxiety in laboratory. If they did not perform any experiment in the laboratory before coming to undergraduate education,this makes them nervous in the laboratory. Both of the groups reported the importance of high school or elementary school laboratory experience on their laboratory anxiety. High anxious students reported that their lack of past experience on laboratory makes them nervous. On the contrary; one of the low anxious students attributes her feeling comfortable while using chemicals to her elementary school experience.

My elementary teacher was very ambitious to do experiments. I had used to participate actively in the experiments since my elementary years. I learn by seeing, in the laboratory;I do experiment; I took a sample; I collect data, I record my observation's etc. these experiment process were very helpful for me. I prefer being in a laboratory and doing experiments rather than being in a classroom and listening to the teacher. (low anxious student-2).

Lack of past experiences and having a laboratory accident is reported as causes of chemistry laboratory anxiety. I always feel anxious in the chemistry laboratory. Using chemicals make me nervous. Experiment is unnecessary. We did not do any experiment in high school; my chemistry teacher was an experienced teacher she teaches the chemistry topics to us by lecturing. I learned lots of things from her. If the laboratory is so necessary,I think she would use it. Maybe, I don't know. I am pretty sure that, chemicals are dangerous. In the chemistry laboratory, I am always afraid of having an accident. Previous year, one of graduate students had a gas explosion in the laboratory. Her face burned. I am not sure; we must be careful. (high anxious student-1).

Physical conditions of a laboratory are listed as another factor that causes anxiety or reduces it. If there is enough material to perform an experiment and if there are safety rules, precautions in the laboratory this makes students more comfortable during the laboratory.

There are always enough materials to perform an experiment. There are three or four students in each group. These groups work at one side of the bench; a second group works at the other side of the bench. These groups work separately, but they can interact with each other if they need. There is a shelve on the middle of the bench. we use these shelves during the experiment. we put our sample on it etc. Each lab has a bath in case of emergency (burn or being exposed to acids). There is also eyewash near the benches. Such items decrease my anxiety. Actually, we always wear laboratory glasses (Low anxious student-1).

Limited number of laboratory assistant is pointed as anxiety cause;
We formed experiment groups there was maximum four students in the groups. One assistant was responsible for three or four group. This is not enough I think. There are some experiments that we cannot understand at which moment we will add something. For example,we have to add something in a mixture before the color change occurs sometimes we missed the point when we called the assistant s/he was dealing with other groups. When we pass the proper time, we have to re-perform the experiment from the beginning. This is time consuming. Number of assistant should be increased in chemistry laboratories (high anxious student- 2).

CONCLUSION AND DISCUSSION

The chemistry laboratory anxiety scale with four dimensions was applied to engineering, arts and sciences and education students in order to measure their chemistry laboratory anxiety levels. The aim of the study was

twofold; first one is to determine the difference among engineering, arts and sciences and education students chemistry results, and if there is a difference among students' results, to investigate where the difference lies and what can be the causes of these differences. We first looked the gender relation with chemistry anxiety levels. There is no consensus on the literature regarding gender differences and anxiety (Yaylı & Hasırcı, 2009). There is a significant number of study that found females reports more anxiety than their male partners (Udo, Ramsey, & Mallow, 2004; Jegede, 2007; Pigge & Marso, 1987). On the contrary, there are a limited number of studies that found there is no gender difference for feeling anxiety (Ghaaith, & Shaaban, 1999). Present study results revealed that there is no gender difference between female and male students' chemistry laboratory anxiety scores among four independent variables (UC, PW, TM, DC).This finding does not align with Udo et al.'s (2004) study who found that females report more anxiety than his male partners and Jegede's (2007) study, who also found that females show more fear or anxiety towards chemistry than their male counterparts.

The second focus of the study was to investigate whether there is statistically significant difference among engineering, arts and sciences, and education students' chemistry laboratory anxiety levels or not. All of the participants were science major students who have already taken science major courses (physics, chemistry, biology) and laboratories (general physics lab., chemistry lab., biology lab.). The focus of the study was to compare education students' chemistry laboratory anxiety scores with engineering, and arts and sciences students' scores. The results of the study have shown that engineering students have middle level of chemistry anxiety whereas arts and science students' have lower, and education students have higher chemistry laboratory anxiety. Teachers' science concerns or anxieties were investigated in numerous study (Fuller, 1969; Kagan, 1992; Swennen, Jörg ve Korthagen, 2004; Udo et al., 2004). These studies highlight the importance of teachers' role for transforming anxiety to their students. Semi-structured interviews shed more light on students' anxiety scores. Preservice teachers' causes of chemistry laboratory anxieties were listed as: lack of laboratory experiences in high school, lack of physical conditions, a limited number of laboratory assistant, having laboratory accident (e.g gas explosion) in the past and broad coverage of the lab manual. These findings align with Jegede's (2007) survey. He also tried to explain the causes of anxiety and listed into four categories namely; wide coverage of the syllabus, low awareness of career opportunities in the subject, lack of exposure to excursion and field trips, well equipped laboratory, as well as poor teaching methods.

In third, present study results based on students self-reports about their anxiety levels. This may be a threat to internal validity of the study. Udo et. al (2004) points out that, students may over report their anxieties. In this study, students may also be over reported their anxieties. self-report scores should be triangulated by using electromyography (EMG), a physiological measure of tension, as Alvaro (1978) and Hermes (1985) did in their studies. They both compare the science-anxiety questionnaire results and EMG measurements and reported that self-reported anxiety scores were consistent with the EMG measurements, both in preclinical and post-clinic tests, this provides an important measure of confidence in the validity of the self-reports of science anxiety. Future research should be including both of these data collection tools in order to improve validity and reliability issues. On the other hand, present study used both quantitative and qualitative research results in exploration of students' anxiety scores. Method triangulation may increase the trustworthiness of the results. Still we cannot generalize our findings because the limited number of (n= 295) participants. Future research should be conducted with the large number of students in order to generalize findings of the study. Finally, since the structural,educational modeling does not fit our sample, CFI and NNFI explained values were low, it is difficult to make any firm conclusions about the findings.

For further research; Decreasing or controlling anxiety in laboratory possibly may enhance learning of multifaceted laboratory skills. Helping students how to control their anxieties and fears related to chemistry laboratory studies can enable the development of positive self-efficacy beliefs that will lead to more positive attitudes toward chemistry.

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APPENDIX-1 Chemistry Laboratory Anxiety Instrument

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. I am anxious when I use chemicals during lab.					
2. When I work in the chemistry lab, I feel at ease using the equipment.					
3. When I get ready for lab, I get concerned about recording the data we will generate.					
4. When I work in the chemistry lab, I feel nervous working with other students.					
5. I worry about whether I have enough time to complete the lab.					
6. When I get ready for chemistry lab, I get concerned about the chemicals we will use.					
7. When working in the chemistry lab, I feel nervous carrying out the lab procedures.					
8. I am anxious when I record data during lab.					
9. I feel comfortable working with other students when I am in lab.					
10. When working in the lab, I am nervous about the time it will take.					
11. I am comfortable being near chemicals when I am in lab.					
12. I am anxious when I carry out a lab procedure.					
13. When working in the chemistry lab, I feel nervous about recording the data I will need.					
14. I feel anxious when I work with other students during lab.					
15. When preparing for lab, I am concerned about the time available for doing the experiment.					
16. When working in the chemistry lab, I feel nervous being around the chemicals.					
17. I feel anxious when I use equipment during lab.					
18. When working in the chemistry lab, I feel at ease recording the necessary data.					
19. When I get ready for chemistry lab, I get concerned about working with other students.					
20. I am comfortable with the amount of time available for doing the lab.					

APPENDIX-2 Interview Questions

Name, last name? Department ? Grade level?
Which chemistry courses did you take at high school (general chemistry, organic chemistry, analytical chemistry)?
Did you have a chance to make chemistry experiments at high school?
Was there a chemistry laboratory in high school?
If yes, who was performing the experiments, you as a participant or the teacher as a demonstrator?
How many chemistry courses (general chemistry, organic chemistry, analytic chemistry, inorganic chemistry) did you take so far?
Which of those courses included laboratory activities?
Were the physical conditions of the laboratory appropriate for an an experiment (seating arrangement, heating system, cooling system, etc.)
How were your laboratory manuals? Were they helpful?
How do you perform experiments in the laboratory, as an individual or as a team?
How many research assistants guide you during the experiment?
What makes you nervous in the laboratory?
How do you feel during data collection and data recording procedures?
How do you feel while using chemicals?
Have you ever had a laboratory accident?
Do you think what kind of precautions should be taken to prevent laboratory accidents?

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PROSPECTIVE PRE-SCHOOL TEACHERS' PERCEPTIONS OF "CHILD": A STUDY OF METAPHORS

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ABSTRACT

The aim of the study is to find out, using the metaphor technique, the images of prospective preschool teachers about "child". To do this, the study group consists of 123 prospective preschool teachers studying at the Preschool Teaching Department of Ahmet Keleşoğlu Faculty of Education, Necmettin Erbakan University. The data obtained were analyzed. The participants made out 66 metaphors and these metaphors were categorized under 10 different headings according to their common features. The results indicate that the prospective teachers regard "child" mainly as an entity that can be shaped, in need of love and care.

Key Words: Metaphor, child, preschool, prospective teachers.

INTRODUCTION

Human beings sometimes emulate organisms in nature while living with them and sometimes relate their own lives with those organisms and thus try to express themselves. Metaphors are one way of expressing oneself. Metaphor can be defined as expressing one concept or situation with another concept or situation based on the use of language for symbolic purposes (Abrams, 1999: 155). The word "metaphor" is derived from the Greek words "Metapherein" or "Metafora" (Levine, 2005). "Meta" means "to change" and "pherein" means "to carry". According to Lakoff and Johnson (2005: 27), "the essence of metaphor is understanding and experiencing one kind of thing in terms of another." Therefore, a metaphor is formed by referring the phenomenon of X as the phenomenon of Y explicitly or implicitly.

Primarily, what is meant by the concept of metaphor is explaining a complex phenomenon or event by likening it to another phenomenon or event (Oxford et al., 1998). Metaphor means assigning a word a meaning other than its specific meaning. That is possible by attaching (1) the meaning of gender to kind, (2) the meaning of kind to gender or (3) the meaning of kind to another gender or (4) according to a proportion (Aristo, 2008: 59-60). As Sennett (1980: 78) puts it, "a metaphor creates a meaning greater than the sum of its parts" and provides us with a new awareness. When there is too much or too little similarity or difference, a message intended to be given by means of a metaphor might not be understood. "If a picture is worth 1,000 words, a metaphor is worth 1,000 pictures. For a picture provides only a static image while a metaphor provides a conceptual framework for thinking about something." (Shuell, 1990: 102). In other words, metaphor is a process of building linkages between knowledges in mind which make it possible to perceive and understand a

subject from the perspective of another subject (cited in Saban, 2004). Metaphor is a perfect technique to teach unknown things and a valid tool to store in mind and remember the knowledge acquired (Eraslan, 2011).
"Metaphoric thought" means to generate thoughts using metaphors. Metaphorical thinking process consists of several stages: (Sezer, 2003):

1. An abstract phenomenon (situation, event, concept) intended to be explained and made sense of,
2. A concrete (explicit) phenomenon used to explain this phenomenon and linguistic expression of this phenomenon,
3. Specific equivalences (analogies) formed (fictionalized) between these two phenomena.

There are some others who argue that metaphorical thinking process is composed of two parts: "topic" and "vehicle". While topic refers to a phenomenon, situation or concept explained or meant to be explained, vehicle refers to a term or terms used metaphorically (Balcı, 1999: 33). Example: *"A child is like…….. because……."*.

When the literature is examined, metaphors have been studied many times since 1980s in different disciplines of social sciences. Some of these research studies are about education. Education makes use of metaphors in planning, developing training programs, promoting learning and developing creative thinking. There are also findings which suggest that metaphors are used to determine teachers' and prospective teachers' professional perceptions. In the research studies by Çelikten (2006), Saban (2004, 2008, 2009), Aydın and Pehlivan (2010), Eraslan (2011), Hacıfazlıoğlu, Karadeniz and Dalgıç (2011) several metaphors were formulated about "culture", "teacher", "student", "school", "sociological" and "leadership".

Teachers are among the main components of education and they play important roles in both school and society. Teachers' role and importance are undeniable in student success. In this context, the profession of teacher requires professionalism (Yıldırım, Ünal, Çelik, 2011). Teachers are guides that help students learn and facilitate their learning (Özdemir, Yalın and Sezgin, 2004: 90). Teachers are real architects of societies and artists that shape human personality (Cerit, 2006; Çelikten, 2006: Saban, 2004).

The Importance of Research

Therefore, teachers' and prospective teachers' perceptions of "child" have great significance. When the literature is examined, it is observed that prospective teachers' metaphors regarding various phenomena were previously studied but no research study that specifically focuses on prospective pre-school teachers' perceptions was found. In this regard, this research study is believed to make up for this deficiency.

The Aim of Research

This research study aims to determine prospective pre-school teachers' perceptions of "child" by means of metaphors. In line with this main aim, the following questions were sought to be answered:

1. What metaphors do prospective pre-school teachers have about the concept of "child"?
2. Under which conceptual categories can these metaphors be grouped?
3. Which feature of child do prospective pre-school teachers' metaphors about "child" mostly focus on?

METHOD

In this research study, which is qualitative, metaphor techniques were used to obtain data. The research study was conducted with the participation of 123 prospective teachers studying at the Preschool Teaching Department of Ahmet Keleşoğlu Faculty of Education in Necmettin Erbakan University during the academic year of 2012-2013. The participants have the following features:

Table 1: Prospective Pre-school Teachers' Demographical Information

DISTRIBUTION OF PROSPECTIVE PRE-SCHOOL TEACHERS ACCORDING TO THEIR DEMOGRAPHICAL FEATURES			
		n	**%**
GENDER	FEMALE	112	91,6
	MALE	11	8,94
	TOTAL	**123**	**100**
AGE	17-20 YEARS	89	72,35
	21-25 YEARS	33	26,82
	32 YEARS	1	0,81
	TOTAL	**123**	**100**
SOCIO-ECONOMIC LEVEL	LOWER	2	1,62
	MIDDLE	118	95,93
	UPPER	3	2,43
	TOTAL	**123**	**100**
TYPE OF HIGH SCHOOL	GENERAL HIGH SCHOOL	16	13,00
	ANATOLIAN HIGH SCHOOL	35	28,45
	SCIENCE HIGH SCHOOL	1	0,81
	VOCATIONAL HIGH SCHOOL	37	30,08
	ANATOLIAN TEACHER'S HIGH SCHOOL	30	24,39
	OTHER	4	3,25
	TOTAL	**123**	**100**
EDUCATIONAL LEVEL	ENTRY LEVEL (1. and 2. Grades)	70	56,9
	GRADUATE LEVEL (3. and 4. Grades)	53	43,1
	TOTAL	**123**	**100**

Data Collection

With the aim of identifying prospective pre-school teachers' metaphors of "child", each participant was asked to complete the following prompt: "Child is like… because …" The students were given a blank sheet of paper with this prompt written on the page. They were asked to focus on the metaphor they have written and clarify their reason. In research studies where metaphors are used as a means of research, the phrase "is like" is used to associate more clearly the link between the topic and the vehicle of the metaphor (Saban, 2009). With the concept "because" the participants produced a sensible reason in this study. The sheets of paper written by prospective teachers were used as a primary source of data in this study.

Data Analysis

The metaphors made out by the participants were analyzed in five stages; (1) coding and sorting (2) compiling sample metaphorical images (3) category development (4) establishing validity and reliability (5) transferring data to SPSS for quantitative data analysis.

During the stage of coding and sorting, the metaphors produced by the participants were listed in alphabetical order. Whether the participants clarified their metaphors sufficiently or not was analyzed. Each metaphor

supplied by the participants was coded. Besides, the sheets of paper with no metaphors and those which discuss general features of a child instead of a metaphor were excluded.

During the stage of compiling sample metaphorical images, 66 metaphors were collected after excluded papers were eliminated. At this stage, the metaphors were listed in alphabetical order and raw data were reviewed for the second time. A sample expression that represented each metaphor from student essays was chosen. Thus, a sample metaphor list was prepared by compiling students' metaphorical images that are believed to represent each of 66 metaphors. This list was prepared to serve two main aims: (a) using the list as a source of reference when grouping the metaphors under a certain category (b) to validate data analysis process and interpretations of the research.

During the stage of category development, the participants' metaphors of "child" were analyzed in terms of their common features. 66 metaphors were classified. In other words, how the participants conceptualized the metaphors was analyzed. For this aim, each metaphor image was analyzed in terms of (1) the metaphor topic ("child"), (2) the metaphor vehicle and (3) the ground which means the relationship between the topic and the vehicle. Later, each metaphor was associated with a certain theme in terms of perspective and 10 different conceptual categories were created.

During the stage of establishing validity and reliability, two important processes were carried out in order to establish the validity of research results: (1) Data analysis process (particularly the way 10 conceptual categories were formed) was explained in detail. (2) Compiling an exemplar metaphorical image that is believed to represent each of the 66 metaphors and including all metaphorical images in the section of findings. Expert opinion was sought to confirm whether metaphors listed under 10 conceptual categories represent the conceptual categories in question.

During the transfer of data to SPSS package program for quantitative data analysis, all data were transferred to SPSS statistical program after determining 66 metaphors and developing 10 conceptual categories. After this process, the number (f) and percentage (%) of participants that represent 66 metaphors and 10 categories were calculated and presented in the following table.

FINDINGS

In this section, the findings regarding the metaphors developed by the prospective pre-school teachers (entry and graduate levels) about "child" were presented in tables and analyzed and interpreted under sub-headings according to research questions.

Table 2: Metaphors Developed About "Child" and the Number and Percentage of Students that Represent Those Metaphors

Metaphor Code	Metaphor Name	frequency *(f)*	percentage *(%)*	Metaphor Code	Metaphor Name	frequency *(f)*	Percentage *(%)*
1	Dough(play dough)	14	11,38	**34**	Mother	1	0,81
2	Flower	9	7,31	**35**	Rubber	1	0,81
3	Tree	8	6,50	**36**	Raw material	1	0,81
4	Angel	5	4,06	**37**	Mud	1	0,81
5	Young Tree	4	3,25	**38**	Cloud	1	0,81
6	Water	4	3,25	**39**	Car	1	0,81
7	Mirror	3	2,43	**40**	Seed	1	0,81

8	Soil	3	2,43	**41**	Clay	1	0,81
9	Diamond	3	2,43	**42**	Coal	1	0,81
10	Jewel	3	2,43	**43**	Gripping novel	1	0,81
11	Blank Plate (Tabula Rasa)	3	2,43	**44**	Smile	1	0,81
12	Treasure	3	2,43	**45**	Beauty	1	0,81
13	White sheet	2	1,62	**46**	Happiness	1	0,81
14	Blank sheet	2	1,62	**47**	Music	1	0,81
15	Plant	2	1,62	**48**	Joy of life	1	0,81
16	Work of art	2	1,62	**49**	Candy	1	0,81
17	Life	2	1,62	**50**	Little monster	1	0,81
18	Unhardened concrete	2	1,62	**51**	Source of fun	1	0,81
19	Bird	2	1,62	**52**	World taste	1	0,81
20	Note-book	1	0,81	**53**	Recent movie in theaters	1	0,81
21	Field	1	0,81	**54**	River	1	0,81
22	Garden	1	0,81	**55**	Grapefruit	1	0,81
23	Sponge	1	0,81	**56**	Tear	1	0,81
24	Casette	1	0,81	**57**	Innocence	1	0,81
25	Camera	1	0,81	**58**	Cotton	1	0,81
26	Empty dish	1	0,81	**59**	Poplar Tree	1	0,81
27	Morning	1	0,81	**60**	Adult	1	0,81
28	Painter	1	0,81	**61**	The world	1	0,81
29	Rainbow	1	0,81	**62**	Teacher	1	0,81
30	Individual	1	0,81	**63**	Philosopher	1	0,81
31	Light	1	0,81	**64**	Little man	1	0,81
32	Chest	1	0,81	**65**	Miracle	1	0,81
33	Lifetime	1	0,81	**66**	Bud	1	0,81

1. Prospective teachers' metaphors of "child"

The metaphors developed by prospective teachers about "child" with the number and percentage of students representing each metaphor were presented in Table 1:

1. Prospective pre-school teachers produced a total of 66 metaphors about "child".
2. About half of the 66 metaphors (26 of them) were represented by only one student. The rest of 40 metaphors was represented by 2-14 students.
3. The metaphors listed in the first five counts are as follows: 1. dough (14 students, 11.38%), 2. flower (9 students, 7.31%), 3. tree (8 students, 6.5%) 4. angel (5 students, 4.6%), 5. young tree and water (4 students, 3.25%).
4. Students associated 19 of the metaphors with organisms, and 47 of them with things. The metaphors associated with organisms were listed as soil, seed, plant, poplar tree, young tree, mother, adult etc. while

the metaphors associated with things were listed as empty dish, treasure, rubber, unhardened concrete, play dough, work of art etc.

2. Conceptual Categories Formed by the Metaphors in Terms of Their Common Features

In this section, the metaphors supplied by the participants were gathered under ten categories listed in terms of frequency. In line this aim, logical explanations and reasons suggested by prospective teachers for each metaphor were analyzed. The metaphors were placed in categories in terms of the concepts that they were respectively associated with.

2.1. Child as Moldable Raw Material

There are 12 categories in the category of child as moldable raw material. They are water, unhardened concrete, blank plate (tabula rasa), rubber, dough (play dough), raw material, mud, cloud, car, seed and coal. Dough (play dough) (14 students, 11,38%) is the most important item of this category. When the contents of the metaphors in this category are analyzed, it is possible to reach a common standpoint that a child is born hungry for knowledge and can acquire all abilities and habits for survival through education.

Tablo 3: Data Regarding the Category of Child as Moldable Raw Material

Child as Moldable Raw Material	n	%
Water	4	3,25
Unhardened Concrete	2	1,62
Blank Plate (Tabula Rasa)	3	2,43
Rubber	1	0,81
Play dough, dough	14	11,38
Raw material	1	0,81
Mud	1	0,81
Cloud	1	0,81
Car	1	0,81
Seed	1	0,81
Clay	1	0,81
Coal	1	0,81

"Prospective teachers used the following statements when they defined the metaphors in the category of "Child as Moldable Raw Material":

- A child follows the way you pave and takes the shape of their container, but his/her essence will never change *(Male, 2.grade).*
- "Like an unhardened concrete, whatever dropped on it leaves a trace" *(Female, 3.grade).*
- "A child learns and practices whatever we teach or show him/her" *(Female, 1.grade).*
- "A child goes towards the way you direct him/her" *(Male, 1.grade).*
- "We can mould and shape a child the way we want him/her to be " *(Female, 1.grade).*
- "Especially young children carry on with the way you shape them" *(Female, 4.grade).*
- "A child takes the shape he/she is given "*(Female, 1.grade).*
- "A child becomes rain in an effective environment while he/she falls out in a strong wind" *(Female, 3.grade).*
- "A child goes towards whatever way you direct him/her" *(Male, 1.grade).*
- "A child turns green and grows like a tree as you water him/her" *(Female, 1.grade).*
- "A child is shaped by the environment and turned into a work of art" *(Female, 2.grade).*
- "A child turns into a diamond if you process him/her, but if not, he/she keeps on turning into a coal" *(Female, 3.grade).*

2.2. Child as Organism in Need of Care and Protection

There are 2 metaphors in the category of child as organism in need of care and protection. Flower (9 students, 7,31%) is the most important item of this category. The contents of the metaphors found in this category emphasize that a child needs love and care.

Table 4: Data Regarding the Category of Child as Organism in Need of Care and Protection

Child as Organism in Need of Care and Protection	N	%
Bud	1	0,81
Flower	9	7,31

Prospective teachers used the following statements to define the metaphors in the category of "Child as Organism in Need of Care and Protection**"**

- "They get ready to mature" *(Female, 2. grade).*
- *"*A child grows and blooms if he/she is cared for. If not, he/she fades *"* *(Female, 2.grade).*

2.3. Child as Developing Organism

There are 4 metaphors in the category of Child as Developing Organism. They are rainbow, young tree, tree and plant. Tree (8 students, 6,5%) is the most important item of this category. When the contents of the metaphors found in this category are analyzed, it is emphasized that a child constantly grows and develops with necessary support and becomes a perfect individual if equipped adequately.

Table 5: Data Regarding the Category of Child as Developing Organism

Child as a Developing Organism	n	%
Rainbow	1	0,81
Young tree	4	3,25
Tree	8	6,5
Plant	2	1,62

Prospective teachers used the following statements to define the metaphors in the category of "Child as Developing Organism**"**.

- "The most natural way of seeing colors all at once" *(Female, 2.grade).*
- *"*A child grows and fruits the way you take care of him/her" *(Female, 1.grade)*.
- "It is hard to hold on to life and once you make it, its grandeur is infinite" *(Female, 2.grade).*
- "If you provide a child with enough sun and water, he/she blooms. If not, he/she dies" *(Female, 3.grade).*

2.4. Child as Source of Purity and Love

There are 6 metaphors in the category of child as source of purity and love. They are tear, innocence, angel, cotton, bird and poplar tree. What is emphasized in the contents of the metaphors found in this category is that a child owns an innocent nature since birth.

Table 6: Data Regarding the Category of Child as Source of Purity and Love

Child as Source of Purity and Love	N	%
Tear	1	0,81
Innocence	1	0,81
Angel	5	4.06
Cotton	1	0,81
Bird	2	1,62
Poplar tree	1	0,81

Prospective teachers used the following statements to define the metaphors in the category of "Child as Source of Purity and Love":

- "The way they cry is innocence" *(Female, 1.grade).*
- "Children are sinless" *(Female, 1.grade).*
- "They see life with all purity" *(Female, 4.grade).*
- "Children are unaware of the world around them; they are pure, innocent and without sin" *(Female, 1.grade).*
- "Children are free" *(Female, 1.grade).*

- "They are honest like a poplar tree; they tell the truth" *(Female, 1.grade).*

2.5. Child as Reflective Organism

There are 5 metaphors in the category of child as reflective organism. They are mirror, soil, note-book, field and garden. Mirror and soil (3 students, 2.43%) are two most important items of this category. When the reasons for the metaphors were analyzed, a close relationship was found between the education received by a child and the feedback. A child is seen as a natural reflector of the knowledge he/she is given in this category.

Table 7: Data Regarding the Category of Child as Reflective Organism

Child as Reflective Organism	N	%
Mirror	3	2,43
Soil	3	2,43
Note-book	1	0,81
Field	1	0,81
Garden	1	0,81

Prospective teachers used the following statements to define the metaphors in the category of "Child as Reflective Organism":

- "Children express whatever they experience or feel; they are free of lies" *(Female, 3.grade).*
- "When they are given enough care, you can be amply rewarded for your efforts" *(Female, 3.grade).*
- "They record whatever they are told" *(Female, 2.grade).*
- "You reap what you saw" *(Female, 3.grade).*
- "If you take care of your garden and grow roses and lilies. If not, what you grow is thorns" *(Female, 1.grade).*

2.6. Child as Valuable Organism

There are 9 metaphors in the category of child as valuable organism. They are individual, work of art, diamond, jewel, light, chest, lifetime, life and mother. Diamond and jewel (3 students, 2.43%) are two most important items of this category. When the contents of the metaphors found in this category are analyzed, it is emphasized that children are valuable because they are the future.

Tablo 8: Data Regarding the Category of Child as Valuable Organism

Child as Valuable Organism	N	%
Individual	1	0,81
Work of art	2	1,62
Diamond	3	2,43
Jewel	3	2,43
Light	1	0,81
Chest	1	0,81
Lifetime	1	0,81
Life	2	1,62
Mother	1	0,81

Prospective teachers used the following statements to define the metaphors in the category of "Child as Valuable Organism".

- "A child is realistic like an adult" *(Male, 4.grade)*.
- "A child requires efforts; he/she is a product and is special " *(Female, 1.grade).*
- "A child is precious and he/she means future" *(Male, 2.grade).*
- "A child is shaped and processed like a jewel and he/she becomes precious" *(Female, 2.grade).*

- "A child becomes a good person in the future and lightens the way for others if his/her teachers are successful" *(Female, 2.grade).*
- "A child has several unknown talents and many secret powers to be discovered" *(Female, 3.grade).*
- "A child is valuable as he/she makes it possible to maintain life" *(Female, 2.grade).*
- "Children get understood as time goes by" *(Female, 1.grade).*
- "Children are precious as we learn everything from them" *(Female, 3.grade).*

2.7. Child as Mysterious Organism

There are 2 metaphors in the category of child as mysterious organism. They are miracle and treasure. Treasure (3 students, 2,43%) is the most important item of this category. In the contents of the metaphors found in this category, it is emphasized that a child has many aspects to discover.

Table 9: Data Regarding the Category of Child as Mysterious Organism

Child as Mysterious Organism	N	%
Miracle	1	0,81
Treasure	3	2,43

Prospective teachers used the following statements to define the metaphors in the category of "Child as Mysterious Organism":

- "Children see different aspects of events and see unnoticed things" *(Female, 3.grade).*
- "Children have special feelings " *(Female, 3.grade).*

2.8. Child as Passive Recipient

There are 8 metaphors in the category of child as passive recipient. They are white sheet, sponge, blank sheet, cassette, camera, empty dish, morning and painter. White sheet and blank sheet (2 students, 1.62%) are two most important items of this category. When the contents of the metaphors found in this category are analyzed, it is emphasized that students are passive recipients and passive participants in educational activities.

Table 10: Data Regarding the Category of Child as Passive Recipient

Child as Passive Recipient	N	%
White sheet	2	1,62
Sponge	1	0,81
Blank Sheet	2	1,62
Cassette	1	0,81
Camera	1	0,81
Empty dish	1	0,81
Morning	1	0,81
Painter	1	0,81

Prospective teachers used the following statements to define the metaphors in the category of "Child as a Passive Recipient"

- "You are confronted with what you draw" *(Female, 4.grade).*
- "Children get what you give them, either good or bad" *(Female, 2.grade).*
- "Chidren are like a blank sheet, so everything written on that sheet improves children's personality" *(Female, 2.grade).*
- "They record everything happening around and use it as a life experience" *(Female, 3.grade).*
- "They record everything they experience" *(Female, 1.grade).*
- "Children get whatever you give them and whatever they see" *(Female, 4.grade).*
- "When people wake up in the morning, they are usually vigorous and hungry for knowledge" *(Female, 1.grade).*
- "They interpret what they observe in their way" *(Female, 2.grade).*

2.9. Child as Source of Happiness and Joy

There are 13 metaphors in the category of child as source of happiness and joy. They are gripping novel, smile, beauty, happiness, music, joy of life, candy, little monster, source of fun, world taste, recent movie in theaters, grapefruit and river. When the contents of the metaphors found in this category are analyzed, it is emphasized that a child is an unconditioned source of love and has a nature that embraces all colors.

Table 11: Data Regarding the Category of Child as Source of Happiness and Joy

Child as Source of Happiness and Joy	N	%
Gripping novel	1	0,81
Smile	1	0,81
Beauty	1	0,81
Happiness	1	0,81
Music	1	0,81
Joy of life	1	0,81
Candy	1	0,81
Little monster	1	0,81
Source of fun	1	0,81
World taste	1	0,81
Recent movie in theaters	1	0,81
Grapefruit	1	0,81
River	1	0,81

Prospective teachers used the following statements in the category of "Child as Source of Happiness and Joy":

- "Children give happiness when you go deeper inside" *(Male, 2.grade).*
- "What we see as wrong is right for them" *(Male, 4.grade).*
- "Children provide us with life and happiness" *(Female, 3. grade).*
- "They always shine" *(Female, 3.grade).*
- "They soothe when they are cared for" *(Female, 1.grade).*
- "We are influenced by their joy" *(Female, 3.grade).*
- "Naughty children are cute" *(Female, 3.grade).*
- "You can never know when and what they are going to do" *(Female, 1.grade).*
- "They are free of evil; they are pure and without sin" *(Female, 2.grade).*
- "They are so sweet" *(Female, 4.grade).*
- "Exciting at first, but then unlovable" *(Female, 4.grade).*
- "A child is like a food. Although it seems bitter, you enjoy the taste when you eat it" *(Female, 4.grade).*
- "Unless the source is depleted, its energy will not run out; it will keep flowing" *(Female, 4.grade).*

2.10. Child as Basis of Future Society

There are 5 metaphors in the category of child as basis of future society. They are adult, the world, teacher, philosopher, little man. In the contents of the metaphors found in this category lies the idea that a child is a guarantee of the future of a nation.

Table 12: Data Regarding the Category of Child as Basis of Future Society

Child as Basis of Future Society	n	%
Adult	1	0,81
The world	1	0,81
Teacher	1	0,81
Philosopher	1	0,81
Little man	1	0,81

Prospective teachers used the following statements to define the metaphors in the category of "Child as Basis of Future Society":

- "Children know their responsibilities" *(Female, 3.grade).*
- "A child embraces thoughts and people from every color" *(Female, 1.grade).*
- "There is a lot to learn from them" *(Female, 3.grade).*
- "Children think of unexpected things and asks unpredictable questions" *(Female, 1.grade).*
- "Children understand everything" *(Female, 3.grade).*

3. Features of a child that the metaphors developed by prospective teachers about "child" focus on

Metaphors developed by prospective teachers about "child" mostly suggest that a child is born with an empty reservoir. The common standpoint is that a child can be shaped by education. Another fact is that a child constantly needs care and love for his development.

CONCLUSION AND DISCUSSION

Individuals who attend faculties of education in order to become pre-school teachers bring their personal attitudes about learning, teaching and child as a result of the informal observations and experiences with different teachers that they had during their pre-university years. Therefore, it is of great concern to study prospective pre-school teachers' perceptions of "child". The findings of this research study which was designed with the aim of investigating prospective pre-school teachers' perceptions about "child" using metaphors draw attention to a few important points.

First of all, it requires several metaphors to elucidate the concept of "child". For example, a child is regarded as "mirror", "work of art", "play dough", "innocent", "angel", "flower", and "little monster". As Weade and Ernst (1990: 133) put it, "metaphors are selective and they represent a part, but not the whole, of the phenomena they describe." Alternative metaphors are needed to elucidate certain educational phenomena fully. Thus, it is impossible to define the concept of "child" with one metaphor only. As Yob (2003: 134) highlights, "Primarily, a metaphor is not the thing being referred to but a symbol of it. If it were the same as the thing it was referring to it would not be needed. Therefore, it is other than and in some respects less than what it refers to, even when referring powerfully and provocatively. One way to compensate for this deficiency in representation is to employ a variety of metaphors (…)"

Secondly, perceptions about "child" are grouped under ten conceptual categories (child as moldable raw material, child as organism in need of care and protection, child as developing organism, child as source of purity and love, child as reflective organism, child as valuable organism, child as mysterious organism, child as passive recipient, child as source of happiness and joy, child as basis of future society). The most popular themes were child as moldable raw material (12) and child as source of happiness and joy (13). The fact that prospective teachers see a child as moldable raw material proves that they adopt a traditional approach to education. The approach of seeing a child as the constructor of his own life and education still does not prevail. According to educational theory of Kant, "Man may be either broken in, trained, and mechanically taught, or he may be really enlightened. Horses and dogs are broken in; and man, too, may be broken in" (Negiş Işık, 2012). However, the aim is to teach children how to think. This aim must be the principle of all activities. In brief, children should be raised as individuals that control their thinking, understanding and behaviors rather than a passive recipient of knowledge.

The findings obtained in a research study by Saban (2099: 317) which explores prospective primary school and field teachers' metaphorical images about the concept of "student" draws attention to several important findings: it requires numerous metaphors to explain the concept of "student" fully. For example, students can be described as "raw material", "defective organism", "compliant organism", "social capital" or "empty mind". Besides, it can be described as "valuable organism", "developing organism", "constructor of his own knowledge" and "active participant". Saban, Koçbeker and Saban (2006) asked a total of 1222 prospective teachers (485 males, 737 females) majoring in the programs of Primary School Teaching, Computer and Instructional Technology Teaching and English Language Teaching to formulate a metaphor regarding the

concept of "teacher". According to the research findings, prospective teachers formulated a total of 111 valid metaphors. While male students regarded teachers as "shaper/molder", "guide/path finder" and "cooperative/democratic leader", female students regarded teachers as "knowledge provider", "supporter of personal development" and "character developer". Students majoring in the program of Primary School Teaching considered teachers' roles as "supporter of personal development" and "character developer"; students majoring in the program of English Language Teaching considered teachers' role as "guide/path finder"; students majoring in the program of Computer and Instruction Technologies Teaching considered teachers' roles as "knowledge provider" and "cooperative/democratic leader" more than those in other programs did.

Thirdly, it was found that there is a relationship between creative and abstract thinking skills and grade level as a result of the metaphors developed by prospective teachers about the concept of "child". A superficial and traditional thinking style prevails in the metaphors developed by entry level prospective teachers about "child". It was also found that graduate level prospective pre-school teachers have a structuralist modern approach. Therefore, when the grade level rises, students make use of rather abstract analogies to express their metaphorical images about "knowledge". This finding is related to the age range of children. A study by Dinç-Artut and Tarım (2006) investigated whether grade level influences primary school students' understanding an abstract phenomenon like the concept of place value in Mathematics. This research study was carried out with 728 students from various socio-economic status studying at the second, third, fourth and fifth grades in 18 primary schools. According to the research results, as grade level rises, students make fewer errors about place values (2.grade 62,8%; 3.grade 53,7%;4.grade 49,2%; 5.grade 44,1%).

In conclusion, according to the research findings prospective pre-school teachers' notions about "child" are mainy positive. This research study proves that prospective pre-school teachers have various metaphors about "child", which are grouped under 10 conceptual themes. Research studies that compare the perceptions of prospective teachers about "child" with those of teachers in practice using metaphor techniques could provide educators with significant information and new perspectives. Furthermore, discussing the results of such research studies in pedagogical formation courses will help prospective teachers improve, change and question their perspectives about the future roles of "child" and reconstruct their teacher identities.

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MUSIC TEACHERS' PERSONAL TENDENCIES REGARDING ADMINISTRATIVE LEADERSHIP

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ABSTRACT

Education environments in our days which are changing/transforming/developing are effected not only with teachers's contributions but also by management leadership tasks in positive or negative ways. The management leaders of education environments are selected by education system's implementations. So teachers are natural sources of such group because of active classroom management applications in their profession.

In this research, it is aimed to determine personal trends of music teachers related to management leadership tasks. It is being thought that music teachers are highly prone to establish a democratic working climate because of their abilities to manage group music works, social activities. This study is important for creating awareness about management leadership tasks among the group of music teaching profession.

To gather data, a questionnare has been used which is structured in Aksu's (2004) "Yönetici Eğilim Ölçeği" (Management Trend Scale). The scale's factor related to personal trends has been applied to 174 music teacher. The data has been tabled and given in the findings and interpretation part. Suggestions which are thought to create solutions have been presented, taking into consideration music teachers and relevant people in institutions which train music teachers, in accordance with the results of such questionnaire.

Key Words: Music teacher, management leadership, personal trend.

INTRODUCTION

As the elements of educational process in elementary and secondary educational institutions, administrative leaders perform the task of organizing many components such as teachers, students, building, equipment and teaching programs. In the scope of this research, administrative leadership duties refer to the duties of school principals and vice principals.

Administratorship, which is a factor important enough to affect academic success in educational process (Wiley, 2001; Mulford, Silins, 2010; Peker, et al., 2011), also affects school culture (Özdemir, 2006; Çelikten, 2003). Therefore, the effect of the administrative leadership on the educational processes is at a notable level and it is of interest to the researchers.

Today, it is a known fact that in order to cope with the world that is globalized with the developing technology and is rapidly getting smaller in a constant motion, we must necessarily update the educational factors at the same speed. In the light of this reality, administrative leadership training has gained importance at the national and international levels (Battal, Şahan, 2002; Grogan, Andrews, 2002; Akın, 2012; Korkmaz, 2005); its theoretical framework has begun to be built (Çetin, 2008; Ada, Küçükali, 2006; Cerit, 2008); and the role of modern administrative leaders in the new world has begun to be discussed (Balyer, 2012; Gümüşeli, 2001; Ada, 2004; Brooks, Normore, 2010).

In the Turkish education system, administrators are selected among the teachers in service. Therefore, teachers' tendencies regarding administratorship (Aksu, 2004; Bingül, Hacıfazlıoğlu, 2011; Yeşilkaya, 2007) or their opinions regarding administrators and their implementations or their skills (Küçükali, 2003; Karadağ, 2011; Kocabaş, Karaköse, 2005; Köstereliođlu, Argon, 2010) constitute one of the focal points for the researchers on this subject.

Teachers, who constitute the source of the administrative leadership duties, bring to mind that their administrative skills and interests can be different from each other due to the fact that they come from different disciplines and they experience unique educational processes in terms of their field education. Within the teaching occupation, music teachers have maintained the activity of collectively making music not only in role of implementer with their musician identity but also in role of guide with their teacher identity. For instance, it is among the natural responsibilities of the music teachers in their daily occupational lives to enable groups with different duties to sing a musical piece and to maintain a democratic working environment resulting from the nature of collectively making music. With such and similar features, music teachers stand out as the important candidates for the administrative leadership duties in the educational institutions.

In the light of what has been explained above, prospective teachers are among the focal points of these duties due to the fact that teachers constitute the source of the administrative leadership. In the researches in which an attempt was made to determine the general tendencies (Tebiş, Okay, 2012a) and personal tendencies (Tebiş, Okay, 2012b) of the prospective music teachers regarding the administrative duties that they will come across in the schools where they will teach, it was set forth that the prospective music teachers had a high level of self-confidence on this subject and they had a strong belief that they would fulfill the administrative duties, but they did not have any knowledge on this subject, and accordingly, they were not able to reach a consensus in many matters. The researchers pointed out the high level of self-confidence exhibited by the prospective music teachers. The idea, which stands out within the suggestions developed by these researchers in accordance with these results, is that the related people must develop music teachers' awareness on preparing for administrative duties during their vocational training.

This research was considered important in terms of determining the tendencies of the group, who renders service in music discipline among the teachers who work in educational environments, regarding the administrative leadership and its related duties, their personality features and approaches; creating awareness in the related group in this regard; and drawing attention to the administrative leadership. This study was conducted in order to determine personal tendencies of music teachers regarding the administrative leadership duty.

METHOD

The "Administrator Tendency Scale" was utilized in collecting data in the research. Related permission was taken from the researcher who developed this scale. A new survey was structured in order to determine personal tendencies of music teachers regarding the administratorship by benefiting from the scale that was developed by Aksu (2004). In order to reach as much music teachers as possible, the survey was conveyed to the teachers via a data collection website that was developed in collecting online data. The data were collected from 174 music teachers. The data were collected in the electronic environment and their frequencies were taken. Their distribution was presented in the findings section in the form of tables and they were interpreted. An attempt was made to offer suggestions to the related people on the subject in the light of the results that were obtained according to these presented findings.

FINDINGS AND INTERPRETATION

The results, which were found by processing the following obtained data, were rendered into tables in a way that their frequencies and percentages can be monitored. Furthermore, short interpretations were also featured after the findings were set forth.

Table 1: State of Agreement on the Opinion That Administratorship Is a Reputable Duty

Rate of Agreement	%	n
Completely	15.5	27
Mostly	36.2	63
Partially	31.0	54
Slightly	8.6	15
Disagree	8.6	15
Total	100	174

As seen in Table 1, the options, which show the music teachers' rate of agreement on the reputation of the administrative duty, exhibited a distribution as follows: "Mostly" option with a ratio of 36.2%; "Partially" option with a ratio of 31%; "Completely" option with a ratio of 15.5%; and "Slightly" and "Disagree" options with a same ratio of 8.6%. According to these rates of accumulation, it can be stated that the music teachers have a partially hesitant opinion regarding the reputation of the administrative duty, but half of them regard this duty as reputable.

Table 2: State of Agreement on the Opinion "If I Were an Administrator, I Could Create a Better Workplace Environment by Influencing My Coworkers"

Rate of Agreement	%	n
Completely	29.3	51
Mostly	46.6	81
Partially	19.0	33
Slightly	1.7	3
Disagree	3.4	6
Total	100	174

When we examine Table 2, it is observed that the music teachers exhibited a notable accumulation in "Mostly" option with a ratio of 46.6%, "Completely" option with a ratio of 29.3% and "Partially" option with a ratio of 19% in their beliefs that they can create a better workplace environment by influencing their coworkers. In view of this distribution, it can be interpreted that the music teachers have a strong belief that they can create a better workplace environment by influencing their coworkers.

Table 3: State of Agreement on the Opinion "I Prefer My Managing Rather Than Being Managed by Someone Else"

Rate of Agreement	%	n
Completely	12.1	21
Mostly	24.1	42
Partially	32.8	57
Slightly	13.8	24
Disagree	17.2	30
Total	100	174

In Table 3, it can be observed that the music teachers' rate of agreement on the opinion "I prefer my managing rather than being managed by someone else" exhibited a distribution as follows: "Partially" option with a ratio of 32.8%; "Mostly" option with a ratio of 24.1%; "Disagree" option with a ratio of 17.2%; "Slightly" option with a ratio of 13.8'%; and "Completely" option with a ratio of 12.1%. In view of the fact that the opinions of the music teachers exhibited a distribution with close ratios in "Completely" and "Mostly" options (36.2%), "Slightly" and "Disagree" options (31%) and "Partially" option (32.8%) that signified a hesitation, it can be interpreted that the teachers did not have a common opinion on managing or being managed.

Table 4: State of Agreement on the Opinion "In My Undergraduate Study, I Had the Opportunity to Think about Administratorship"

Rate of Agreement	%	n
Completely	1.7	3
Mostly	10.4	18
Partially	12.1	21
Slightly	24.1	42
Disagree	51.7	90
Total	100	174

In Table 4 that examined whether or not the music teachers found the opportunity to think about being an administrator during the courses that they took in their undergraduate studies, a strong accumulation was observed in "Disagree" option with a ratio of 51.7% and "Slightly" option with a ratio of 24.1%. In view of this distribution, it can be stated that the music teachers have the opinion that they did not found the opportunity to think about being an administrator due to various reasons such as their educators and the contents of the courses that they took.

Table 5: State of Agreement on the Opinion That Music Teachers Raise Themselves Thinking About Becoming an Administrator

Rate of Agreement	%	n
Completely	0.0	0
Mostly	25.9	45
Partially	24.1	42
Slightly	17.2	30
Disagree	32.8	57
Total	100	174

As seen in Table 5, it is observed that the music teachers exhibited an accumulation in "Disagree" option with a ratio of 32.8%; "Mostly" option with a ratio of 25.9%; "Partially" option with a ratio of 24.1%; "Slightly" option with a ratio of 17.2%; and "Completely" option with a ratio of 0% about the opinion that they raise themselves as administrators. The fact that none of the music teachers preferred "Completely" option in this distribution is the indication that none of the participating music teachers raised themselves thinking about becoming an administrator. On the other hand, it can be stated that this tendency is supported in view of the preferences in "Slightly" and "Disagree" options. However, the fact that one out of every four teachers marked "Mostly" option gives us an impression that there is an interest and tendency on this issue and that the distribution observed in Table 5 may change in accordance with this tendency.

Table 6: State of Agreement on the Opinion That Administratorship Is an Appropriate Job for Music Teachers

Rate of Agreement	%	n
Completely	8.6	15
Mostly	36.2	63
Partially	24.2	42
Slightly	15.5	27
Disagree	15.5	27
Total	100	174

In Table 6 that presented music teachers' rate of agreement on the opinion that administratorship is an appropriate right job for them, the ratios of the options are observed as follows: "Mostly" option with a ratio of 36.2%; "Partially" option with a ratio of 24.2%; "Slightly" and "Disagree" options with a same ratio 15.5%; and

"Completely" option with a ratio of 8.6%. According to these distributions, a positive accumulation is observed with a total ratio of 44.8% when "Completely" and "Mostly" options are considered together whereas a negative accumulation is observed with a total ratio of 31% when "Slightly" and "Disagree" options are considered together. The difference (13.8%) between these two accumulations set forth a result slightly in favor of the positive opinion. In accordance with this distribution, it can be stated that the music teachers exhibited a cautious feeling of acceptance towards the opinion that administratorship is an appropriate job for them.

Table 7: State of Agreement on the Opinion "Administratorship Is a Promotion That Brings Satisfaction in Terms of Career"

Rate of Agreement	%	N
Completely	5.2	9
Mostly	19.0	33
Partially	31.0	54
Slightly	13.8	24
Disagree	31.0	54
Total	100	174

In Table 7 that presented music teachers' tendencies regarding the opinion that administratorship is a promotion that brings satisfaction in terms of career, the distribution ratios of the options are as follows: "Partially" and "Disagree" options with a same ratio of 31%; "Mostly" option with a ratio of 19%; "Slightly" option with a ratio of 13.8%; and "Completely" option with a ratio of 5.2%. In view of this distribution, it can be interpreted that approximately half of the music teachers did not agree with the related opinion as they exhibited an agreement on "Slightly" and "Disagree" options with a total ratio 44.8%. However, when the accumulation in "Partially" option (31%) is examined, it can be stated that the opinions on this subject bear an impression of uncertainty at a considerable level.

Table 8: State of Agreement on the Opinion "Managing Adults Provides More Job Satisfaction Compared to Managing Children and Youngsters"

Rate of Agreement	%	n
Completely	0.0	0
Mostly	12.1	21
Partially	36.2	63
Slightly	20.7	36
Disagree	31.0	54
Total	100	174

When music teachers' rate of agreement on the opinion that managing adults provides more job satisfaction compared to managing children and youngsters is examined in Table 8, a strong distribution is observed in "Partially" option with a ratio of 36.2%; "Disagree" option with a ratio of 31%; and "Slightly" option with a ratio 20.7%. In view of these ratios, it can be stated that the music teachers did not agree with the related opinion by exhibiting a notable tendency of hesitance.

Table 9: State of Agreement on the Opinion "I Find Administratorship Pleasurable Since It Requires Being Versatile and Dynamic"

Rate of Agreement	%	n
Completely	6.9	12
Mostly	31.0	54
Partially	29.3	51
Slightly	12.1	21
Disagree	20.7	36
Total	100	174

In Table 9 that presented music teachers' rate of agreement on the opinion that they find administratorship pleasurable since it requires being versatile and dynamic, it can be stated that the distribution exhibited an accumulation with notable ratios in the following options: "Mostly" option with a ratio of 31%; "Partially" option with ratio of 29.3%; and "Disagree" option with a ratio 20.7%. In view of these ratios, it can be stated that the music teachers did not prioritize a certain opinion when "Mostly" and "Completely" options that represented the positive tendency are considered together with a collective ratio of 37.9%; "Slightly" and "Disagree" options that represented the negative tendency are considered together with a collective ratio of 32.8%; and "Partially" option that represented abstention with a ratio of 29.3% is considered.

CONCLUSION AND SUGGESTIONS

Music teachers exhibited a hesitant tendency of acceptance towards the opinion that that fulfilling the duty of administratorship in educational institutions is a reputable duty (Table 1).

Music teachers exhibited a cautious feeling of acceptance towards the opinion that administratorship is an appropriate job for them (Table 6). This result was due to the fact that they did not know the requirements of such an office and they did not know their personality features in terms of eligibility and competence for this office.

The participants exhibited a cautious tendency towards the opinion that administratorship is a promotion that brings satisfaction in terms of career. On the other hand, approximately half of them stated that they did not agree with this opinion and that administratorship is not a promotion that brings satisfaction in terms of career (Table 7).

Exhibiting a hesitant tendency, music teachers stated that they did not agree with the opinion that managing adults provides more job satisfaction compared to managing children and youngsters (Table 8).

Reflecting a strong feeling of self-confidence, music teachers believe that they can create a better workplace environment when they become administrators by influencing their coworkers (Table 2).

Music teachers exhibited close distributions on the opinion "I prefer my managing rather than being managed by someone else". Therefore, they set forth that they did not have a common tendency regarding the issue of managing or being managed (Table 3). This condition results from the indecisiveness that music teachers experience in taking on the duties of the administrator.

During their undergraduate studies, music teachers did not think about becoming administrators in the schools that they would work (Table 4). It is understood that competent environments, which can evoke an opinion regarding administrative leadership, are not able to be prepared in the process of training teachers.

A great majority of music teachers set forth that they did not raise themselves as administrators. On the other hand, the fact that there was a small group that marked "Completely" option indicates that this condition may change in the future via guidance/informing (Table 5).

Music teachers were not able to reach a consensus on the opinion that they find administratorship pleasurable since it requires being versatile and dynamic (Table 9). It is concluded from this condition that the participants did not consider/know the living conditions and activities required by the administratorship, and accordingly, they hesitated while expressing their opinions.

In view of these results, an attempt was made below to explain new suggestions that will enable music discipline to be more dynamic, productive and active in the field of teaching.

When the above-mentioned results were evaluated in general, it was understood that the music teachers had a high level of self-confidence in fulfilling administrative leadership duties and they believed that they would be embraced and appreciated by the people around them while fulfilling these duties. On the other hand, it is observed that the issues on which they exhibited hesitant approaches result from the fact that they had almost no preliminary learning and preparation regarding these duties; that they either did not come across this issue throughout their education or they found little opportunity to think about this issue.

In line with what has been mentioned above, it is suggested that the related courses in teacher raising education must be given more actively with a field-oriented and job-oriented manner; that prospective teachers must be frequently given information on administrative leadership; that encouraging/reassuring motivations must be presented towards them aside from the related courses; and that prospective teachers must follow up administratorship and leadership seminars and similar studies in their occupational lives.

Music teachers working in the field are recommended to not abstain from the necessary preparations for the administrative duties; to have a desire for the administratorship tests that are conducted pursuant to the system in effect; to prepare and participate in these tests; and to fulfill these duties with the above-mentioned high self-confidence should they succeed in these tests.

Profession of educating, particularly active teaching in the classroom, requires a good administratorship in essence. Therefore, teachers are leaders, administrators, compilers, assemblers and organizers as required by the philosophy of their occupation. Thanks to such characteristics, teachers are proficient in fulfilling administrative leadership duties. In terms of working conditions, music discipline is among the primary areas that require collective working and in which collective activities are performed the most. Thanks to this attribute, music teachers can exhibit a successful and more active attitude in collaborative working activities. For that reason, it is considered that music teachers will create an active, sharing, regulative and democratic environment in the office of administrator. As supported by the results of this research, the fact that the self-confidence of music teachers was found high despite their weak preliminary learning is an indication that they constitute the ideal group for these duties among teachers from other fields.

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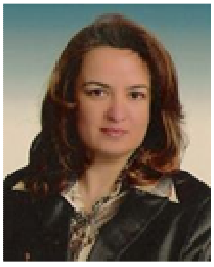

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METHODS OF CURBING LEARNER MISCONDUCT IN ZIMBABWEAN SECONDARY SCHOOLS

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ABSTRACT

This study explored the methods used in curbing misconduct in Zimbabwean Secondary Schools. Our focus on the methods used for curbing student misconduct was on: the challenges teachers and school authorities experience in implementing those methods; the relationship between learner misconduct and school effectiveness and the psychological and physical damage that results from inappropriate methods to curb misconduct.

The study used a descriptive survey design in which 150 teachers completed questionnaires and 10 school heads were interviewed in Harare Province. An analysis of the causes of misconduct was imperative because methods used to curb misconduct can only be appropriate if causes are taken into consideration.

The methods used to curb misconduct comprised: codes of conduct and rules; the prefect system; parental involvement; counselling and disciplinary committees. Punishments to ward off misconduct included: manual work, detention and as a last resort, corporal punishment, exclusion and expulsion in accordance with procedures stated in Circular P.35.

There were some controversial findings which prompt further research and debate. For example teachers felt that they should apply corporal punishment without seeking authority from school heads first while the policy requires them to do so. Another one is where human rights organizations feel that corporal punishment should be discontinued as it dehumanizes learners while teachers argue that it is a necessary form of punishment. There is also debate on whether school girls who fall pregnant should be re-admitted after their maternity leave. However, most participants agreed that the methods under use serve their purpose well.

Key Words: Discipline, misconduct, school climate, school effectiveness, punishment.

INTRODUCTION

Schools receive learners from communities in order to inculcate knowledge, skills and values which society expects them to have to become good adults, workers and citizens. Sometimes the schools' expectations regarding learner behaviour are not met due to either school-based or learner-based factors. Often there is culture conflict between the expectations of schools and those of the traditional African home in Zimbabwe on how student discipline should be instilled. This paper explores methods of curbing misconduct in schools which teach the 12-18 year old learners. The national procedures of handling learner misconduct in schools are stated

in Policy Circular N0 35. Our findings were rated to determine the appropriateness of the methods used in schools to curb learner misconduct against provisions of that circular.

School discipline and student misconduct

Many scholars provide various perceptions of the concept of discipline. Some view it as training that produces a specified character or pattern of behaviour. Others view it as punishment intended to correct or train. Yet to others, discipline is a gradual and time consuming task of helping learners to see sense in acting in a certain way through enforcement of school rules that facilitate learning and minimize disruption (Cotton 2001). Thus, discipline is educative order which tries to reach appropriate standards and follow rules for engaging in valuable educational activity (Wilson 1977).

Any behaviour contrary to discipline is misconduct. For instance, behaviour which prevents other learners from feeling safe, secure, respected and learning effectively is contrary to the learning contract between the school and the learner. Criminal offences and behaviour that is likely to put the school into disrepute could lead to disciplinary procedure (Hill 2006). The common acts of misconduct found among secondary school learners included: fighting, truancy, vandalism, bullying, taking drugs, sharing pornographic materials, improper sexual association and insubordination to staff. Society has continuous debate on how such acts of misconduct should be dealt with by schools. While some people argue that punishment is the answer, others prefer instilling discipline among learners. Enforcement of discipline governed by Circular P.35 in Zimbabwe is seen as essential for school effectiveness.

As an agent of human socialisation for adult life, school discipline involves self-control guided by moral, social principles of overcoming selfish emotions and desires. It does what is right and good. A disciplined person does not do well out of fear but because s/he believes such behaviour is better than actions that can harm other people. Schools need to cultivate habits of self-discipline rather than use authoritarian methods of controlling behaviour. There is need to diagnose and correct causes of indiscipline objectively then satisfactory solutions can be obtained (Ozigi 1977). While many teachers, administrators and parents believe that corporal punishment is necessary to teach children a lesson and discourage them from similar practices in future, other teachers say they do not want to use it but have no other way to control large classes. However, educators and psychologists argue that, teachers can praise good behaviour, impose non-physical punishments and involve children in making the school rules to reduce discipline problems (Kimaryo 1998).

Punishment should be guided by principles of justice and fairness. It should fit the offence. It ought to be deterrent and consistent (Ozigi 1977). In Zimbabwe, Circular P.35 provides the procedure to be followed for suspension, exclusion and corporal punishment in schools. But prior to that, the circular states that:

Every Head should strive to cultivate a school climate where pupils will/can develop internal discipline which is not initiated by fear of punishment. A school ethos which promotes self-discipline among pupils supported by positive remedial disciplinary and pro-active measures, where necessary, is preferred to situations where pupils avoid misdemeanours because the alternative could be infliction of physical pain by the Head (Chipfunyise 1999:7).

Jones (1993) argues that, punishment does not effectively modify difficult behaviour in the long term. Reinforcement of good behaviour through praise, quick and spontaneous reward does. Reinforcement comes with self-awareness of success. There is need for authorities to listen to and respect learners to develop self-esteem and give students experiences of success in schools. This helps learners to reach for higher levels of social behaviour and cooperation.

Rationale for this research

Nowadays schools face more complex acts of misconduct by students than previously experienced. This study sought to assist parents to complement school authorities' efforts to minimize learners' exposure to acts of misconduct. For example, in Zimbabwe, some ethnic groups unknowingly contribute to school girl pregnancies by training teenage girls in sexual skills (Chinamwari) which encourage premature sexual intercourse. Some

parents do not rebuke children when they find them either smoking or taking alcoholic drinks. Worse still, other parents fund their children's hire and purchase of pornographic tapes. Knowledge of sources of indiscipline helps educators to collaborate with parents to use suitable methods of curbing indiscipline.

Human rights activists criticize some traditional methods of instilling discipline among learners for disregarding children's human rights. This study sought to find out how schools were coping with such controversies. It also sought to establish the relationship between learner misconduct and school effectiveness. Findings of the study would inform educators about the psychological and physical damage that result from use of inappropriate methods of curbing misconduct.

Statement of the problem

Misconduct is disruptive to the teaching and learning process. However, stakeholders do not always agree on how to control it. This raises the need to address the following questions.

The research questions

- What methods are used to curb learner misconduct in Zimbabwean secondary schools?
- What challenges do teachers and school heads face in curbing learner misconduct?
- What is the relationship between levels of indiscipline and school effectiveness?
- How do schools orient teachers to use methods that minimize physical and psychological damage to offenders?

RESEARCH DESIGN AND METHODOLOGY

We used the descriptive survey design to obtain empirical evidence for our problem (Verma and Mallick 1999). The survey helped us to grasp the teachers' and school heads' views on indiscipline in schools and the methods of managing it. Descriptive survey design gathers data from many cases at a time and studies phenomena in their natural settings. It is also concerned with: population characteristics, practices, beliefs and attitudes that are held (Verma and Mallick 1999) about curbing misconduct in Zimbabwean schools.

Our study was qualitative because we drew data from respondents' feelings, attitudes and beliefs (Borg and Gall 1989). We sought to interpret why things happened the way they did. We used qualitative methods in order to understand controversial issues and people's perspectives in their social and cultural contexts.

We drew a purposive sample from 82 secondary schools in Harare Province. Forty schools went up to Ordinary Level and 42 went up to Advanced Level Certificate. Each school enrolled about 1400 pupils. Most schools ran double sessions. The province had 4420 teachers. Our sample had 10 school heads who we interviewed and 150 teachers from 15 schools that completed a questionnaire. We studied ten school log books to compliment interview and questionnaire data. We used a purposive sample because school heads and teachers are custodians of school discipline. This also enabled us to compare the perspectives of these two groups of educators on curbing learner misconduct.

Qualitative data are usually sourced from interviews, questionnaires, documents, the researchers' impressions and reactions (Myers 1997). We interviewed school heads and studied their log books while teachers completed a questionnaire.

We carried out guided conversation interviews (Holstein and Gubrium 2002). Although they are prone to bias, they reveal how respondents felt about their experiences. Although they were time-consuming and expensive, interviews enabled us to explore how educational practitioners interpret learner discipline and their role in it (Lawler 2002).

We used the questionnaire because we gave standard instructions to all the respondents and the conduct of the research did not affect the results. The administration and scoring of the questionnaire was quick,

straightforward and analysis was easy although sometimes questionnaires tend to force respondents to choose alternatives that might not represent some of their views (Borg and Gall 1989; Verma and Mallick 1999).

We studied the school log books and Circular P.35. A school log book is a record of special visits, disciplinary problems and how they are handled. We studied the log books because they are the official record of serious acts of misconduct and punishments. The major limitation of the log book is that it may not be made accessible due to the sensitivity of some of its records. It may not be reliable because some cases go unrecorded. Policy Circular 35 is a ministerial document which gives guidelines of dealing with serious acts of misconduct. We studied Policy Circular 35 because it gives the national standard procedures of dealing with acts of learner misconduct in schools. Its limitation is that it may be in the school but not accessible to the teachers.

We present our results according to the research questions of our study. The reactions of parents, teachers and pupils to the national education policy on school discipline constituted key points of our analysis. We compare questionnaire and interview results according to themes and patterns that emerged as answers to our research questions (Judd, Smith and Kidder 1991). We summarized the results for easy conclusions and recommendations.

To ensure credibility of our results, we ensured that our data collection instruments were reliable and that the data we collected was valid. Validity is the degree to which a technique elicits what it investigates. Reliability refers to the extent to which a technique consistently yields the same results (Verma and Mallick 1999).

Reliability and validity of our findings were ensured by including qualified and experienced teachers in the sample. While all school heads and 46% of the teachers were university graduates, 54% teachers held diploma in education. Eight school heads and 90% of the teachers had more than 10 years of teaching experience. With regards to participation in school discipline, we had: 34% class teachers, 28% heads of department, 23% deputy school heads and senior teachers, as well as 15% house masters and sports directors in the sample.

Content validity in both the questionnaire and interview was checked by pilot testing them. We promoted open and undistorted communication with interviewees to avoid contamination of interview data. We encouraged interviewees to share their uninterrupted feelings and thoughts. We held interviews in private to make respondents speak from the vessels of answers and not to respond to our presence (Lawler 2002). We personally delivered and collected questionnaires to afford respondents opportunity for clarification on some issues and high return of questionnaires. Multiple methods sealed loopholes of one method by strengths of another.

RESULTS

We present findings of this study in this section. Ten school heads were interviewed but 132 out of 150 (88%) questionnaires were collected from teachers. Our results are based on these.

Our main question in this study sought the methods used to curb learner misconduct in Zimbabwean secondary schools. We found that methods of curbing learner misconduct varied with offences. Common acts of learner misconduct revealed by this study were: cheating, lying, lateness and bunking lessons, truancy, and insubordination to teachers, bullying, stealing, vandalism, as well as drug and sexual abuse. We grouped methods of curbing misconduct in schools among preventive, corrective and punitive according to the themes that emerged.

Responses from both interviewees and the questionnaire indicated that secondary schools in Zimbabwe crafted preventive codes of conduct, school rules, prefect systems, and disciplinary committees to educate, forewarn and deter learners from misconduct. Twenty-eight per cent of the teachers and all ten school heads agreed that parental involvement in school discipline is an effective method of curbing learner misconduct.

School rules were included in applicants' packages. Applicants and their parents/guardians were required to sign contracts for compliance with school rules prior to enrolment. The prefect system was considered by teachers and school heads as part of the school structure which maintained discipline. Disciplinary committees were another aspect of the school structure used for curbing misconduct in secondary schools.

Among the corrective methods used in secondary schools to curb learner misconduct were reprimands, supervision, counselling and rewarding good behaviour. Reprimands were the most applicable method of restraining learners from acts of misconduct by every teacher. Nineteen per cent of the teachers said supervision was vital to curb truancy, bunking lessons and not doing homework. Schools used attendance registers, teachers on duty, homework diaries and solicited parental supervision of homework. Counselling was the most popular method to 57% of teachers and all school heads. It curbed misconduct without causing physical and psychological harm to the offender. Rewarding good behaviour was also used to control misbehaviour.

Punishments used for curbing misconduct included: manual work, detention, corporal punishment, exclusion and expulsion. Manual work was the most popular punitive method to 70% of the teachers and all ten school heads. Corporal punishment was viewed by 35% of teachers as a necessary method for curbing learner misconduct. Detention was not a popular method for curbing misconduct in this study. Exclusion was preferred by 11% of the teachers. Expulsion, like exclusion was seen as the last resort of methods to curb learner misconduct.

Our study also sought the challenges faced by teachers and school heads in curbing learner misconduct. Our participants identified occasional lack of parental support during implementation of methods to curb misconduct in schools. Some parents relinquished their responsibility to the school under the pretext that school discipline was none of their business. When a learner misbehaved, some parents took their child's rather than the school's side. Ill-educated parents and teachers discouraged prefects from "overcommitting" themselves to prefect duties under the pretext that it negatively affected students' academic performance. Due to large classes in Zimbabwe, teachers who were members of disciplinary committees were sometimes short of time to meet offenders and delayed justice. Sometimes corrupt staff members protected offenders.

Challenges faced from corrective methods varied. One challenge from reprimanding learners was the temptation for teachers to use abusive language to restrain improper use of language worsening the problem. Pronouncements of human rights activists tended to mislead offenders to ignore the advice of teachers in preference for that by human rights organizations. Schools usually do not have qualified teacher counsellors. Most schools in Zimbabwe found rewarding non- offenders unaffordable.

Use of manual work to curb learner misconduct is challenging since manual work is sometimes scorned by dull students who would rather have it than be "tormented" by difficult academic work in class. It also interferes with the teaching-learning progress. Manual work sometimes hardens offenders thereby promoting learner negativity. Teachers who supervise it also feel penalized. School heads said that they discouraged detention as it is susceptible to expose pupils to abuse by unscrupulous teachers. The Zimbabwean education Policy Circular 35 forbids the use of corporal punishment by teachers without the recorded school head's approval. Participants who knew the provisions of Circular P.35 argued that the implementation of exclusion and expulsion was inhibitive. Only the school heads were allowed to expedite exclusion with the concurrence of parents and the Provincial Education Director (PED).

With regards to the relationship between levels of indiscipline and school effectiveness, where schools involved parents, learners and educators in developing and implementing school rules, mutual understanding and loyalty translated into school effectiveness**.** The prefect system enhanced democratic leadership training and involved learners in effective school organization. Parental involvement in school discipline increase school-home co-operation as a pre-requisite for learner discipline to promote school effectiveness. Disciplinary committees enhanced school effectiveness through empowerment of parents and academic staff. Counselling

addressed individual learner needs which encouraged learner focus on their studies thereby enhancing school effectiveness.

As for schools' orientation of teachers to use disciplinary methods that minimize physical and psychological damage to offenders, staff induction and meetings were used to discuss policy, code of conduct and school rules on how to administer school discipline. Participants' responses revealed deficiencies in staff orientation since schools still had some teachers who flouted school regulations by having improper sexual association as well as sharing alcoholic drinks and cigarettes with learners. Some staff members protected learner offenders in disciplinary committees. Ill-educated teachers discouraged prefects from "overcommitting" themselves to prefect duties under the pretext that it negatively affected students' academic performance. Some teachers used abusive language to restrain improper behaviour among learners. There were no qualified teacher counsellors to help with learner counselling in Zimbabwean schools. Some teachers shunned supervising manual punishments as they felt that they were also being punished if they are not the ones offended. As teachers were not allowed to administer corporal punishment "without authority" from school heads, they felt disempowered in the eyes of mischievous students. Such teachers quietly relinquished their responsibility of administering learner discipline and turned a blind eye to offenders. While all school heads interviewed claimed that the teachers knew the provisions of Circular P.35, 76% of the teachers in the sample testified ignorance of its provisions.

DISCUSSION

The results of this study reveal that learner misconduct is partly attributable to ineffective family socialization. Our discussion accounts for all our research questions.

The preference of methods of curbing learner misconduct ranged from slight (6%) to high (70%). Some responses that are peculiar to Zimbabwean schools are highlighted. It took several trips and in one school we made five visits to collect questionnaires.

We grouped methods of curbing learner misconduct into: preventive, corrective and punitive. Apart from teacher-based methods, teachers and school heads argued that a suitable environment for managing learner discipline required parental involvement. Parents could visit schools during: parents', consultation and sports days as well as during meetings to create communication opportunities for shared-vision on school discipline with teachers. Parents could also teach their children how to cope with cultural invasion. Nowadays learners are exposed to a technologically transmitted television, social media and film acting culture incorporating sexual abuse, violence and crime which influences misconduct in schools as learners are misled into believing that films are real and imitate them.

Preventive methods of curbing misconduct are systemic as they form part of every school. Twenty-eight per cent of the teachers and all the ten school heads regarded parental involvement as an effective method of curbing learner misconduct because charity begins at home. Poor parenting through erratic discipline and parental conflict can be a source of learner indiscipline (Mcnamus 1993; Hollin 1993).

Under the hard economic conditions in Zimbabwe, many children lacked parental guidance for various reasons. Parents were pre-occupied with eking a living and left children to their whims while schools grappled with learner misconduct. Such parents were either involved in cross-border trading or had left for greener pastures abroad. Maybe out of ignorance, some parents relinquished their responsibility to the school under the pretext that school discipline was none of their business. Some parents received stolen property from children while others sent children to buy cigarettes and alcoholic drinks exposing them to temptation to consume them. When a learner misbehaved, some parents took their child's rather than the school's side. Other learners misbehaved out of ignorance because they lacked parental guidance and role models since they came from child-headed families due to the HIV/AIDS pandemic.

All the school heads and teachers in this study concurred that school codes of conduct and rules were the basis of discipline in every school. They are preventive and systemic methods of curbing misconduct in schools as they provide guidelines and standards of behaviour expected of learners. School rules seek to achieve a quiet, smooth and efficient school environment. Nowadays, many people are cynical about the growing tendency of young people towards permissiveness and demand for excessive freedom. Enforcement of discipline based on fear, paternalism or inaction only produce negative results without developing characters for good citizenship. Rules need to guide students in what they are expected to do and not to do in terms of courtesy , obedience, table manners, respect for elders, bullying and fighting among others. For conformity, pupils should be involved in rule-making (Docking 1987).There is need to explain reasons for the rules especially those that students do not like (Ozigi 1977). Rules need to be clearly understood and fairly enforced to avoid defiance by offenders. Some frustrated teachers with limited powers influenced learners to flout regulations with the support of uncooperative members of the community who stole school property and shared alcoholic drinks and cigarettes with pupils. Of late, the Zimbabwean education system incorporates school development associations and committees in which parents are involved and informed about the school rules and codes of conduct as well as how discipline is administered if anyone breached them. Although restrictive rules that occasionally ignore learners' and parents' freedom obtained in some schools, codes of conduct enhance school effectiveness.

The prefect system was considered by teachers and school heads as part of the school structure which maintained discipline. Prefects are learners who have formal authority over other learners (King 1973). They are selected, well behaved and exemplary learners who are delegated organization and coordination of school activities. Such learners are also required to deal with minor cases of indiscipline, learner welfare, study and checking attendance. Functions of prefects help to set a good tone for the school. Prefect system helps to train students in democratic processes, taking responsibility and ownership of the school while ensuring the consolidation of good manners and representation of learners. Prefects suggest improvements to the tone and standards of the school with regards to simple courtesies, consideration for others, cleanliness, hygiene, loyalty and self-discipline (Ozigi 1977). It is an effective way of involving learners in the administration of the school. We found that its effectiveness was sometimes marred by lack of commitment among some prefects. Ill-educated parents and teachers discouraged prefects from "overcommitting" themselves to prefect duties under the pretext that it negatively affected their academic performance. Some prefects were timid while others were defied and threatened by jealousy and stubborn students. However, schools ensured that prefects were protected and accorded full recognition.

Disciplinary committee was another school structure used for curbing misconduct in secondary schools. It comprises senior staff members including: deputy head, senior and other teachers with specialist proficiencies. It plays a key pastoral role in the school. Counsellors, boarding matrons/masters in boarding schools, heads of departments, housemasters and sports directors are often incorporated in these committees. Disciplinary committees facilitate fair and democratic administration of discipline among staff and students. However, due to overpopulated schools in Zimbabwe, our study found that they were sometimes short of time to meet offenders and delayed justice. Occasionally, corrupt staff members protected some offenders. Disciplinary committees enhance school effectiveness by recognizing and motivating staff members with special skills. In some cases school disciplinary committees include teachers and parents.

Corrective methods used in secondary schools to curb learner misconduct were reprimands, supervision, counselling and rewarding good behaviour. Reprimands were the most applicable method of restraining learners from acts of misconduct by every teacher. It is a rebuke or reproach that a teacher makes to students against minor acts of misconduct like making noise in lessons, use of vulgar language and wearing improper attire. They are meant to get learners into line. One challenge was the temptation for teachers to use abusive language to restrain improper language worsening the problem.

Supervision was found vital by 19% of the teachers against offences like: truancy, bunking lessons, and not doing homework. Teachers used attendance registers, teachers on duty, homework diaries and solicited parental supervision of homework. The process involved monitoring the learners to help them and ensured

that they did the correct things. Teachers and school heads added that large classes, common in Zimbabwe, required teachers to keep mark records to ensure that every learner did homework.

Counselling was the most popular method to 57% of teachers and all school heads. Guidance and counselling curbs misconduct without causing physical and psychological harm to the offender. It is often used on traumatic and addictive offences like pregnancy and drug abuse.

A teacher is more likely to elicit appropriate behaviour if s/he understands the situation that the learner faces (Kimaryo 1998). This explains why most schools have guidance and counselling committees which have a pastoral function. They assist learners with problems of growing up and adjustment into the school system. Where leaners are preparing for tertiary education and leaving school, they help in career guidance. They also help learners with family, social, economic and disciplinary problems (Ozigi 1977). A major challenge of using counselling in curbing learner misconduct is that it requires time and expertise which schools often ill-afford. Pronouncements of human rights activists which according to one male school head give children "too much freedom too early" tended to mislead offenders to ignore the advice of teachers in preference for that by human rights organizations. Since Zimbabwean schools do not employ qualified counsellors, senior teachers take that role.

Rewarding good behaviour was also used to control misbehaviour although most large schools in Zimbabwe found it unaffordable. Schools use the house point system where learners are involved in inter-house co-curricular clubs, games and societies as well as behaviour competitions in order to reward good performance while minimizing misconduct. This system divides the school into houses for purposes of competition in all academic and co-curricular activities. It is intended to encourage collective responsibility and discipline (Docking 1987). Agreed points are given against learners who misbehave and are punished. The house with best behaved learners per week earns a behaviour trophy or some prize. Prefects and members of the house try to exert influence on problem students in the house so that the house does not lose points. Such students are watched, warned and advised by the members of their house to improve their behaviour (Ozigi 1977).

Punishments to ward off misconduct included: detention, manual work, and as a last resort, corporal punishment. We found that these were used on persistent acts of misconduct. Only in extreme cases, should learners be excluded and expelled from school (Ozigi 1977). Manual work was the most popular punitive method to 70% of the teachers and all ten school heads. Being seen publicly on punishment was seen as an embarrassment which could deter offenders from future acts of misconduct. However, manual work is sometimes scorned by dull students who would rather have it than be "tormented" by difficult academic work in class. It interferes with teaching-learning progress. It is painful but hardly addresses the actual problem. Manual work sometimes promotes learner negativity. Teachers who supervise it feel punished if they are not the ones offended. Detention was not a common method for curbing misconduct in this study. School heads said that they discouraged it as it was susceptible to expose pupils to abuse by unscrupulous teachers.

Corporal punishment was viewed by 35% of teachers as a necessary form of punishment while others had reservations about it. The Zimbabwean Education Policy Circular 35 forbids the use of corporal punishment by teachers without the recorded school head's approval. Most learners and parents know the policy. Consequently, teachers who contemplated using corporal punishment "without authority" felt disempowered in the eyes of mischievous students. The provisions of Circular P.35 are that only the school head or her/his delegate can apply corporal punishment. A witness has to be present to countersign the number of strokes the offender receives. School heads felt that in double-session schools where they were required to teach classes and supervise all 50 and above teachers per school, the record-keeping of corporal punishment was difficult. Most school heads had very little recorded in their log books on corporal punishment, implying that they carried it out without recording.

Human rights organizations regarded corporal punishment as a dehumanizing method of curbing misconduct. Maybe due to cultural belief rather than psychological considerations, there was still a strong belief among teachers, school heads and parents that, one either spared the rod and spoiled the child or spoiled the rod and

spared the child. Teachers who felt disempowered by the policy on corporal punishment quietly relinquished their responsibility for administering learner discipline to heads of schools and ignored offenders. In fact, while all school heads interviewed claimed that the teachers knew the provisions of Circular P.35, 76% of the teachers in the sample testified ignorance of its provisions. Whereas Wilson (1977:45) says, "the teaching of discipline necessarily requires a great deal more control (power) than the teacher usually has available", one teacher who illustrated some teachers' apparent abdication of power to discipline learners due to fear of being embarrassed said, "Some teachers have been hauled before the courts and asked to meet the legal costs", for applying corporal punishment. This intimidated teachers out of their role as custodians of school discipline. Recording punishment cases protects offenders, teachers and the school heads. However, it is complex and time-consuming. This method did not always yield its intended results as school discipline suffered from what teachers and school heads called undesirable external interference.

Exclusion was preferred by 11% of the teachers. However, teachers who knew the provisions of Circular P.35 argued that its implementation was inhibitive. Only the school heads had the mandate to expedite exclusion with the concurrence of parents and the Provincial Education Director (PED). Excluded pupils could go to some other or return to the same school after a prescribed period. Policy Circular P.35 provides that school girls who fall pregnant be re-admitted into school after "maternity leave" when previously they were expelled from school. This is a good idea when considering that every child needs an educated mother and that education is every person's right. However, most teachers who taught students to abstain from premarital sex argued that the policy promoted promiscuity among students in the face of the HIV/AIDS scourge. They also felt that it promoted learner sexual abuse by some teachers. Besides, teachers argued that such students were difficult to control and had bad influence on other learners.

Expulsion, like exclusion, required parental involvement, approval by the PED and concurrence of the Secretary for Education. It is the most extreme method used by schools to curb misconduct. Our participants viewed it with mixed feelings. Sometimes either the PED or the secretary for education reversed decisions made by the school after appeal by parents. We found that some methods of curbing misconduct were perceived differently between policy makers and schools in Zimbabwe.

We established that discipline is a prerequisite of an effective teaching-learning process, good academic results and reputable school tone. Contradictions over a national policy implied lack of stakeholder consultation which was necessary during policy formulation confirmed by both the ten school heads and 100% of the teachers in our sample.

CONCLUSIONS

Basing on all participants' preferences we concluded that school-home co-operation was a pre-requisite for learner discipline in order to promote school effectiveness. Where schools involved parents, learners and educators in the drawing up and implementing the code of conduct and school rules, mutual understanding and loyalty translated into school discipline and effectiveness. Prefect system is essential for training learners in taking responsibility, democratic leadership and effective management of school organization. We also concluded that disciplinary committees enhanced school effectiveness. Reprimands are an effective way of curbing misconduct as they discourage unacceptable behaviour.

Supervision makes teachers to keep mark records to ensure that every learner did homework. We concluded that guidance and counselling was the most effective method of curbing learner misconduct since it addressed individual learner needs which in turn enhanced school effectiveness. Although manual work deterred misconduct it could be abused by offenders. Corporal punishment did not yield its intended results as school discipline suffered from undesirable external interference. We also concluded that exclusion of pregnant learners discouraged teenage pregnancy. However, re-admission of excluded pregnant girls is good because it reduces re-generation of ignorance in the population in the long term.

RECOMMENDATIONS

We made some recommendations based on our study. Suitable methods of curbing learner misconduct in schools should be used appropriately. Parents should help schools by training children in good personal behaviour which prepares learners to easily adapt to school discipline. Crafting school rules should involve all stakeholders to earn collaboration. Prefects should be inducted for self-confidence and re-assured of full support of school authorities, parents and the community. Disciplinary committees are an essential part of the schools' machinery for fair and transparent administration of school discipline. Teacher counsellors should receive in-service training and support from both parents and school administration. Manual work should be used after thorough analysis and when appropriate to avoid unintended results. All stakeholders should be consulted during policy formulation for them to be committed to school policies. Human rights organizations should work with rather than against schools to teach learners discipline. Students who fall pregnant should either be re-admitted into a different school or in the non-formal and continuing education system.

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THE ISSUE OF TRAINEE TEACHERS' GUARANTEED PLACEMENT ABOLISHMENT IN MALAYSIA

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ABSTRACT

In the Tenth Malaysia Plan (10MP), the government has announced to abolish the guaranteed placement for trainee teachers who were pursuing their studies in Teacher Education Institute of Malaysia (TEIM), Public Higher Educational Institutions (PuIEI) and the Private Higher Educational Institutions (PrHEI). As such, this study discusses the latest issues in education in Malaysia related to the abolishment of guaranteed placement for trainees which will be implemented starting 2011 to 2015. This study used qualitative methods, through literature review and document analysis. The research finding shows that there are six major rationales that lead the government in deciding to abolish guaranteed placement for trainee teachers which are; to dignify the teaching profession, to produce a world-class human capital, transition to open systems in teacher training, to create an excellent-teacher environment, to eradicate the community's perception regarding the marketability of students of teaching field, and emulate the example of developed countries. In conclusion, the government decided to abolish the guaranteed placement in order to improve the quality of teachers and improve the teaching profession in producing students who are competitive and high achieving thus can compete globally.

Key Words: Trainee teachers, abolishment of placement, guaranteed placement.

INTRODUCTION

Education is the most important foundation in the development of a human life. Human and education cannot be separated because education can shape an individual's identity and create human capital that is useful to religion, race and nation. Education is actually not initiated in school, but it had started from home. Although the education provided is not formal, but the transition of education has started from a baby to a child through the guidance of their parents.

The progress of a nation, in reality, depends on the development of education in the country. Implementation and restructuring of school curriculum is a step that was taken by the Ministry of Education (MOE) under the Curriculum Development Centre (CPC) in order to achieve the goal of being a developed nation. However, in achieving the status of a developed nation, human capital is very much needed as an important indicator to make changes in developing countries. Human capital that is skilled in literacy and numeracy is a challenge for educators in realizing the mission of the country.

In moving forward, issues and challenges present in education is too broad that it can be a rather difficult problem to resolve. According to Sufean (2004), the issues of education can be classified into administration, levels of education, educational technology, school organization, and teacher training. This suggests that the

issues and challenges in education include various aspects where all the related parties should play their part to strengthen the country's education system.

The latest issue of the abolishment of the guaranteed placement for trainee teachers specified in the 10MP explains that no more guaranteed placement to all trainee teachers after their graduation. This issue of abolishment of the guaranteed placement for trainee teachers is a new issue in the world of education. Not many studies conducted to discuss the situation. This is because the 10MP was just recently implemented in the year of 2011 and will last up to 2015 and it just put forward the objectives in general and simple way. Statistical proof through literature reviews are less and limited.

Overall, this indicates a paradigm shift in the education system that was never expected by the community, especially those who wants the title of an educator. Thus, this changes is a challenge that must be faced and accepted by all parties to achieve high education standards towards global.

EDUCATION, TEACHER AND TRAINEE TEACHERS

Definition of Teachers and Trainee Teachers

According to the online Institute of Language and Literature (ILL), the terms “teachers” and “trainee teachers” are two terms that mean different things. Teachers refer to individuals who teach, tutor or educator, while trainees are students in particular Teacher Training Institutions and would become a teacher soon. Based on the two meanings, it can be formulated in general that the role of the teacher is to educate people and make someone become a useful person, while trainees are candidates or potential teachers who will be the teachers in the future.

In addition, a teacher will also provide opportunities for trainee teachers to observe their teaching as a teaching model that can be emulated, review and comment in writing and sign lesson planner books of trainee teachers, lead the students in personality development, especially in terms of healthy interaction and stress the elements of self-esteem enhancement and the cultivation of teacher professionalism.

Each teacher will serve to guide trainees through clinical observation that emphasize guidance towards the process of continuous improvement, as well as record keeping and guidance documents are updated from time to time. In addition, a teacher will also inform the school management about the progress of the trainee from time to time, monitor and inform the attendance and discipline of trainee teachers to the school management and the college management immediately during the practicum period, make a written report on cases of trainee teachers to the college as soon as possible, and co-supervise with the guiding lecturer to guide students.

Based on that, it is concluded that the teachers or lecturers is a group of individuals who play a key role in forming groups of trainees who are competent and dedicated. Although it is too subjective to explain that teachers are the change agents to success and excellence of a trainee teacher but teachers are the sources of inspiration that can motivate future educators and make them useful human capital to the nation.

HISTORY OF TEACHER EDUCATION INSTITUTE OF MALAYSIA (IPGM)

The history of teacher education in this country began with the establishment of teacher education institution which started its operation in Singapore which opened in 1878 and known as The Malay High School. Then in 1922, teacher education institutions, Sultan Idris Training College located in Tanjung Malim was established and now known as Sultan Idris University of Education (UPSI). Since then, from 1935 until 1955, the teacher education institutions increased during the years such as Women Teachers’ Training College Melaka, Malayan Teachers’ Training College Kirkby, Liverpool, England, and Malaysian Teacher Training College (MTT), Brinsford Lodge, Wolverhampton, England.

Establishment of teacher education institutes increased at that point of time due to the public awareness of the importance of education in the family. Thus, major changes can be seen increased greatly after 1980's. In 2004, a total of 27 colleges and 1 English Teaching Centre were upgraded. The upgrade is an important factor to transform teacher education towards greater professionalism. It was, in 2005, the congregation of Ministers approved 27 teacher training colleges for Teacher Education Institutes (IPG) in which the TEI can award a Bachelor Degree in Teaching or B. Ed. which came into force on 13 July 2005.

In 2006, the declaration of upgrading the teacher training college to TEI is a major change in its history because it initiated the Graduate Teachers Program in the institutes such as the Graduate Program for Primary School Teachers (GPPST). In addition, TEI also began conducting pre-service that can give recognition to the Bachelor degree of primary school teachers through the Post-MCE (Malaysian Certificate of Education) Graduate Teacher Training Course such as Bachelor Degree in Teaching and B. Ed. TESL.

Amendment of Education Act 1996 which allowed colleges to be upgraded to TEIM was approved on 25 August 2008 by the House of Representatives. In the same year, the Senate approved amendments to the Education Act 1996, Chapter 9, Section 42 to 49 on 4 December 2008. The Most Honourable Minister of Education, Dato' Hishammuddin Tun Hussein declared officially that all the Teacher Training Institutes in Malaysia should be known as Teacher Education Institute of Malaysia (TEIM) and TEI in Terengganu has been named to Dato' Razali TEIM effective on 16 January 2009. The purpose was to commemorate the former Deputy Minister of Education, Dato' Razali Ismail, who had died on 28 November 2008.

Table 1: Chronology of Teacher Education Institutions in Malaysia

Year	Institu the Teacher Education
1878	The Malay High School, Singapore.
1922	Sultan Idris Training College, Tajung Pilot and now known as Sultan Idris University of Education (SIUE)
1935	Women Teachers' Training College, Melaka
1951	Malayan Teachers' Training College, Kirkby, Liverpool, England.
1955	Malaysian Teacher Training College (MTT), Brinsford Lodge, Wolverhampton, England.
1980's	Establishment of TEI in every state.
2004	27 colleges and 1 English Language Teaching upgraded to TEI.
2005	TEI can award a Bachelor Degree in Teaching or B. Ed.
2006	Initiation of Teacher Graduate Program
2008	Amendment of Education Act 1996 allowed colleges to be upgraded to TEIM
2008	The Senate approved amendments to the Education Act 1996, Chapter 9, Section 42 to 49
2009	The Most Honourable Minister of Education, Dato' Hishammuddin Tun Hussein declared officially that all the Teacher Training Institutes in Malaysia should be known as Teacher Education Institute of Malaysia (TEIM)

Source: Ministry of Education Malaysia

THE ISSUE OF TRAINEE TEACHERS' GUARANTEED PLACEMENT ABOLISHMENT

This issue of abolishment of the guaranteed placement for trainee teachers is a new issue in the world of education. This is expected to take place within the 10MP duration from the year of 2011 and will last up to 2015. Previously, the trainees were guaranteed their position as future teachers regardless of their achievement and performance but in this special plan duration, it will be abolished. This situation explains that a teacher being successfully appointed depends on their performance. The following statement describes the appointment of the teacher:

"With this, only the trainee teachers that achieved the best performance and qualified will be offered the position. The abolishment if guaranteed placement is to set minimum quality requirements for new teachers"

Tenth Malaysia Plan (10MP)

Based on the above statement, only a prospective educator who is able to reach a certain level of qualification and obtain the best performance will be offered a position as a teacher while the trainees who do not meet the standards, the potential to be offered the post of a teacher is low. This point shows that the government is committed to maintain the quality of the teaching profession by setting certain conditions so that prospective educators successfully produced are of better quality and globally competitive.

The rationales behind the abolishment of guaranteed placement for trainee teachers were to dignify the teaching profession as a main field of choice, to produce a world-class human capital, transition to "open systems" in teacher training, to produce an excellent group of future teachers by choosing only the best individuals, to eradicate the community's assumptions and perceptions regarding the easy employment teaching field, and emulate the example of developed countries. These six rationales are indicators that can be used as guidance in creating future teachers who are visionary and able to support the national goal of achieving developed nation status by the year 2020.

RATIONALES BEHIND ABOLISHMENT OF GUARANTEED PLACEMENT FOR TRAINEE TEACHERS

Establishing Teaching Profession as a Main Field of Choice

Uplifting the teaching profession is not an easy thing to do, especially in making this field as a field of choice. However, it is not impossible to achieve what is required by the ministry. According to statistics obtained from the Ministry of Education, there were more than 175,000 applications submitted for admission into this field. This number explains that the teaching profession is one of the areas of choice among young people who want to be educators. However, from this mount of applications acquired, only 7% of applicants obtained 7As and above in MCE, while for admission to Post-Graduate Teaching Course (PGTC), only 3% had the average grade point of 3.5 and above (MOE 2010).

Referring to that statistic, majority of the outstanding students have no tendency to make teaching as their profession. Most of them are more interested in the critical and professional positions such as doctors, lawyers, engineers or accountants (Norfadhilah & Halimah, 2010). Those who excel are usually offered a scholarship to study in the country or abroad. It is said that the government does need experts in these fields to achieve the target to create a more professional local labour force. However, it implies that this field is still not the preferred choice of students who excel in spite of the government's plan to abolish the placement assurance to prospective teachers who do not achieve the standard and qualified.

The efforts of the government to implement the abolishment of guaranteed placement is not meant to punish them or not giving them a chance at all, but it is more aimed at getting them to be prepared and more responsible in improving their performance and their achievements so that this field will be comparable with the professional status of the medical profession, to legal or engineering. Accordingly, the Ministry of Education in the planned period of 2011 to 2015 will implement the high-profile campaigns to dignify this field as a main field, while increasing the awareness about the teaching profession as a profession with prestige. Four important points to be emphasized in the empowerment of the profession is:

1) Financial Rewards

Offer higher starting salaries to attract more outstanding students to apply for the teaching profession. According Scalfani (2010), the financial rewards given aims at improving productivity, performance and quality of education. This means that financial reward is one of the motivating factors that encourage more excellent students to choose this profession as a career.

2) Career Development & Prestige
Give new offer to teachers. Career prospects will be more interesting because there are a lot more professional development opportunities and also quicker promotion opportunities for excellent teachers.

As an elite career, the teaching profession will use a rigorous selection criteria and evaluation process. Only outstanding candidates will be accepted in the profession. The purpose of this is to make the profession at par with other areas.

3) Nation Development
The teaching profession is responsible in establishing future leaders and in making Malaysia a nation of high-income. This is because the teachers are one of those who will shape the students to become functioning individuals in particular to the country and nation.

Produce World-Class Human Capital

Development of human resources, also known as human capital is one of the agenda given attention by the government since the 8MP until now. Investment in human capital is given greater emphasis in the 10MP to increase the resilience and boost the economic growth and also to build a community that has exemplary values.

According to the 10MP (2011-2015) report, the goal will be achieved through the cooperation between the government, private sectors and communities. In this 10MP, greater concentration is focused on developing world-class human capital, equipped with the knowledge, skills and strong ethics. For this purpose, the comprehensive improvement are being done through reshuffling of the education system to improve student performances significantly, enhance the skills of Malaysians to increase their employability, and restructure the labor market to make Malaysia a high-income country.

Reshuffling the education system meant to make the education provided more integrated and holistic. Among the issues addressed in this reshuffle is the abolishment of guaranteed placement of trainee teacher. As already known, the abolishment of guaranteed placement of trainee teacher is a new matter in the country's education system. Significantly through this implementation is to achieve the goal of producing both mentally and spiritually balanced human capital, and be able to cope with the various challenges in the era of globalization.

Prospective teachers who are studying in educational institutions at this time will receive more challenges than trainees who have completed their studies. Those who obtained the best results have the "tickets" for successful appointment as a teacher while those who obtained only satisfactory results have a "ticket" to be sent back to their villages. However, the MOE is not only evaluating the best performance and achievements, although these are the fundamental values to determine the success of human capital, but the purpose of the abolishment of guaranteed placement of trainee teacher is to awaken them, to prepare them to face challenges and aware of their roles and responsibilities towards their students. If they fail during teacher training, how could they be trusted to educate the young generation of Malaysia in the future.

Hence, a balanced development of human capital as required in the national education philosophy which is physical, emotional, intellectual and spiritual should exist and must be cultivated in each individual who has the right mind especially those who are called prospective educators. Trainee teachers must equip themselves with as much knowledge as they can which will serve as a bonus and advantage in their generic capabilities. Accordingly, prospective teachers who are produced will be more meaningful if they are able to achieve the national goal, show a healthy competitive to gain higher achievements and able to respond to the government's call to develop world-class human capital. Thus, the rate of failure in gaining an entry into the profession is low because they have a variety of skills, availability, credibility and potential to develop human capital in the future.

Transition to "Open System" In Teacher Training

Previously, teacher training existed only TEI in every state, and then expanded up to the public institutions such as SIUE, PUM, USM, UTM, NUM and SUM, but today, teacher training is provided even in private institutions such as UNISEL (www.unisel.edu.my). This measure intends to liberalize *the* system of teacher training and switch to the "open system" to add more trained teachers.

Liberalizing the teaching system is not new in the country's education system (Nik Aziz et al., 2008). This step is to open up more opportunities for youths to make the teaching profession as a career field of their choice. Nevertheless, the implementation of the "open system" in teacher training will make future teachers more competitive with each other for no recruitment of future teachers who managed only satisfactory performance longer exists.

According to the findings of a national survey (2009), 69% of respondents suggested that the government improve the quality of teachers in their services, while 30% of respondents suggested increasing student outcomes at the primary education level. The propriety of this study is to reach a state where the population is literate. This being the case, it summons a change of mind among all parties to achieve that goal. Implementation of an open system is a first step to improve services for teachers especially in the early stages. Accordingly, the transition to open systems in teacher training is a method of liberalization of global oriented higher education. Prospective teachers will be trained by learning modules set by the grant so that each prospective teacher has better understanding of their roles and responsibilities in the future.

Accordingly, the abolishment of guaranteed placement of trainee teacher should not be a big issue especially among future teachers. This is because an open training system will create more opportunities among individuals who fail to position themselves in the teacher training institutes or universities. This open system allows individuals who did not make it into any TEI the opportunity to apply for admission in those private colleges that offer a degree in Education. However, a career placement after graduation is not guaranteed. Only the ones with the highest standards and qualification will have the opportunity to be offered the position as a teacher.

The transition to open systems will create more healthy competition. In addition, it will also get them to continually work hard to achieve excellent results and thus qualify them to gain ground as a permanent teacher. If, the previous systems are not revamped, the attitude of some trainee teachers who always have the assumption that even with poor results they could still get the placement will become a culture among them.

Forming a Group of Outstanding Prospective Teachers: Choosing the Best

Developing a group of potential future teachers to become excellent teachers in the eyes of the nation will take real effort by all parties. The role of government, non-governmental organizations, schools, communities and educators are important in the formation of excellent teachers in the school. A way to express this is to improve the teacher selection system. Although the teacher selection system is not the main factor in determining the excellence of a prospective teacher but it can be used as a yardstick to assess at the initial stage that the teacher candidates are able to succeed in his/her career in the future.

The increase in the number of applications for the position of teacher or the degree level teaching program and post-graduate diploma shows that young adolescents are very keen to take on positions as educators. However, majority of the applicants obtained only satisfactory results. For example, in 2005, of 62 thousand candidates who applied for the Post-Graduate Course (PGC), only 7,800 were selected. This shows that the strict selection criterion is the first step to form a group of the best trainee teachers.

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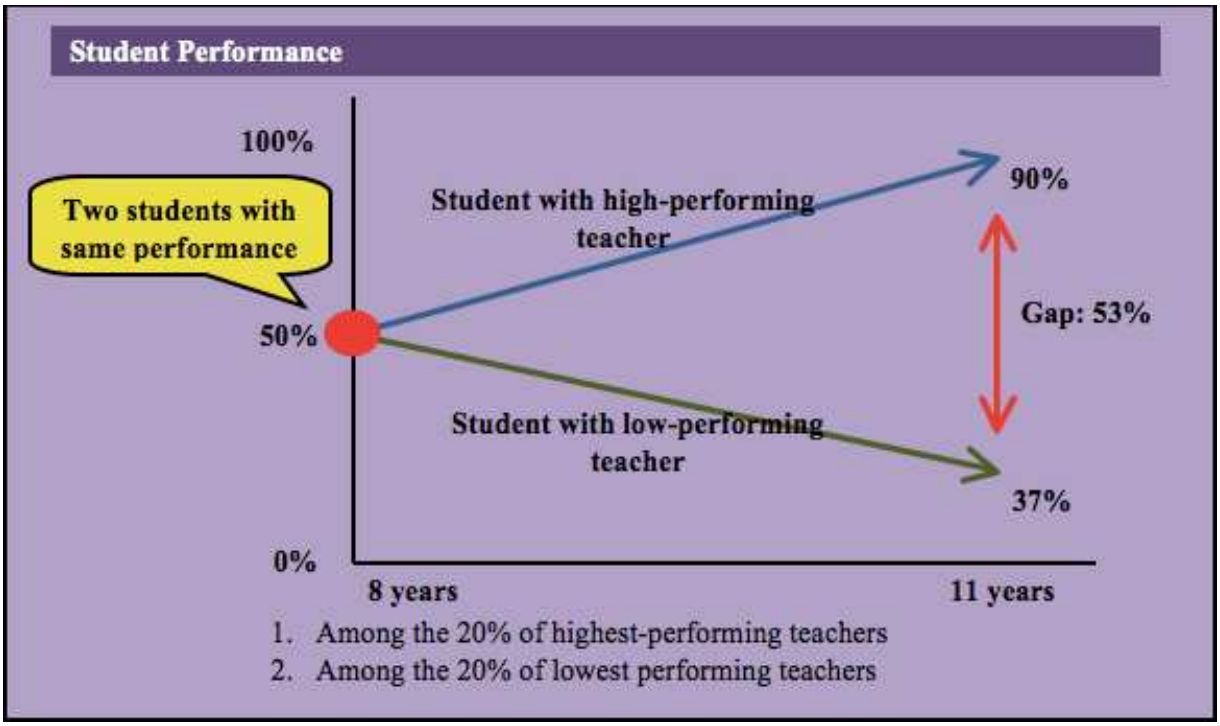

Figure 1:Quality of Teacher as Determinant of Student Performance

Figure 1 above shows the quality of the teachers determines the performances of students. Based on a study conducted by Sander and Rivers (1996), excellent teachers more likely to produce excellent students than teachers who fail to master their lessons. It is explained that a teacher plays an important role to enhance the interest and inclination of students towards knowledge. Through the interest and inclination, the desires of students to correct their deficiencies and improve their abilities in their classes are easier to do than to students who simply do not have the interest to learn.

As implications of this research, in producing an outstanding group of students, it actually begins with forming an outstanding group of future teachers. This can be achieved through the strengthening of teacher training. Each of the trainees must undergo practical training as a first step to provide them with real exposures on their roles and responsibilities. However, practicum conducted in our country is in fact too short compared to the trainee teachers in Finland and New Zealand (Davies et al., 2009). According to the Ministry of Education (2010), the practicum module implemented at this time will be increased for the benefit of the trainees themselves. If in the previous module, the practicum was a short span of two months up to 6 months but in 10MP, the module will be implemented over long practicum duration of a year until a year and a half.

These efforts of government should be received positively. Results and benefits are for the long-term interests. If the government is not determined or nonchalant, the education system would be lagging far behind other countries that are already ahead. So, all the trainee teachers should strive harder to be labelled as prospective excellent teachers. This being the case, the implementation of this abolishment has its own goals and mission for the benefit of all parties.

Eradicate the Community's Assumptions and Perceptions Regarding the Easy Employment in the Education (Teaching) Field

In general, many Malaysians think education majors can get a job easily upon graduation especially in a teaching institution. This statement is far from what is real. This is because each individual who applied to become a trainee teacher in a certain teaching institutions have to go through a lengthy screening process

before they managed to get a place. This occurs because many MSHC, MHRC and Diploma students select teaching majors as their choice to further their education to the highest level without thinking about their interests and career prospects in the future.

Those who have filled in application form to the university via online especially those who applied for teaching course have to wait for a call to sit for special test Malaysia Educators Scholastic Inventory (MEdsi). The purpose of this test is to identify the real personality and suitability of the candidates to venture into the teaching profession based on four ideas which are personality, career interests, values of integrity and emotional intelligence. The candidates who pass the Medsi test will be called for an interview before they were absorbed by tertiary education in the public and specific teacher training institutes. The purpose of this screening is to form a group of quality educators in addition to reducing the problems of misconduct, to form teachers who are motivated, brilliant and charismatic.

The successful candidates will be absorbed as trainee teachers in universities and teacher training institutes. They would spend four years to pursue the teaching course based their fields of choice. In these four years, they have to take various courses and passed with excellent marks so that their opportunity to be absorbed into service will be higher. This is because after their graduation from universities particularly students who pursued education majors, they need to fill an online teacher vacancy form at the MOE website. After that, they will be called for an interview for the post of Trained Backup Teachers. The successful trainee teachers will be called for second interview and have to sit for a special test. The interview results will be released within the next two to three months. Those who are successful will be absorbed into service as teachers. However, within a year of confirmation in their position, they will be called once again for an interview and induction before they are confirmed as a teacher.

Based on the circumstances, the assumptions and perceptions of the society about the easy employment are not accurate at all. This is because trainees undergo many screening processes before they are eligible to be labelled as a qualified teacher. The situation becomes even more challenging in the 10MP through the new plan by the government to abolish the guaranteed placement. If before this, the society had inaccurate assumptions, then in the foreseeable future that impression will change.

Emulate the Examples of Developed Countries

Developing a country is not a simple matter; therefore a newly developing country should have its own national idol or role model. Emulating the developed countries will inspire the leaders to develop the country in the interest of the people. Emulating in the field of education is one of the most important elements in order to achieve the desired progress. According to the Organization for Economic Cooperation and Development (OECD) (2008) which is operating under UNESCO, Finland is one of the most advanced countries in the field of education. Program for International Student Assessment (PISA) Test conducted found that Finland students top the Science literacy achievement and Mathematics understanding with a score of 543 in reading, 536 for Mathematics and 548 for Science, which is actually ahead of other developed nation.

What makes them so brilliant? What are the key factors that their students are wise and clever in their studies? According to OECD, the most important factor of success of their students is dedicated and committed teachers. It was reported that a teacher in Finlad received the best teacher training in the world. They have the autonomy in teaching where they can use their expertise to modify lessons according to students' ability in the classroom or school. Test is reduced, while the weaker students will be guided more than those who are more efficient. In addition, students are also encouraged to explore and implement their own work because through this method of learning it will be more relaxed and casual-natured. There are no special programs for students who are smart, all students get the same guidance but according to each student's ability.

This explains that the expertise and commitment of teachers make teaching and learning more effective and encourage students to excel in each of their subjects. Based on that, the step to abolish guaranteed placement carries certain rationale such as ensuring that future teachers will be able to produce something out for the interest of students, schools and country. If a trainee teacher is not able to master the field of teaching, how is

he/she expected to share the knowledge and expertise with the students? Not only that, if a trainee teacher's performance does not bode well, how can the trainee teacher be regarded highly by the community?

Therefore, knowledge is the most important need particularly in shaping the diversity of skills and expertise among teachers. They need to explore and learn about various kinds of knowledge during their study period as a requirement in the future. It does not end there; the diversity of knowledge is an advantage that can be used by trainees to become outstanding future educators. If this is cultivated among trainee teachers in Malaysia, the failure rate in securing a placement will be low. Besides, if they did not use these opportunities, particularly in strengthening their knowledge, they will face problem related to their skills in teaching when it comes to real situation, thus lowering their chances of becoming excellent teachers just like the teachers in Finland and New Zealand.

CONCLUSION

The implementation of guaranteed placement abolishment that was carried out since the year of 2011 to 2015 as explained in the Tenth Malaysia Plan (10MP) is more of a trial to observe whether this step will bring positive or negative effects. Although the planning just started in the year of 2011 but the rational that can be taken through the implementation is the positive encouragement to prospective teachers to improve their achievements. This is because teachers are the individuals who will play a role in shaping the personality of students. Through this, the success and effectiveness in guiding the students will have a positive impact on the school system. When this occurs, the country's education system can be lifted on par with the best education systems abroad.

Thus, excellent trainee teachers are the fundamental to excellence of teachers in the future. Prospective competent educators are the important connector between the development of human capital and developed country status. Trainee teachers, who are properly educated, equipped with knowledge and skills as well as strong characters, will be “human capital” that achieves the national mission to become a high-income developed country. Thus, outstanding trainees are formed as a combination of existing positive criteria in themselves, supplemented by training and professional pre-service and in-service courses. Therefore, the prospective teachers must always be ready to face the challenges and not make the abolishment of guaranteed placement as a main reason of early failure in becoming successful.

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INTEGRATING TECHNOLOGY INTO CLASSROOM: THE LEARNER-CENTERED INSTRUCTIONAL DESIGN

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ABSTRACT

In this study, to present an instructional model by considering the existing models of instructional design (ARCS, ADDIE, ASSURE, Dick and Carey, Seels and Glasgow, Smith and Ragan etc.) with the nature of technology-based education and to reveal analysis, design, development, implementation, evaluation, and to revise levels with lower levels of the instructional design model were aimed. The ASSURE model is extremely learner centered. Unlike many design models, it was created using cognitive theories of learning as its foundation. The directions of Assure Model are characteristic features of learners, getting stated objectives and selecting the best media and materials for the instruction program. In this study, document analysis method were used. As a result, two example lesson plans given can be updated according to all grades and lessons. With the use of these example plans are expected to perform more effective learning.

Key Words: Technology, integration, instructional design.

INTRODUCTION

To integrate the technology with education is a well accepted need. A great of technology policies have been put in place recently so as to fulfill the need. The most important of all attempts is likely FATIH Project. Within the scope of FATIH Project planned to accomplish until 2016, it has been planned to supply with 620.000 interactive boards for classrooms and a tablet computer for each teacher and student. It is indicated that the Project carried out jointly by a lot of agencies and institues is not only a software and hardware providing project but also it has also four components, “E-content”, “In-service Training”, “Curriculums” and “Safe Information and Communication Technology Usage” (Republic of Turkey Ministry of National Education [MNE], 2012). The effective and productive usage of technology reached to the schools within the scope of FATIH Project is one of the basic conditions for success in the Project. In terms of most teachers, technologies such as interactive boards and tablet computer distributed for schools, teachers and students are new and not known well. For teachers, the usage of these technologies for education is a subject known less. When viewed from this aspect, to provide convenient support so that the teaachers can use these technologies efficiently and productively is an obligation more than a necessity. In this process, concrete steps for how teachers integrate the technology into their lessons must be taken. One of these steps is to organize activities enabling teachers acquire information about how to design the lessons integrated with technology. It is thought that within its limits, the diversified usage of information and plans for teaching lessons presented in this article will be useful to carry out the learning activities more efficiently and productively.

The Technology Integration Policies in Turkey

From past to present, various in-service training applications have been put into practice to integrate the technology with educational environment and to give opportunities for teachers' career development. However, it is seen that these in-service training organized by MNE focus on basic computer training mostly (MNE, 2008). The trainings are generally given by means of face to face education activities in summer season. It can be said that the efforts to give such education using various technology via distant education. On the other hand, it appears that the practices are not completely different from the activities carried out in classroom. Related research reveals that it has not been succeded at accomplishing the expected objective for in-service training, in other words, the practices are far from effectiveness, productiveness and attractiveness (Akbaba-Altun, 2006; Çağıltay, Çakıroğlu, Çağıltay and Çakıroğlu, 2001; Kayaduman, Sırakaya and Seferoğlu, 2011; MNE, 2004; Usluel, Mumcu and Demiraslan, 2007).

On the other side, in integration process, whether the teachers approve of the technology or not is extremely substantial has been indicated (Alrafi, 2005; Avcu, 2011; Hardy, 1998; Owre, 2006). In this perspective, some models have been developed with the purpose of examining why the individuals exhibit some behaviours. The theory being a resource for most of these models is Theory of Reasoned Action – TRA. TRA focuses on the behaviour examining acceptance or rejection. This theory explains that a person's behaviour depends on his/her intent and intent is determined by attitude and subjective norms. The most well-known model of all the models being adapted from TRA is likely Technology Acceptance Model – TAM. (Kourakos, 2006). TAM developed by Davis (1989) is a model measuring the individuals' desires and intents to use technology on the basis of three basic factors. These three basic factors are (1) perceived usefulness, (2) perceived ease of use and (3) the individual's behaviour oriented intent. TAM asserts that perceived benefit and perceived ease of use determine the individual's behaviour oriented intent. While *perceived usefulness* is defined as "the degree to which a person believes that a particular information system would enhance his or her job performance _i.e., by reducing the time to accomplish a task or providing timely information", *perceived ease of use* is "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989). On the other hand, it has been criticized due to its being limited by some researchers and suggestions to make it more powerful have been presented by adding various factors. Venkatesh ve Davis (2000), improved the model by adding new dimensions (Subjective Norm, Image, Proffesional interest, Output quality, Willingness, Demonstrability of results) and they gave Technology Acceptance Model 2 - TAM 2 name for new model. According to TAM 2, factors such as the technology's ease of use and usefulness, the persons cared by the individual judging it necessary, its enhancing the individual's social status, its being related to his/her proffession, its giving an opportunity for performing a duty succesfully and its nonnecessity of use have influence on the individual using the new technology (Venkatesh and Davis, 2000).

As is seen from the related research, a new technology being used effectively in educational environment requires that the teachers have information about this technology and their benefit and easiness perception levels related to the technology are high. It can be said that these two conditions have direct effects on the success of FATIH Project which is the recent project brought into force by MNE so as to integrate the technology and education. However, that the teachers' literacy levels related to technology being high will not be enough single-handedly can be said. The important thing is that the teachers can make more contribution on their students' learning by integrating the technologies with their lessons. When viewed from this aspect, it is expected that teachers can design teaching efficiently.

Instructional Design

Instructional design (ID) is a systematic process that is employed to develop education and training programs in a consistent and reliable fashion. ID is a complex process that is creative, active and iterative. Although the exact origins of the ID process can be debated, the writings of Silvern (1965) represent an early attempt to apply general systems theory (Bertalanffy, 1968) and systems analysis an approach to solving instructional process. Silvern was particulary interested in how general systems theory could be used to create effective and efficient training for aerospace and military training and published what some consider the first ID model.

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In the 1960s, the ID process was applied in some higher education settings (Barson, 1967). Instructional designers believe that the use of systematic design procedures can make instruction more effective, efficient and relevant than less rigorous approaches to planning instruction. The systems approach implies an analysis of how its components interact with each other and requires coordination of all design, development, implementation and evaluation activities (Gustafson and Branch, 2007).

Although a variety of systematic ID processes have been described (e.g., Dick, Carey & Carey, 2005; Gagne et al., 2005; Morrison, Ross & Kemp, 2004; Smith & Ragan, 2005) all descriptions include the core elements (also referred to as phases) of analysis, design, development, implementation and evaluation (ADDIE) to ensure congruence among goals, objectives, strategies and evaluation and the effectiveness of the resulting instruction (Gustafson and Branch, 2007). The phases of the ADDIE model is seen in the following figure.

Analysis

- Analyze student characteristics
  - Prerequisite knowledge
  - Online experience
  - Attitudes, learning styles, cultural barries, age, gender, etc.
- Analyze learning context
  - Learners' bandwidth
  - Resources available to learners for completion of assignments, etc.
- Analyze content to be learned
- Define learning goals and objectives

Design

- Decide on the main instructional strategies (how will learners interact with content?)
  - Lecture
  - Projects
  - Presentations
  - Activities
  - Exercises
- Design an assessment plan
- Create detailed course outline

Development

- Construct a detailed syllabus
- Develop and/or acquire course materials
- Develop assignment/project resources
- Develop assessment items (traditional exams, rubrics for projects, papers, or portfolios, etc.)

Implementation

- Learners complete the course as designed
- Learners are assessed according by the designed assessments
- Instructor monitors, guides, and facilitates as learners complete the course

Evaluation

- Formative- instruction effectiveness is monitored while being taught
  - Adjust instructional strategies according to students' interaction with the content, the instructor, and the peers
- Summative- overall course effectiveness is measured at course completion
  - Collect course feedback via online survey, email, or other media.
  - Validate content accuracy and completeness, teaching methods, and communication approach, among others.
  - Revise as necessary

Figure 1: Phases of the ADDIE Model

Although the ADDIE activities mentioned earlier represent the fundamental concepts of the ID process, there are several characteristics that should be evident when the process is employed. These include the following:

1. ID is learner centered.
2. ID is goal oriented.
3. ID focuses on meaningful performance.
4. ID assumes outcomes can be measured in a reliable and valid way.
5. ID is empirical, iterative and self-correcting.
6. ID typically is a team effort.

Learner-centered instruction means that learners and their performance are the focal points of all teaching and learning activities. Teaching and other forms of instruction are simply means to the end of learner performance. Thus, there may be no initial assumption that a live teacher is even needed for the learner to achive the stated objectives. Self-and group study, technology-based instruction and teacher-based strategies are all options to be considered, with the result often being a mix of all these and other strategies. Learners may also be given opportunities to select their own objectives or learning methods in some circumstances. This change in perspective from teaching to learning represents a paradigm shift of immense power when planning for effective educational environments (Gustafson and Branch, 2007). At this point, ASSURE Model emerges.

ASSURE Model

As stated in the previous parts, some variables such as teachers' perception of usefulness for technology, the teachers' thoughts that the use of technology is easy, teachers setting the technology to work by planning it efficiently have been important on the use of technology effectively. Integrating the technology with education requires the systematical use of technology. Heinich, Molenda, Russel and Smaldino (1996) developed a planning model called ASSURE model concerning the use of technology systematically in lessons. ASSURE is a abbreviation formed with the capitals of model's steps. The model is a sequence of operations developed for planning of technology use that helps teachers to design and improve the most convenient educational environment. We can say that the model aims at the solution of problems regarding enabling the use of technology effectively in educational environment and systematizing the steps of lesson plan preparing. The steps of the model is seen in the following chart (Heinich, Molenda, Russel and Smaldino, 1996).

Chart 1: The Steps of ASSURE Model

Analyze learners
State objectives
Select methods, media and materials
Utilize media and materials
Require learner participation
Evaluate and revise

According to Megaw (2006), ASSURE model is the most convenient model for integrating the theories of education technology and research with practice. The first step of ASSURE model is the analysis of the learners. To determine all of the properties of the learners is not practical and essential. Learner analysis means determining the more operational properties such as general qualities, preliminary information level, learning styles. The second step of the model is to state the objectives. It is to determine which information and skills be gained at the end of the related education. The third step is to choose the convenient method, environment and material to achieve the objectives defined in the previous step. The fourth step is to benefit from the method, environment and materials defined previously effectively and productively. The fifth step is to enable the learners benefit from learning opportunities in eduactional environment. The last step of the model is to evaluate all learning components so as to achieve qualified learning outputs. ASSURE model has the assertions not only supporting technology's educational potential but also minimization the problems. On the other hand, by using the model effectively, the students will be more active, technology will integrate with education, alternative evaluation methods will be used, apart from traditional methods, democratical learning methods

will be used. In this context, two different sample lesson plans grade six using ASSURE Model approach appear below.

Sample 1
Subject: Healthy Living
Grade: 6
Age: 12-13 years
Duration: 80 minutes
Number of Students: 25

Analyze Learners.
The class consist of 25 12-13 year old seventh graders who attend ABC Middle School in Ankara County Public School. Socioeconomically they are for the middle class with at least two parents having a college education. None have a serious mental or physical impairment. The students are already proficient in the basic computer skills need for this lesson. Most have their own computer at home and have high-speed Internet access.

State Objectives
1) Student will participate in a class discussion.
2) Students will read and take notes on the eight types of healthy living, and use these notes in their analysis.
3) Students will locate six healthy living posters from the links provided and copy them into a Word document.
4) Following the criteria set by the teacher, students will create six analysis sheets, one for each poster to be analyzed.
5) Students will correctly analyze each poster accurately complete each of the analysis sheets in a timely manner.
6) Students will demonstrate their knowledge of healthy living by answering a short essay question on the unit exam.

Select Methods, Media and Material
Methods
1) The lesson will start with an all class discussion, led by the teacher, about current examples of healthy living. This will be followed by the teacher leading the class in an example of poster analysis.
2) The teacher will show some videos about healthy living. Student participation will be ensure by aid of anchored learning method.
3) Students will use the Internet (on their tablet computer)to research the information needed to complete the analysis sheets.

Media
1) Interactive whiteboard will be used to record students responses during the opening discussion.
2) Students will have photocopy of one healthy living poster supplied by the teacher and to be used during the example analysis. The teacher will have an overhead of the same poster.
3) Interactive whiteboard will be used to show the class the webquest site. 4) The Internet will be used to gather the six posters.
5) The student created analysis sheets will be used to present the students information on the posters.

Material
-Interactive whiteboard
-Posters
-Class set of poster handouts
-Internet access in the classroom
-Access to color printer
-Tablet computers.

Utilizing Media and Material--Requiring Student Participation

Note: this is the heart of the lesson plan and these two components work together to carry it out.

Day 1: Teacher leads the class in a discussion about healthy living in today's society. Questions could include the following:
-What is your favorite food? Why?
-What are some of the best known food advertisements?
-Why do food companies advertise? Do advertisements work?
-Does anyone besides businesses use advertising?
-Do you do sports? Which kind? Why?
-How many hours do you sleep at nights?

Record student answers on the interactive whiteboard. This should take about 8-10 minutes. Next, give each student a copy of the sample healthy living poster. Try to find one with an easy to understand message and symbols students may be familiar with. Have the students point out the symbols involved, who would have created the poster and why.

Use the copy of the poster to point out any significant omissions. This is similar to what they will be doing with the webquest. This should take 10-15 minutes. Finally, show the students the webquest site via the tablet computer. Make sure this is already prepared to go prior to the lesson starting. Use the remaining class time to show the students each part of the site.

Day 2: These days will be used by the students to locate their posters and create the analysis sheets. Your role is as a helper and you should be ready to assist any student who is having trouble. It is vital that you check students' tablet computers prior to class everyday to be sure they are working and that the color printer has ink. The main areas of concern are:

*Are the students only using the websites provided by the webquest? *Are the students on task?
*Are the students working independently?

You should strictly monitor the room until you see that all students have created at least one analysis sheet in the proper format. Remind the students to save their work. With 5 minutes remaining in class, have the students wrap up their work for the day. If students seem to be finishing quickly, you could limit them to two days in the school lab, and have them do some of the work at home.

Evaluate and Revise

It is critically important to know if the students have learned anything from this lesson. First of all, the teacher should be monitoring the students progress each day in the classroom. You may need to spend some time one-on-one with students until they understand what you asking them to do. Second, you must fairly and consistently grade their analysis sheets. By including a poster to analyze in the unit test, you know that the concepts have been remembered and that they can do the analysis on their own.
Revising this lesson could be accomplished in several ways. First, the time in the classroom can be shortened or lengthened if appropriate. If the assignment is taking too long, the number of posters to analyze could be cut. Second, students could work in pairs if you make sure they are compatible. You could also give students analysis sheets ready to fill in.

Sample 2

Subject: Healthy Living
Grade: 6
Age: 12-13 years
Duration: 80 minutes
Number of Students: 25

Analyze Learners

The class consists of 25 students: 15 girls and 10 boys. The students generally participate in classes that are highly interactive and settings where the teacher uses role play, anchored learning, brain storming and guided discovery moethods. The female students portray a more business like personal while the boys tend to be more talkative and playful and need an extrinsic factor to keep them working. The students tend to be more visual, auditory and kinesthetic learners. The aim of this lesson is to introduce students to the topic of healthy living.

Entry competencies: The students are able to use the tablet computers. Students also are fascinated by the computer and all the entertainment it provides, thus making learning via this medium fun and exciting.
Learning Styles: With the advent of technology and all its advantages students are more driven and fascinated by the computer. There are different learners in the class: visual, auditory and kinesthetic. Therefore, it is believed that by using the computer, the students will be keener to learning as it will be a medium that they enjoy.

Select Objectives

Cognitive
Students should be able to:
-List the various healthy food.
-Differentiate among the various kinds of food.

Psychmotor
Students should be able to:
-Describe the various food used in the Office.

Affective
Student should be able to:
-Demonstrate awareness of the various types of food used in the office.

Selected Media, Materials and Methods

Tablet Computers: *All of* students have tablet computers with internet access and will complete various activities. Some students will be required to work in pairs if some tablet computers are faulty.

Headphones: The students will be provided with headphones so that they could listen to the sounds throughout the some videos. This will allow students to engage in their activities without disturbing each other.

Interactive Whiteboard: The teacher will use the interactive whiteboard to introduce the activity to the class. The interactive whiteboard is available in the classroom.

Utilize Media and Material

Preview the Materials: Prior to the class the teacher created the watching video activity on the various food. The teacher will ensure that there is internet access, and that all tablet computers are functioning properly which will aid in the effectiveness of the delivery of the lesson.

Prepare the Materials: The teacher selects videos before lesson. Teacher sends a video link to all of tablet computers. Students will be required to complete all the activities on the aforementioned link. Students will know where exactly the information is and it would not allow them to deviate from the topic.

Prepare the Environment: The teacher will arrange the seats to allow each student at each computer. The interactive whiteboards will only be used for the first and last ten minutes of the lesson. Students will maintain their groups for the remainder of the lesson.

Prepare the Learners: The teacher will inform the students of the intervention before the lesson to ensure that they are familiar with video and they understand the importance of the material which will be used. Students will see the importance of the topic by viewing healthy food power point presentation. They will also be informed of the activities and evaluation exercises that they will be given.

Provide the Learning Experience: The teaching strategies that will be used are guided discovery and anchored learning. Student will explore and discover the content required for the activities. The teacher will supervise and move around the classroom providing assistance to groups that require further explanation. The interactive whiteboard will also be used to provide further explanation to groups experiencing difficulties.

Require Learner Participation

The students will be divided into groups. They will be placed in groups of threes. The group will be allowed to navigate through the site in order to familiarize themselves with the tasks, after which they will be allowed to commence the activities.

Evaluate and Revise

To evaluate the students' knowledge on the topic, the students will be evaluated based on classroom participation. At the same time they will be allowed to post their answers to the interactive whiteboard on the their tablet computers.

RESULTS AND DISCUSSION

The process integrating the technology with education is complex and multidirectional. In the process, there are a lot of factors such as teachers, students, background, school administrators, policy determiners, parents. The greatest responsibility of the shareholders is teachers' responsibility. In this process, the important thing is not the usage level of technological resources, but the usage of technology in educational environment with convenient pedagogical approach properly. Instructional design is to develop functional learning systems with resources to fulfill the educational requirements of target group. Instructional designer is not the person only having competences for instructional design process. Instructional designer is the domain expert knowing area's history, progress and current condition; in this way developing sensitivity in paralel with the improvements and foretelling about these. When viewed from this aspect, it can be said that the teachers are not designers. Hovewer, teachers need to use the technology systematically to integrate the education with technology. Regarding the use of technology in lessons systematically, Heinich, Molenda, Russel and Smaldino (1996) developed a planning model called ASSURE model. We can say that the model aims at the solutions of the problems using the technology effectively and systematizing preparing steps of a lesson plan. When viewed from this aspect, carrying out a education based on ASSURE model focusing on the student and technology rather than traditional education is a need rather than an obligation. Example lesson plans given before can be updated according to all grades and lessons. The important thing in this stage is teachers applying the process steps in the model selflessly. When considered that all teachers and students of all degrees will have tablet computer and all classrooms will have electronic environment such as interactive board, internet, the application of lesson plans will be easier. It is thought that when the information and the plan presented in this article within its limits are taken into consideration for various lessons and grades, it helps growing up the persons technologically literate which is one of the must of an education system resulting in qualified and meaningful learning.

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THE RELATIONSHIP BETWEEN PROSPECTIVE PRIMARY MATHEMATICS TEACHERS' ATTITUDES TOWARDS PROBLEM-BASED LEARNING AND THEIR STUDYING TENDENCIES

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ABSTRACT

Problem-based learning (PBL), aims students to gain autonomous learning, independent study, inquisition and problem-solving skills; and it is an approach in which individuals are confronted with simulated situations like the ones they are probable to face in their daily lives and encouraged to learn individually through self-study and research. This method being used in mathematics classes has an importance for the permanent storage of knowledge. One other factor which affects the students' learning is their efficient and proper way of study. This study, which aimed to investigate the relationship between prospective primary mathematics teachers' attitudes towards problem-based learning and their studying tendencies, was conducted with 100 students who study at mathematics teaching discipline of primary education department of Hasan Ali Yücel Faculty of Education, Istanbul University. The Scale of Problem-Based Learning Attitude which was developed by Turan & Demirel (2008) and the Scale of Study Process which was adapted to Turkish language by Yılmaz & Orhan (2011) has been applied in this study. In this study a parallel relationship is determined between the prospective primary mathematics teachers' attitudes towards problem-based learning and approaches to the lesson study.

Key Words: Problem-based learning, approaches to studying, mathematics education.

INTRODUCTION

Being called as "problem-based learning" in English, this approach can be named as "problem temelli öğrenme, probleme dayalı öğrenme, problem temelli öğretim, probleme dayalı öğretim" in Turkish. (Kılınç, 2007). Problem-based learning (PBL), which aims students to gain autonomous learning, independent study, inquisition and problem-solving skills, is an approach in which individuals are confronted with simulated situations like the ones they are probable to face in their daily lives and encouraged to learn individually through self-study and research. (Özdemir, 2003; Plucker, 1999, akt. Turan, Demirel, 2008). Problem-based learning strategy puts the 'problem' in the center, from teaching objectives to students' behaviors and from teaching methods and techniques to testing and assessment processes. That is why; learning objectives and behaviors have to be defined beforehand in such an approach. After these stages are determined, the methods and techniques to be used need to be fixed (Kılınç, 2007).

In PBL session, what is conducted in small groups is a teaching method in which the development of overall skills and behaviors are connected with knowledge acquisition. PBL group consists of a student group of 8 to 10 and a tutor who enables learning easier for them. PBL has four elements: problem or scenario, tutoring leader, student and evaluation. PBL is carried out thorough a pre-formed scenario and its success depends on the quality of the scenario. (Wood, 2003, akt. Turan, Demirel, 2008). The scenario is often chosen out of real life problems. The scenarios or the problems need to be suitable for the students' background knowledge. (Yaman, Yalçın, 2005). Evaluation in PBL includes revising the projects and scenarios so that they provide meaningful learning situations for the students, supporting permanent storage of knowledge and transfer, developing reflection; and making it possible to use knowledge and skills properly (Bridges and Hallinger, 1995, akt. Turan, Demirel, 2008).

Two important factors in the performance of PBL are the teacher and the student. PBL demands dramatic changes in the behaviors and roles of both groups. The most important role of the teacher is to make learning easier. His role is much different than what is accustomed as a teacher's duty. He guides the students and leads them to gather information about this field (Turan, Demirel, 2008). PBL is a student-centered process. Students take the role of solving the problem in problem-based learning process. Group members gain the ability to work in groups and learn through collaborative work while working in groups so as to solve the problem and learn it (Turan, Demirel, 2008). As the first step of PBL approach is a problem which is necessary to be solved, students who work in PBL environment need to have well-developed problem-solving and critical thinking abilities (Yaman, Yalçın, 2005). PBL provides students with a sophisticated and deep point of view to cases. It improves students' advanced thinking and listening skills (critical thinking skills, scientific thinking skills etc.) (Kaptan, Korkmaz, 2001).

So as the programs in which PBL is used to be successful, teachers and students who have an important role in the process should work collaboratively. The data gathered via the attitudes and views of students and teachers about the program are also important as feedback for the development of the program (Turan, Demirel, 2008). In this aspect, being aware of the students' attitudes towards studying is important for the success of the program.

Basic principles of effective study skills are studying with the frame of a defined program by concentrating, studying systematically and regularly, persisting until finishing the work completely, keeping the pace with one's peers (Uluğ, 1981, akt. Temelli, Kurt, 2010). According to the studies done on students' techniques of studying; effective studying processes, the quickness in completing an assignment, positive opinions about the teacher, internalizing objectives of the lesson, the effort to make sense of the subjects learnt, the desire to be successful academically and fear of failure (Entwistle, McCune, 2004, akt. Yılmaz, Orhan, 2011).

Within this context, one other topic is the aim of the students in the learning environment during learning activity; while some students set off in order to catch on every single subject being learned, some others would participate in the learning activity for the only reason of passing exams. It was found out that the learners process knowledge in two levels as sophisticated and superficial (Yılmaz, Orhan, 2011).

Learning approaches mean the aim to learn a specific point and the varieties of the activities to be chosen; and they include the strategies that learners use during studying and the reasons why they choose these strategies. In this sense, individuals choose either "sophisticated learning" or "superficial learning". If they understand the subjects at higher level, it means that they adopt sophisticated learning; if their understanding is at lower level, it means that they have superficial learning style (Ozan, Köse, Gündoğdu, 2012).

The studies conducted by Trigwell and his friends (1999, akt. Yılmaz, Orhan, 2011) show that student- centered teaching has a relation with sophisticated learning approach and teacher-centered teaching is related to superficial learning approach. If a learning material is attractive enough, the basis for a sophisticated learning can be established. From this point of view, teachers should provide student-centered and interactive teaching environments for an effective learning; identify the students who have superficial study tendencies and take precautions to make them use the strategies which can be defined as a part of sophisticated learning (Yılmaz, Orhan, 2011). People can only be happy in an ergonomic learning environment which they love and be happy in. Students' studying in a suitable environment is as important as their having effective studying skills (Bay, Tuğluk, Koçyiğit, 2006). Being one of the methods which provide such kind of suitable environments, PBL enables effective learning.

The identification of which approach the students choose from sophisticated and superficial ways is believed to help to form effective teaching environments. By this way, foundations for the superficial learners to become sophisticated ones will be laid (Yılmaz, Orhan, 2011). Defining the studying approach that PBL supports will have an effect on the rise of students' success.

METHOD

In this study, adopted method is descriptive approach which allows detecting the present condition of a specific topic. It was conducted in 2012-2013 academic year in Hasan Ali Yücel Faculty of Education. The Scale of Problem-Based Learning Attitude which was developed by Turan & Demirel (2008) and the Scale of Study Process which was adapted to Turkish language by Yılmaz & Orhan (2011) has been applied to 100 students who study at mathematics teaching discipline of primary education department of our faculty and the results have been analyzed.

Universe And Sample

Universe is the students who study at Primary Teaching Department of Hasan Ali Yücel Faculty of Education. As these students are about to graduate, they are also prospective teachers at the same time. Sample is 100 students who study at mathematics teaching discipline of primary education department, Hasan Ali Yücel Faculty of Education, Istanbul University.

Data Collection Tools

The Scale of Problem-Based Learning Attitude which was developed by Turan & Demirel (2008) consists of 20 items of whose every single item includes 5 options in Likert type. A range of points from 1 to 5 was developed; each item was graded with an attention to positive and negative expressions so that 5 points mean the positive behavior. With its initial form, 60x5=300 points is the highest and 60x1=60 is the lowest point which can be achieved.

The Scale of Study Process which was adapted to Turkish language by Yılmaz & Orhan (2011) is an adapted version of Study Process Questionnaire which was developed by Biggs in 1987. After a while, this scale was revised in 2001 and a new scale with two factors including 20 items was developed. For the options of items in the scale, a Likert scale rating system was used and the options followed as " never or occasionally true for me (1)", "sometimes true for me (2)", "half true for me (3)", "most of the time true for me (4)", "always or almost always true for me (5)" (Biggs, Kember ve Leung, 2001, akt. Yılmaz, Orhan, 2011). By this way, the score students can get for sophisticated and superficial approaches changes from 10 to 50 points. We can decide which approach the student adopts by looking at the results of this grading.

Data Analysis

Descriptive statistics was used for the analysis of data. All the statistical processes were dealt with SPSS (Statistical Packet for Social Sciences); for the evaluation of data, Independent Group t Test, One-Direction Analysis of Variance (ANOVA) and Pearson Multiple Correlation Analysis techniques were used; and the findings were presented in accordance with the aims of this study.

RESULTS AND CONCLUSIONS

After analysis of collected data, the findings are presented under the headings of the table according to the order of purpose.

Table 1: The Results of Pearson Multiple Moment Correlation Analysis Conducted in order to see the Relation between the Answers of Mathematics Education Students to the Sophisticated Studying Approach and Their Answers to Superficial Studying Approach

	Total Points for the Sophisticated Studying Approach	Total Points for the Superficial Studying Approach
Total Points for the Sophisticated Studying Approach	X=30,3100 SS=6,25501 N=100	r=-0,184
Total Points for the Superficial Studying Approach	p=0,067	X=27,2800 SS=6,98784 N=100

As can be seen in Table-1, no meaningful statistical relationship between the points could be found as a result of Pearson Multiple Moment Correlation Analysis conducted in order to see the relation between the answers of mathematics education students to the sophisticated studying approach and their answers to superficial studying approach. What can be understood from the answers is that students give higher points to sophisticated studying approach which means they adopt this approach more.

Table 2: The Results of Pearson Multiple Moment Correlation Analysis Conducted in order to see the Relation between the Answers of Mathematics Education Students to the Sophisticated Studying Approach and Their Answers to Problem-based Learning Attitude Scale

	Total Points for the Sophisticated Studying Approach	Total Points for Problem-based Learning Attitude Scale
Total Points for the Sophisticated Studying Approach	X=30,3100 SS=6,25501 N=100	r=0,066
Total Points for Problem-based Learning Attitude Scale	p=0,511	X=59,4400 SS=4,98952 N=100

As can be seen in Table 2, no meaningful statistical relationship between the points could be found as a result of Pearson Multiple Moment Correlation Analysis conducted in order to see the relation between the answers of mathematics education students to the sophisticated studying approach and their answers to Problem-based Learning Attitude Scale.

Table 3: The Results of Pearson Multiple Moment Correlation Analysis Conducted in order to see the Relation between the Answers of Mathematics Education Students to the Superficial Studying Approach and Their Answers to Problem-based Learning Attitude Scale

	Total Points for the Superficial Studying Approach	Total Points for Problem-based Learning Attitude Scale
Total Points for the Superficial Studying Approach	X=27,2800 SS=6,98784 N=100	r=0,240 (*)
Total Points for Problem-based Learning Attitude Scale	p=0,016	X=59,4400 SS=4,98952 N=100

As can be seen in Table 3, no meaningful statistical relationship between the points could be found as a result of Pearson Multiple Moment Correlation Analysis conducted in order to see the relation between the answers of mathematics education students to the superficial studying approach and their answers to Problem-based Learning Attitude Scale.

Table 4: The Results of Independent Group t Test Conducted in order to see if the sex variable has an Influence on the Points of the Students' Answers to Problem-based Learning Attitude Scale

Point	Groups	N	Average	SS	$Sh_{\bar{x}}$	t Test		
						t	*Sd*	p
Problem-based Learning Attitude Scale	Female	73	59,2329	5,01808	,58732	-0,681	98	0,498
	Male	27	60,0000	4,96139	,95482			

As can be seen in Table 4, no meaningful statistical relationship between the arithmetic averages of the groups could be found as a result of Independent Group t Test conducted in order to see if the sex variable has an influence on the points of the students' answers to problem-based learning attitude scale.

Table 5: The Results of Independent Group t Test Conducted in order to see if the sex variable has an Influence on the Points of the Students' Answers about Sophisticated Studying Approach

Point	Groups	N	Average	SS	$Sh_{\bar{x}}$	t Test		
						t	*Sd*	p
Total Points for the Sophisticated Studying Approach	Female	73	30,3151	6,51041	,76199	0,013	98	0,989
	Male	27	30,2963	5,62149	1,08186			

As can be seen in Table 5, no meaningful statistical relationship between the arithmetic averages of the groups could be found as a result of Independent Group t Test conducted in order to see if the sex variable has an influence on the points of the students' answers about sophisticated studying approach.

Table 6: The Results of Independent Group t Test Conducted in order to see if the sex variable has an Influence on the Points of the Students' Answers about Superficial Studying Approach

Point	Groups	N	Average	SS	$Sh_{\bar{x}}$	t Test		
						t	*Sd*	p
Total Points for the Superficial Studying Approach	Female	73	26,9315	7,36042	,86147	-0,819	98	0,415
	Male	27	28,2222	5,88566	1,13270			

As can be seen in Table 6, no meaningful statistical relationship between the arithmetic averages of the groups could be found as a result of Independent Group t Test conducted in order to see if the sex variable has an influence on the points of the students' answers about superficial studying approach.

No meaningful statistical relationship between the arithmetic averages of the groups could be found as a result of One-Direction Analysis of Variance (ANOVA) conducted in order to see if the students' graduate high schools have an influence on the points of the students' answers to problem-based learning attitude scale. Likewise, no meaningful statistical relationship between the arithmetic averages of the groups could be found as a result of One-Direction Analysis of Variance (ANOVA) conducted in order to see if the students' graduate high schools have an influence on the points of the students' answers about sophisticated and superficial studying approaches.

CONCLUSION AND DISCUSSION

In the classes where PBL model is used, students gradually take more responsibilities about their own learning and they continue their lives as independent individuals of life-long learning. At this point, teacher does not take the conventional role of transmitting knowledge; instead, he also goes on learning with the students, makes learning easier for the students and encourages them (Kaptan, Korkmaz, 2001, akt. Kılınç, 2007). While students gather knowledge only by listening to the teacher's lectures in the conventional style, they acquire knowledge more permanently by researching, observing, trying, interacting with the outer world in PBL. Not only the students get information about certain topics, but they also acquire such skills as guessing, criticizing, working in groups, collecting data and analyzing all of which will be useful in their whole life (Şenocak, Taşkesenligil, 2005). Students who have acquired or want to acquire these skills adopt sophisticated study approach. The results of this study support this argument. It is found that students who have positive attitudes towards Problem-based Learning agree on the approach of sophisticated study at a higher level.

When the scaling results of a study leaded by Köroğlu and Yeşildere (2004) are generally examined, it was found that students who cover the unit by oral presentation cannot exactly reach the notions and they use memorization while solving problems. And it could be clearly seen that students in this sample were more successful, could make relations between notions and match them with different areas in real life thanks to a mathematics teaching approach which includes student-centered teaching and multiple intelligence. It can be

concluded that PBL approach has a positive effect on the students' attitudes towards mathematics and their level of success (Cantürk Günhan, Başer, 2008). Prospective teachers' attitudes should be observed and an education should be designed accordingly so that they can teach mathematics in the most effective way.

No meaningful statistical relationship between the arithmetic averages of the students' learning attitudes and the sex variable. When Ozan, Köse and Gündoğdu (2012) observed the students' learning approaches according to the sex variable, they found a meaningful difference only in superficial learning approaches part. On the other hand, for sophisticated and strategic learning parts, no meaningful relation was observed between girls and boys. It was seen that male students choose superficial learning approach to a considerable extend when compared to girl students. Senemoğlu (2011) also observed the students' learning approaches according to the sex variable; and she found a meaningful difference in superficial and strategic learning approaches. She concluded that female students choose superficial and strategic learning approaches to a considerable extend when compared to male students. Senemoğlu (2011) could reach no meaningful result in terms of the relation between American students' learning approaches and their genders. Sezgin-Selçuk, Çalışkan and Erol (2007) could not reach any meaningful results in terms of the relation between prospective physics teachers' learning approaches and their genders, either.

These suggestions can be made with the light of the results of this study:

- ✓ Learning environments which will encourage students to choose sophisticated learning approaches more can be enhanced.
- ✓ It might be useful that this study is conducted again with different samples.
- ✓ Some other studies can be done so as to show that students of education faculties can develop sophisticated learning approach with methods other than problem-based learning approach.
- ✓ Experimental studies can be done by creating various learning environments to observe their effects on studying approaches.
- ✓ Students' learning and studying approaches should be defined and lessons for the teaching of these approaches should be included in the programs, seminars and workshops should be organized.

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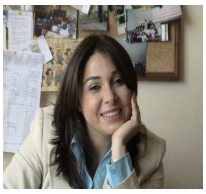

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CONCEPT MAPS AS A TOOL FOR MEANINGFUL LEARNING AND TEACHING IN CHEMISTRY EDUCATION

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ABSTRACT

In the present situation, only qualified people can overcome the problems of education system. Today all coutries aims to reach modernized education system. Above all, chemistry education is one of the pioneers of our educational system. Therefore, chemistry concepts must be conveyed to the receiver (student) accurately and well-arranged. For the successful learning, teaching strategies, methods, techniques and tools should transform knowledge from short-term memory to long-term memory. Ausubels' theory of meaningful learning is one of the most important expository theories which explain how to transform information from short-term memory to long-term memory. According to this theory Meaningful learning occurs when complex ideas and information are combined with students' own experiences and prior knowledge to form personal and unique understandings. In this process, it can be said that concept maps are one of the most important teaching and learning tool that promote meaningful learning. This study was designed as the study of the compilation. The purpose of the study is to introduce concept maps as a tool for meaningful learning, student centered, active, new learning and teaching strategy in chemistry education. According to the University of Illinois, there are seven kinds of concept map. The most commonly used five kinds of concept maps in chemistry were mentioned in this study.

Key Words: Concept map, teaching strategy, meaningful learning, chemistry education.

INTRODUCTION

Generally chemistry is introduced first time as a separate subject in IXth class and students study the basics and fundamentals of chemistry, so they feel a lot of difficulties in understanding these things. One of the biggest problem that students are facing in general chemistry classes is their inability to communicate, what they actually know about the concepts, whether with the teacher or in an exam or on a problem set.

The inability to communicate what they know, and receiving a low test score on the material they actually understood, undoubtedly frustrate the students even to the point of given up. The reason for the student's lack of chemistry communication skills is simple, they spend very little time in learning, practicing and speaking the language of chemistry. The problem is very further lengthened when teacher use discussion sections as just another lecture session or review session and spend the majority of time in talking to the students instead of having the students, do the majority of the talk.

Students' response indicates that a majority of them confuse atoms with molecules. They feel difficulty in understanding atomic molecular models, used to explain the properties and chemical phenomenon. They draw their own assumed figure in mind. Some held an addition mode of molecular composition and stated that a water molecule contained a unit of hydrogen gas (H_2). Some student viewed H_20 (*l*) and Cl_2 (g) as representation of one particle without the concept of atoms or a collection. To them, the use of (*l*) or (g) could not trigger any descriptions about multitude of molecule.

Many students even after studying chemistry do not understand the role of a formula. Some think that formulas are merely abbreviations for names rather than it explains the composition, or structure as well as quantity (mole concept). Some hold the miss conception that a formula is an abbreviation for a mixture.

Most students have difficulties in interpreting chemical equations because their understanding is constrained by the surface feature of representations. When, they see an equation such as.

$$C_{(S)} + O_{2(g)} \rightarrow CO_{2\,(g)}$$

They interpret it as a composition of letters, numbers and lines rather than a process of bond breaking and formation of new bond. The technique of balancing chemical equations makes them picture chemical equations as mathematical puzzles and they can even work algorithmic without having a conceptual understanding of the phenomenon, while they should see symbols and letters as molecules and the arrow as the direction of reaction.

Also a large numbers of students were unable to make translation among formula electronic configuration and ball stick models. Even after a great labour, they lack ability to provide equivalent representation and verbal description for a given representation without appropriate understanding of underlying concepts, most students are not be capable to translate from a given representation to another one. So making conceptual connection between representations and developing understanding of underlying concepts are important for students to learn chemistry.

It is well known, that chemistry is a very difficult subject for students especially the pioneer one but if once they build the better and right understanding of basics and fundamentals, they acquire the skill, to handle the subject very well.

Some of the major reasons for this lack of understanding are.

(1) Students are rote learning (memorizing definitions and statements) instead of learning meaningfully (co-relating new knowledge to previously learned).

(2) Students are unable to recognize the key concepts and concept relationships needed in order to understand the material.

(3) The key concepts or concept relationship may not be clearly presented by the instructor.

(4) Lack of connection between the concept areas. Sometimes laboratory activities enhance this impediment since it lacks conceptual structure associated with text book based instruction since text book provide structure that associate specific facts within an appropriate conceptual frame work. The laboratories are complex information rich environments in which the students may become overwhelmed in their efforts to process the information effectively.

No doubt chemistry laboratories have played an important and effective role in chemical education. However, students frequently lack the ability to associate their laboratory procedures experience with the important chemical concepts.

In order to develop well organized conceptual frameworks students must choose to learn meaningfully rather than by rote learning. In this point, concept mapping is the best teaching strategy that promotes meaningful learning in chemistry.

CONCEPT MAPS

Concept Map is a graphical tool that organizes, connect, and synthesize information. Concept maps show concepts in circles or boxes and one can indicate relationships between concepts by connecting lines or linking words. Figure 1 shows an example of a concept map that describes the structure of atom.

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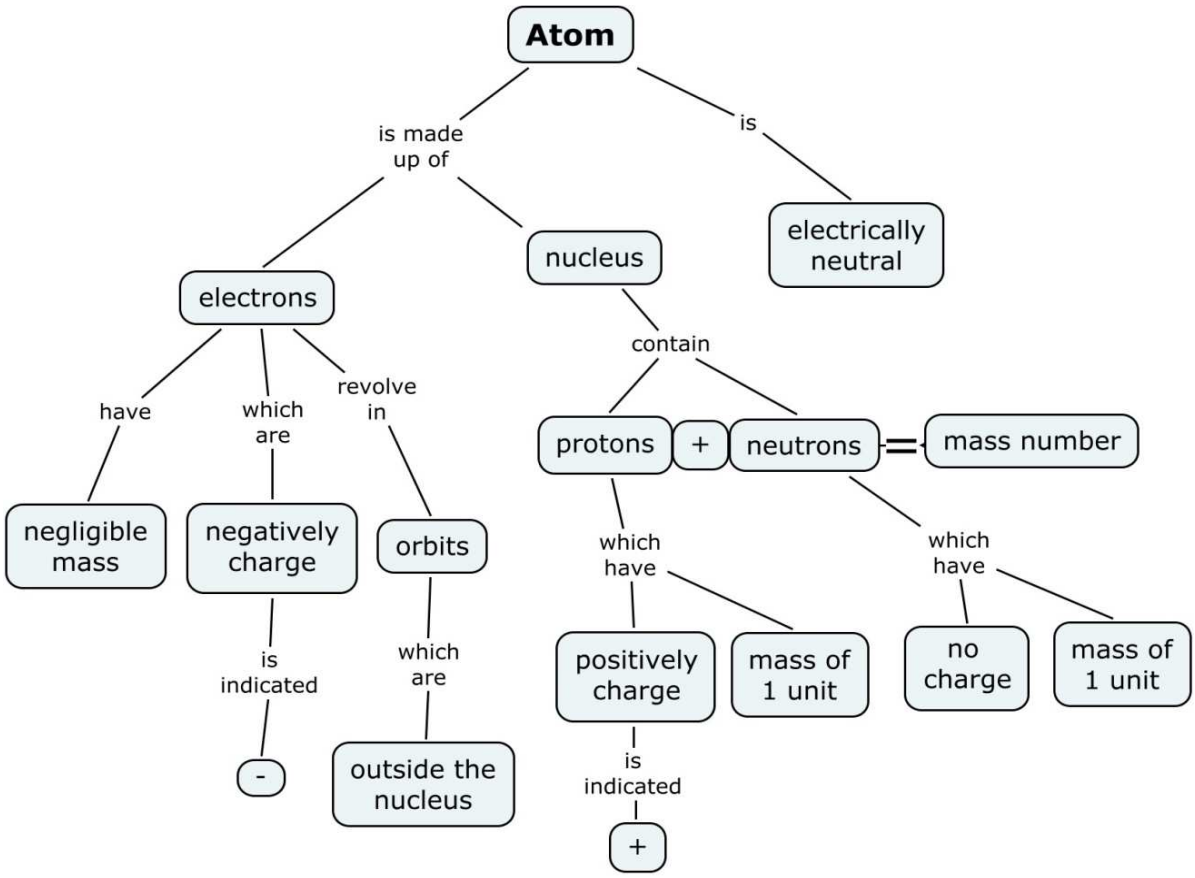


Figure 1: A Concept Map of Structure of Atom

Concept maps were developed on the basis of Asubels' theory of meaningful learning. According to Asubel learning is meaningful when the student comprehends the relationship of what is being learned to other knowledge. When we imbibed the information completely, only then we are able to remember it better. Therefore, meaningful learning is necessary for successful learning.

Comparision Between Meaningful Learning and Rote Learning

As we mentioned above, Ausubel is the founder of the concept of meaningful learning. Ausubel examined the difference between meaningful learning and rote learning in 1981. According to Ausubel:

Rote learning, was the terms encountered for the first time, such as the multiplication table, chemical symbols of the elements, foreign words, the names of the compounds etc. are just taken and stored in mind without any integration or interrilation. All of these items and names are unique and should be kept as they are. Whereas, meaningful learning is the opposite of rote learning where knowledge and concepts which learned is linked to each other.

Rote learning is not object-based. Specially, on the issues where people are unfamiliar with the basic principles or concepts must be memorized before in general. Later, through meaningful learning the same information/subject should be recollected in the memory. So, ultimamately the information grabed through rote learning will become the part of meaningful learning itself. İt will establish a connection to the existing information and become long term memory.

Rote learning is required only for basic concepts to be learn at first impression. Further when the student get taught basic concept, so it will be added to the long term-memory by meaningful learning. İn any case, if student has to learn the whole subject through rote-learning, the subject must be recited by him/her to imbibe

and convert into long term memory. İt is because there is no permanance in the human memory. İt is generally forgot by student very soon.

Meaningful learning provides evidence that any individual is able to internalise a new stimulus of any concept and later it is reflected in the ability of one individual to apply the new knowledge in other situations. On the other hand, in rote learning when new knowledge is arbitrarily incorporated into the cognitive structure. Then that individual could recall the learned concept, but is unable to apply it in new emerged problems or situation.

Why Concept Mapping is Superior to Other Methods?

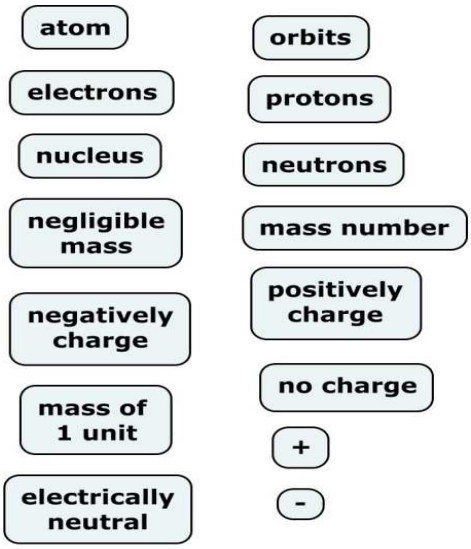
There are several reasons why concept mapping is superior to other methods. These are as follows:

1. The primary benefit of concept mapping is that concept maps can be obtained from the visual presentation of ideas based on the deduction for impairment.
2. It addresses different forms of learning and individual differences between students. It means same subject or same concepts can be drawn differently for the individuals.
3. It can be used easily for the creation and integration of the scope of the assessment.
4. Concept map is student-centered, active teaching method. It can encourage student-teacher interaction when they create a map together by discussing.
5. It is very useful for showing alternative relationships within a system
6. After learning this technique, students get used to establish links between concepts rather than recalling concepts separately.
7. It can be used effectively for revision after a topic. And students are able to rank topics which they learn.
8. It develops the social aspect (confidence level) of students for being able to speak during construction.
9. Provides clarity of the concept.
10. It is a good way to work and prepare for the exams.
11. It is suitable for many different topics, instructional stage and grade level
12. It is easy to use for teaching and learning.

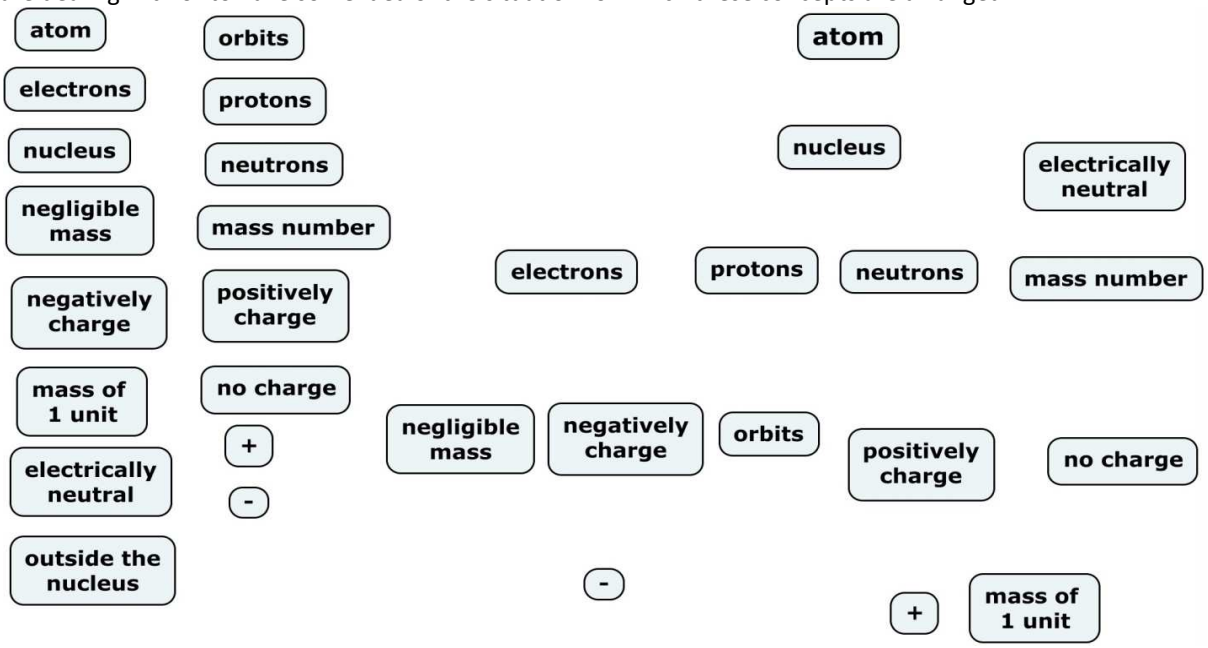
Steps of Constructing a Concept Map

Step 1: To construct a concept map, first, define the context. A good way to define the context for a concept map is to construct a focus question, which means, a question that clearly specifies the problem or issue the concept map should help to resolve. Every concept map responds to a focus question and a good focus question can lead to a much richer concept map. Assume that our focus question is “what is an atom?”

Step 2: Identify the key concepts in a paragraph, laboratory activity or in a chapter; or simply think of the concepts of a subject area and list them. It is better to write the concept labels on separate cards or small pieces of paper, in order that they can be moved around.

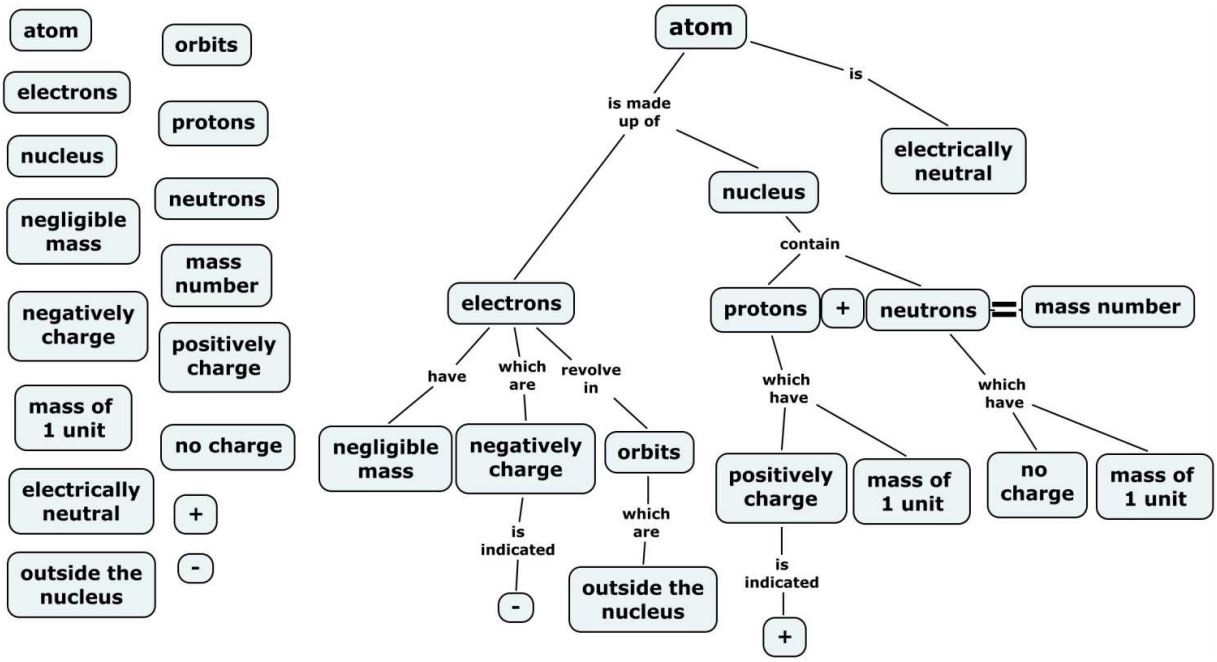


Step3: From the listed concepts, rank the concepts by placing the broadest and the most inclusive idea at the top of the map. It may be difficult to identify the broadest, the most inclusive concept. It should be kept in mind that this rank order may be only approximate. It is helpful to be aware of the context of the concepts we are dealing with or to have some idea of the situation for which these concepts are arranged.



Step 4: Work down the paper and add more specific concepts and do hierarchical arrangement of concepts.

Step 5: Connect the concepts by lines. Label the lines with action or linking words. These links between different domains of knowledge on the concept map can help to illustrate how these domains are related to one another. When you hold together a large number of related ideas, you can see the structure of meaning for a given subject area.



Step 6: Specific examples of concepts can be added below the concept labels. But these are not included in circles or boxes. They are specific events or objects; so they do not represent concepts.

Step 7: A concept map is never finished. After a preliminary map is constructed, it is always necessary to revise this map. Other concepts can be added by student under the guidance of teacher in classroom work. Good maps usually result from several revisions.

Students frequently face problems in adding linking words onto their concept map. This is because they poorly understand the relationship between the concepts which can be specified by linking words. Once students begin to focus in on good linking words, they can see that every concept can be related to every other concept. Some students are facing more difficulty while building concept maps and using it in their experience. This results by primarily from years of rote-mode learning practice in school settings, rather than as a result of brain structure differences. It is not easy to switch students from the former condition to patterns of learning of the later type. While concept maps can help, students also need to be taught something about brain mechanisms and knowledge organization, and this instruction should accompany the use of concept maps.

Benefits and Uses of Concept Maps

There are several benefits and uses of concept mapping for both students and teachers. Concept maps give students an opportunity to:

- ✓ Think about the connections between the chemistry concept being learned at beginning,
- ✓ Organize their thoughts and visualize the relationships between key concepts in a systematic way which can lead students to learn meaningfully
- ✓ Reflect on their understanding.

When an expert creates a concept map, it is typically an elaborate, highly integrated framework of related concepts. Highly sophisticated maps show highly integrated knowledge structures, which are important because they facilitate cognitive activities such as problem solving.

To develop chemistry education, the use of concept maps can be categorized into four.

1) As a method of learning: The use of concept maps has been widely investigated in chemistry by scholars. According to several studies, concept maps help chemistry learning both in classrooms and in laboratories. Concept maps allow learners to think deeply about chemistry by helping them to better understand and organize what they learn, and to store and retrieve information more efficiently. Learners also articulate and challenge their thoughts about chemistry when they discuss their maps with each other.

2) As a Teaching Method: Concept maps are also valuable tools for teachers because they provide information about students' understanding and misconception that student have. Teachers can examine how well a student understands science or chemistry by observing the inclusiveness of their concept map. Concept maps can help us to identify, understand, and organize chemistry concepts we plan to present (teach). At first, students will find concept maps very strange and may even try to memorize them, rather than use them as a thinking tool. It should be noted that it is temporarily, each student has a different capacity to handle this method. Instructors shouldn't give up in such cases.

3) As a Curriculum and Lesson Planning Method: The use of concept maps can also assist the curriculum specialists in developing a curriculum. Concept maps proceed from the more general, more inclusive concepts to the more specific information. It usually leads to encouragement and enhance meaningful learning. Hence it is become obvious that students are required to learn the details of new and unfamiliar disciplines before they have acquired an adequate body of relevant aliments involvement at an appropriate level of inclusiveness.

Concept maps are useful "As a Curriculum and Lesson Planning Method" for teacher and student in following ways:

- ➢ Using concept maps in planning a curriculum on a specific topic helps relating various ideas within a unit format and makes the instruction "conceptually transparent" to students.

- Using concept maps is helpful on revising the existing curriculum in both process and product.
- Concept maps are useful in planning interdisciplinary instructions by developing a conceptually compatible, congruent programme

4) As an Evaluation Method of Students' Understanding: Concept mapping could be a key for developing strong performance assessments that how students are applying concepts and to observe the deep understanding that students are gaining. Student may be provided with a set of unlinked concepts with which they have to construct a map or they may be asked to construct a concept map after the teacher has taught the topic in order to examine their conceptual comprehension. For example, linkages drawn between two unrelated concepts expose students' alternative or negative conceptions in chemistry. Teachers can quickly see the improvements in learning based on knowledge, understanding and problem solving ability, then they modify lesson plans based on received information from students' concept maps.

According to Novak, concept mapping is one of the most powerful evaluation tools, "encouraging students to use meaningful-mode learning patterns."

Scoring of a concept map is based on several criteria such as:

- ✓ Validity of propositions and relationships connecting the concepts.
- ✓ Number of hierarchical levels and correctness of the hierarchical level.
- ✓ Number of cross-links and The validity of cross links
- ✓ Number of links and Extent of latitudinal and longitudinal branching.
- ✓ Number of examples and Appropriateness of general and specific examples.

Kinds of Concept Mapping

According to the University of Illinois, US (2002), there are seven kinds of concept map. The most commonly used five kinds of concept maps in chemistry are mentioned below with examples.

1. A Spider concept map is a kind of map that is used to investigate and enumerate various aspects of a single theme or topic. It helps student to organize their thoughts. Outwardly radiating sub-themes surround the center of the map. It looks a bit like a spider's web, as its name suggests.

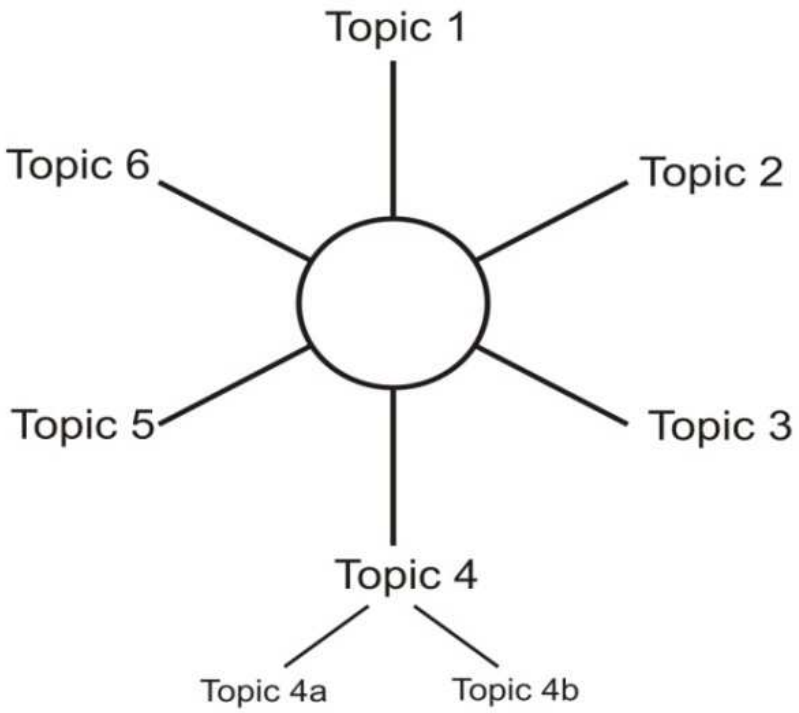


Figure 2a: Spider Concept Map

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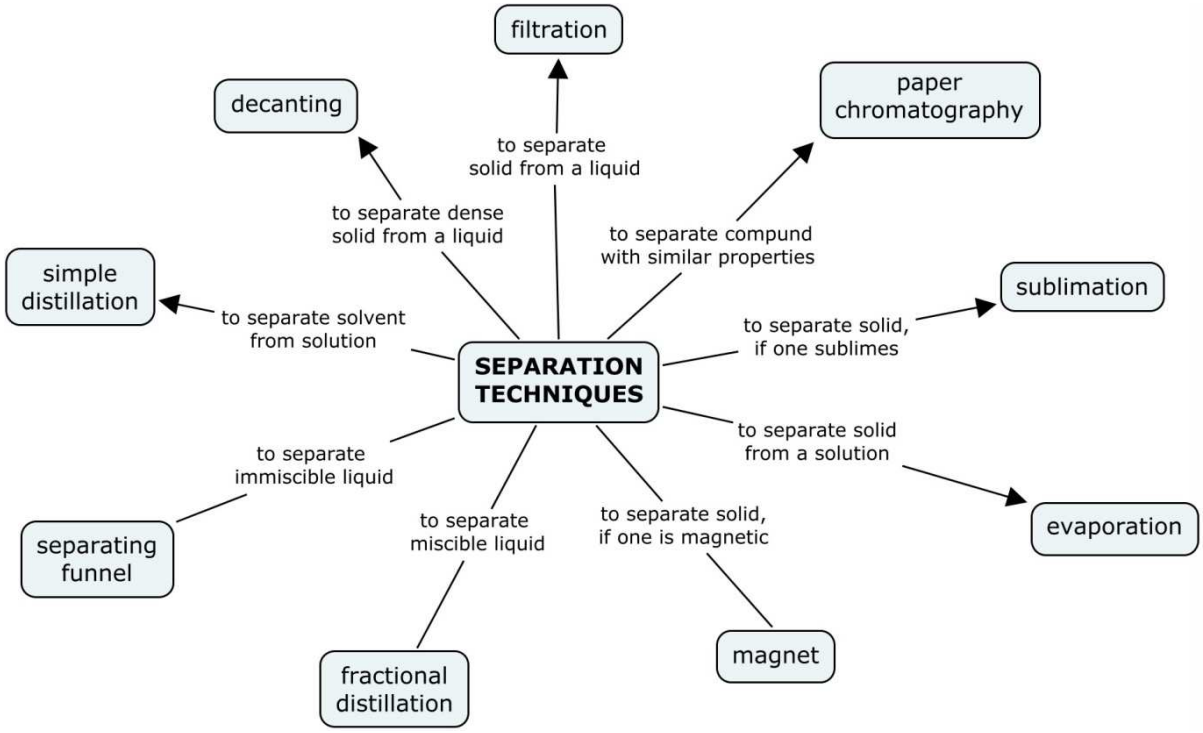

Figure 2b: Separation Techniques

2. The hierarchy concept map, as shown below, presents information in a descending order of importance. Step by step the student noted down the relevant context in the given boxes/circles. It helps to understand and co-relate the subjects. Figure 5 shows an example to the hierarchy concept map.

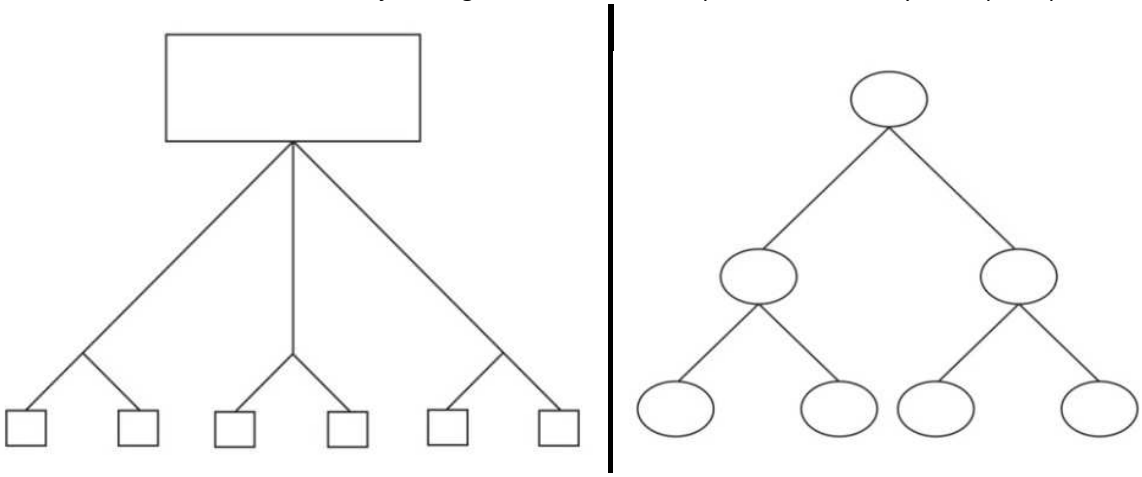

Figure 3a: The hierarchy Concept Map

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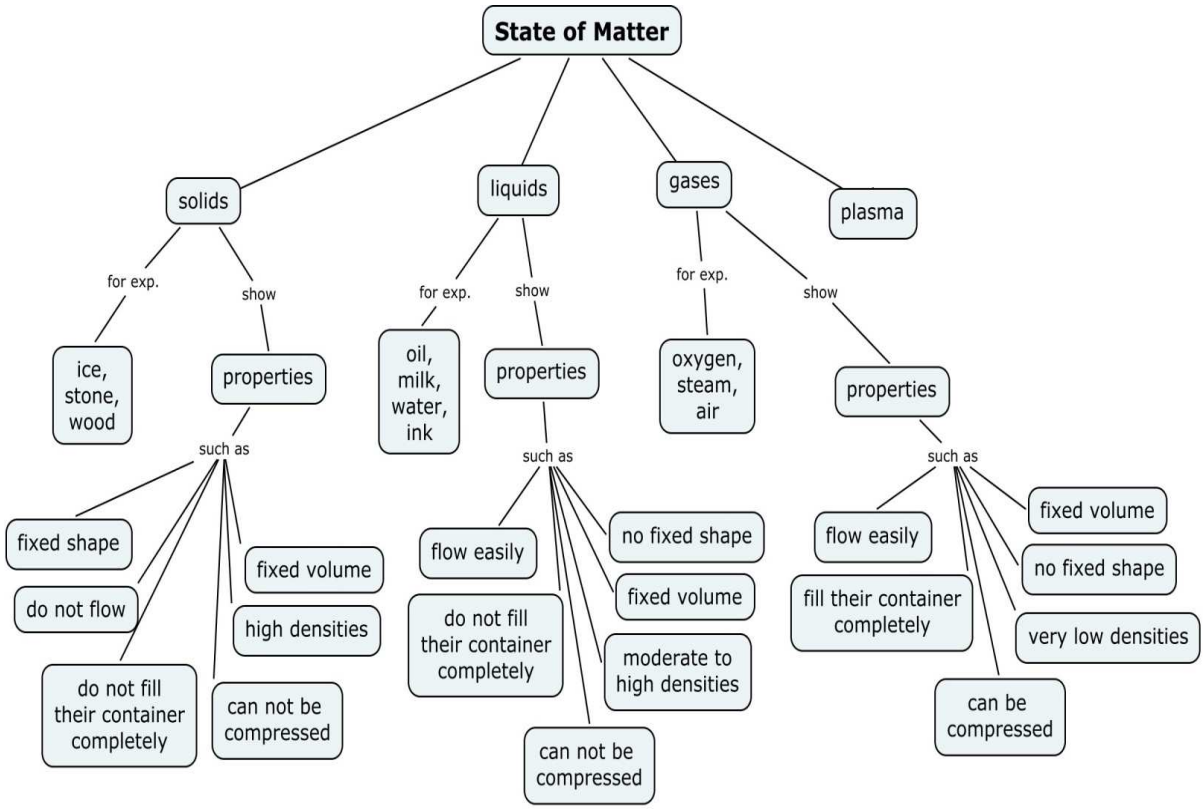

Figure 3b: State of Matter

3. The flowchart concept map organizes information in a linear format.

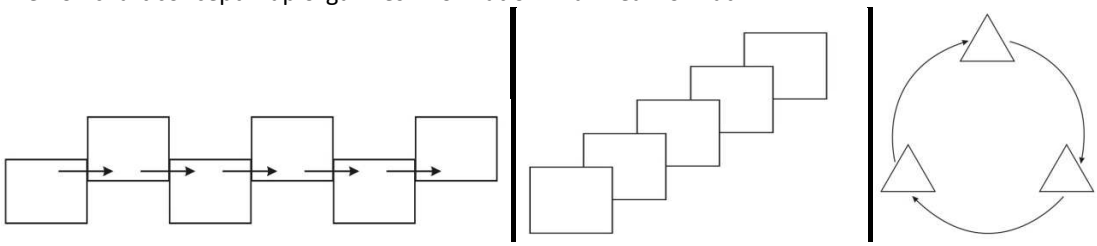

Figure 4a: The flowchart Concept Map

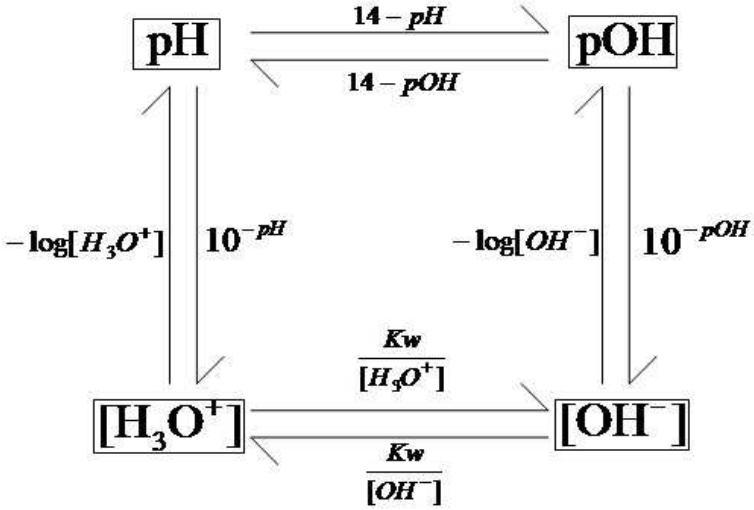

Figure 4b: pH and pOH

4. The systems concept map organizes information in a format. Includes all data on the map and shows many relationships between the data. Uses critical thinking skills along with problem solving skills.

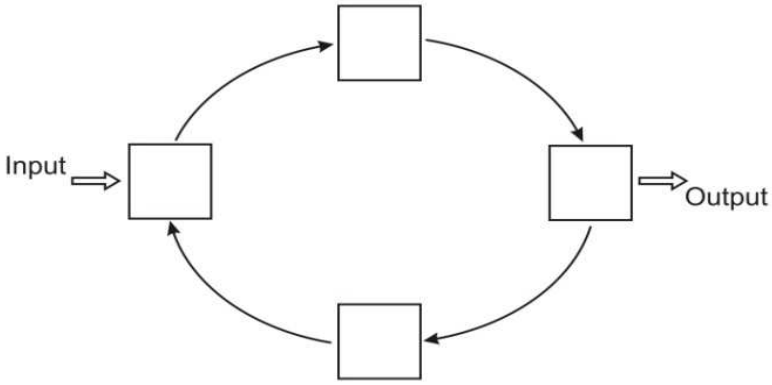

Figure 5a: The systems Concept Map

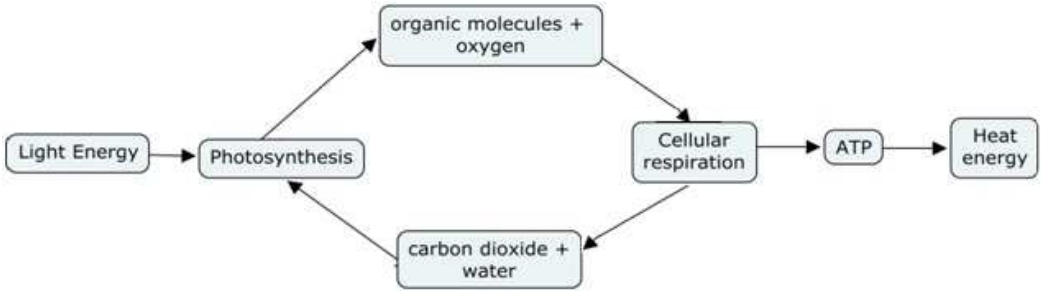

Figure 5b: Photosynthesis and Cellular Respiration

5. Multi dimensional (3D dimensional) concept map describes the flow or state of information or resources which are too complicated for a simple two-dimensional map.

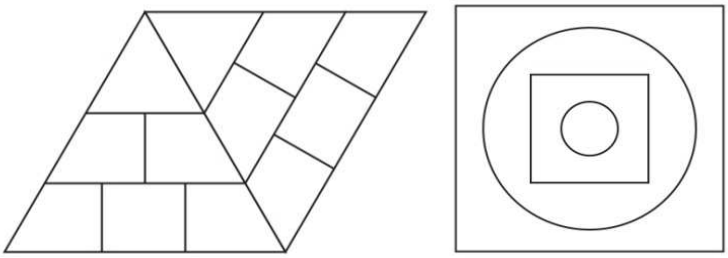

Figure 6a: Multi dimensional (3D dimensional) concept map

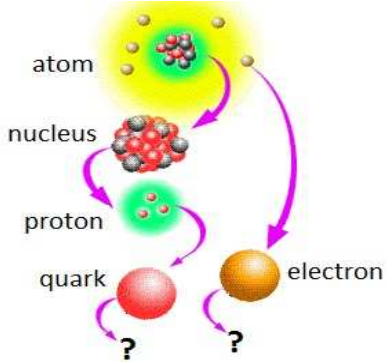

Figure 6b: Atom

Studies Related to Teaching of Chemistry

Chemistry education should be integration of educational knowledge with chemistry knowledge. Chemical education experts provide guidance in the consideration of the choice of appropriate and meaningful chemical content alongside the choice of the most suitable and proven teaching techniques. Some of the related studies mentioned below to highlight the importance of concept mapping in chemistry.

The goal of a study by Nicoll, Francisco & Nakhleh (2001) was to investigate the value of using Concept Mapping in general chemistry and, more particularly, to see if Concept Mapping would produce a more interconnected knowledge base in students, compared to ordinary instruction. The results showed that the Concept Mapping group knew more concepts (49 vs. 38), more linking relationships (69.9 vs. 46.2), more "useful" linking relationships (55 vs. 34.6), and had no more erroneous linking relationships than the non-Concept Mapping students

Sharma (1979), developed a programme in chemistry using Bruner's strategy of conservation focusing. The programme was developed for teaching of concepts to class seventh. The result indicated the programme to be quite effective.

Rosemary Frech Laeary (1993) in her Ph.D thesis considered the effect of concept maps on concept learning and problem solving achievement in high school chemistry. The study investigated chemistry achievement among high school students. A significant relationship between concept learning and numerical problem solving was found in the concept mapping group only, thereby supporting the theory behind the concept mapping strategy.

Keng (1996) conducted a comparative study of note taking, outline and concept mapping learning strategies on National Taipei Teachers College students' understanding at heat and temperature. The result of the analyses permit the following statements in terms of the overall students' performance as measured by the total examination scores, students who used either an outlining or concept mapping learning strategy scored significantly better than students who used only a personalized note-taking strategy.

Pendley et al, (1994), Francisco et al (2002) investigated the effects of concept maps for university student studing chemistry. The result shows that concept maps is beneficial for university students studying chemistry. The reviewed studies clearly revealed that concept mapping enhances students' achievement in chemistry.

CONCLUSION

Since 1990, concept maps have been used in many ways as a research topic in science stream such as, Barenholz and Tamir (1992), Trowbridge and Wandersee (1994), Hegarty-Hazel and Prosser (1991). All of these researches have been proved under the validity, reliability and practicality of concept map as a method of teaching.

The analysis and researches of more than 300 scientific articles about concept mapping shows that in professional education this method is more used in the subject fields which are directly connected to natural or exact sciences. The main idea of using the method is as teaching and learning tool, often combined with assessment tool. In most articles the faculty and students feedback are positive and the authors suggest the method of concept mapping for further use in classroom.

Today instructors and educators are looking for more active and interactive teaching techniques. At this point, concept map will work better in the field of education and will take another step forward to instructional technique. The important thing is our contribution for the usage of effective teaching technique. With each passing day, the effective use and the effective implementation of concept map will be explored and it will make learning easier for learners.

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UNDERACHIEVEMENT IN GIFTED STUDENTS

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ABSTRACT

One of the risks that the gifted students are confronted with is underachievement. This is a surprising fact for those with higher abilities. Underachievers can be found in every grade in school, from kindergarten to graduate school, in both sexes, across ethnic and socioeconomic groups, and in every occupation. What is underachievement? Underachievement is a discrepancy between ability and performance that persists over time. Many researches on the gifted education show the main reasons for the underachievement of the gifted are as follow: emotional problems of the gifted, their peer groups, lack of proper education satisfying their needs, learning disabilities of the gifted, and lack of differentiated and individualized curriculum. This is a literature review on the possible causes of underachievement and ways to eliminate underachievement of gifted children.

Key Words: Underachievement, gifted students, education for gifted students.

INTRODUCTION

Underachievement can occur at any level of intellectual ability. Some underachievers are gifted, with superior intellectual ability and special talents. Others have mild to severe learning problems that are compounded by their lack of effort in the classroom (Rathvon, 1996).

Underachievers' true abilities may be masked by their underachievement. Consistently poor performance can seduce both parents and teachers into believing that the current level of performance is an accurate reflection of children's abilities and skill levels. Parents sometimes thing that their children's problems will be outgrown. Teachers may assume that earlier observed abilities were not true abilities. The following strategies are effective in identifying individual underachievement and its extent (Rimm, Cornale, Manos, Behrend, 1993):

1. Underachievers may exhibit a decline in IQ or achievement test scores over time.
2. A significant difference between IQ scores and achievement test scores may indicate underachievement.
3. Underachievers often exhibit a discrepancy between their performance on individual and group IQ tests. Underachievers, particularly those who are attention dependent, may perform much better in an individual testing situation.
4. When there is a difference between achievement test scores or apparent academic skill levels and school grades, the child is definitely underachieving.
5. If the child is not making appropriate efforts, for example, in schoolwork completion and study, the child is underachieving. Thus if the process of learning is not taking place the child must be underachieving. Underachievers fail to meet the demands of the school situation.
6. Descriptions of the characteristics of underachievers are given in the first chapter of the book. They signal problems that do not go away automatically. Three to six months of these symptoms should alert parents or teachers into taking action.
7. AIM, GAIM and AIM-TO can be used to measure the extent and direction (dominant, dependent, or both) of underachievement. These instruments are measures of the achievement process and may be used for identification or individual evaluation.

Heacox, (1991) listed eight basic characteristics of successful students. If student does not show couple of this charecteristic can be underachievement:

1. Achievers are goal-oriented
2. Achievers are positive thinkers
3. Achievers are confident
4. Achievers are resilient
5. Achievers have self-discipline
6. Achievers have pride
7. Achievers are proficient
8. Achievers are risk takers

Surprisingly, the underachieving student may have some of these characteristic; they are just not evident in school. Many individuals who are not academically successful have outside interest where their talents and abilities shine. There are plenty of so-called "poor student" who blossom when the final bell rings. They are computer whiz kids, accomplished musicians and dancers, active volunteers in their church or community organizations. Just because they don't perform well in school doesn't mean they can't perform at all – a fact that's important to remember and keep remembering.

UNDERACHIEVEMENT IN GIFTED STUDENTS

Seeing underachievement in gifted student is suprizing and it is uncommon result (Neihart, Reis, Robinson ve Moon, 2002). One of the risks that gifted students face is underachievement. According to Richert (1991, as cited in Peters, Glader-Loidl, Supplee, 2000) there is reason to assume that "at least 50% of students identified through IQ have been designated as academic underachiever".

Many gifted students continue to do well on achievement or reasoning tests, but, in their failure to turn in assignments or to attend or participate in class, demonstrate their disengagement from the educational process (Neihart, Reis, Robinson ve Moon, 2002).

The most basic definition of underachievement is a discrepancy between actual achievement and intelligence. In the famous study by Terman, it appeared that gifted individuals did not achieve as well as could be expected on the basis of their intelligence scores (Terman & Oden, 1947). Durr (1964, as cited in Peters, Glader-Loidl, Supplee, 2000) defined underachievement as a difference between IQ-score and actual school achievement, measured in grades or achievement tests. However the measurement of ability or the potential to achieve is problematic according to Raph, Goldberg & Passow (1966, as cited in Peters, Glader-Loidl, Supplee, 2000). For that reason, many attempts have been made to operationalize underachievement in ways that minimize the three problematic measurement issues: ability, performance and the discrepancy between them. Despite the difficulty, according to Tannenbaum (1991, as cited in Peters, Glader-Loidl, Supplee, 2000) one should try to define underachievement because there are few teachers who would deny the existence of students who exhibit this phenomenon.

DETERMINATION OF GIFTED STUDENTS' UNDERACHIEVEMENT

What is known about underachievers? What are they like? The traits or characteristics of underachievers have been reported in many studies, although no one student would be expected to have all or even more than a few traits from this compilation. To further complicate our identification of these children, it has been noted that such children may be aggressive and act out their frustration by seeking attention negatively, or they may withdraw and quietly allow their talents to waste away (Whitmore, 1980, as cited in Clark, 2002).

Underachievement on a task may occur for a variety of reasons (White, Sanbonmatsu, Croyle, Smittipatana, 2002). Although the underachiever is often able to maintain adequate grades during education life because of his intellectual gifts, the signs of the latent underachievement syndrome become increasingly observable over time (Rathvon, 1996):

- Performs well when given one-to-one attention but is restless and unproductive when required to work independently
- Has trouble beginning and completing tasks
- Withdraws attention when parents or teachers give instructions
- Becomes distractible and distracting when not the center of attention
- Has difficulty relating positively to peers (may be revealed in complaints that others are "bothering" the child)
- Has difficulty relating positively to siblings
- Displays frequent temper outbursts or abrupt mood changes
- Makes incessant demands but is never satisfied with anything for very long
- Requires caretaking on some tasks beyond the age when it is appropriate
- Has difficulty organizing school materials and belongings at home

Criteria for identifying gifted underachievers shold include a method for determining observable discrepancies between ability and achievement over a substantial period of time (Mandel&Marcus, 1995, as cited in Neihart, Reis, Robinson and Moon, 2002).

Thorndike (1963, in Tannenbaum, 1991: 65, as cited in Peters, Glader-Loidl, Supplee, 2000) warned of methodological problems in the determination of underachievers. He suggested the following questions as guidelines:

1. Have I an appropriate procedure for determining expected achievement?
a. Have I taken account of statistical regression?
b. Have I used the best team of predictors to establish expected achievement? Have I included aptitude? Initial achievement? Other appropriate factors?
2. Do I have a criterion measure of achievement that has the same meaning for all cases?
a. Have I procedures to check for criterion heterogeneity?
b. Have I a plan to deal with heterogeneity if it is found?
3. Am I aware of the effect of errors of measurement on my study
a. In reducing sensitivity?
b. In producing bias?

CAUSES OF UNDERACHIEVEMENT

Individual Factors

Many researchers listed basic individual factors of underachievement gifted students (Reis and McCoach, 2000):

Personality Characteristics

1. Low self-esteem, low self-concept, low self-efficacy.
2. Alienated or withdrawn; distrustful, or pessimistic.
3. Anxious, impulsive, inattentive, hyperactive, or distractible; may exhibit ADD or ADHD symptoms.
4. Aggressive, hostile, resentful, or touchy.
5. Depressed.
6. Passive-aggressive trait disturbance.
7. More socially than academically oriented. May be extroverted. May be easygoing, considerate, and/or unassuming.
8. Dependent, less resilient than high achievers.
9. Socially immature.

Internal Mediators

1. Fear of failure; gifted underachievers may avoid competition or challenging situations to protect their self image or their ability.
2. Fear of success.

3. Attribute successes or failures to outside forces; exhibit an external locus of control, attribute successes to luck and failures to lack of ability; externalize conflict and problems.
4. Negative attitude toward school.
5. Antisocial or rebellious.
6. Self-critical or perfectionistic; feeling guilty about not living up to the expectations of others.

Differential Thinking Skills/Styles

1. Perform less well on tasks that require detail oriented or convergent thinking skills than their achieving counterparts.
2. Score lower on sequential tasks such as repeating digits, repeating sentences, coding, computation, and spelling.
3. Lack insight and critical ability.

Maladaptive Strategies

1. Lack goal-directed behavior; fail to set realistic goals for themselves.
2. Poor coping skills; develop coping mechanisms that successfully reduce short-term stress, but inhibit long-term success.
3. Possess poor self-regulation strategies; low tolerance for frustration; lack perseverance; lack self-control.
4. Use Defense mechanisms.

Positive Attributes

1. Intense outside interests, commitment to self-selected work.
2. Creative.
3. Demonstrate honesty and integrity in rejecting unchallenging coursework.

Family Factors

Another cause of delays in identifying and treating underachievers is that children's behavior at home and at school can be very different. It is not uncommon for children who are distractible or disruptive at school to behave appropriately (or at least manageably) at home most of time. When the teacher approaches the parents about the child's inattentiveness, lack of effort, or misbehavior, they may dismiss her concern because their perception of the child is so different. These differences in perception may be partly a result of parents' desire to avoid seeing the child's ineffective behaviors. Struggling to cope with their own responsibilities and worries, they have a hard time hearing that something else in their lives is not going right. Differences between parents' and teachers' views of the child may also stem from the different demands of the home and school environments for attention, responsibility, and productivity. Many of today's overburdened parents have precious little time and energy to monitor their child's behavior closely (Rathvon, 1996).

The relationship between children and their parents is of the utmost importance. Butler-Por (1993) described the situation of these children: "rejected children who are not receiving appropriate nurturing, reinforcement, and support are unable to understand what is happening to them and what is expected of them (Lee- Corbin and Evans, 1996, as cited in Peters, Glader-Loidl, Supplee, 2000). Also parent's high expectations from their childen is affect to underachievement. It is diffucult for parents.

At this point, parents may be asking, if monitoring doesn't work and rewards and punishment don't work, what are we supposed to do – nothing? The frustrated and discouraged parents of an underachiever are often so caught up in trying to make the child work that they can see only two treatment alternatives: increasing their control over him or giving up altogether. But there is another choice besides these two extremes. Instead of trying to change the child, parents must do something much more difficult. They must change themselves. That is, parents must change the ways in which they interact and communicate with the underachiever. It is these changes that will enable him to alter his distorted views of himself and the others in his environment and at last change the maladaptive behaviors that derive from those faulty perceptions (Rathvon, 1996).

Environmental Factors

Many researchers listed basic environmental factors of underachievement gifted students (Neihart, Reis, Robinson and Moon, 2002):

- Chronically under challenging, slow-moving classroom experiences (Whitmore, 1986), or moving from a regular classroom to an appropriately challenging one (Krissman, 1989);
- Peer pressure to conform to "regular" norms, to "be like everyone else", which may be particularly intense for students from underrepresented minorities (Diaz, 1998; Ford, 1992, 1996);
- Loneliness, isolation from classmates and the educational enterprise (Mandel& Marcus, 1988, 1995); and
- Family dynamics (family conflict drains energies; parents centering on the underachieving child masks other conflicts; (Green, Fine, & Tollefson, 1988); family has too-low, too-variable, or too-rigid expectations (Rimm, 1995; Rimm& Lowe, 1988).

School Factors

School is the place where most underachievement behavior becomes visible. But as research indicates, it cannot be the only place where underachievement is overcome, since the etiological factors can also be found outside of the classroom. According to Heler (1992, as cited in Peters, Glader-Loidl, Supplee, 2000) the organization of teaching and the personality of the teacher were the two main factors that influenced the achievement of children in the classroom. Butter-Por (1993, as cited in Peters, Glader-Loidl, Supplee, 2000) added to this the attitude that the pupil has towards school; this may be displayed in less care for their schoolwork. Underachieving students tend to have peers with more negative school-attitudes (Ziv, 1977, as cited in Peters, Glader-Loidl, Supplee, 2000)

Inactivity and boredom not only hinders the teacher in observing capacities in students, it also induces underachievement (Freeman, 1993, as cited in Peters, Glader-Loidl, Supplee, 2000).

For factors contributed to underachievement of the students in the sample: emotional issues, social/behavioral issues, curricular issues and learning disabilities/ poor self-regulation concerns (Baum, Renzulli and Hébert, 1995).

THINGS FOR PREVENTING UNDERACHIEVEMENT IN GIFTED STUDENTS

Before we have to prevent gifted students from underachievement we need to determine the main problem. We have to decide first if the student is really underachievement or he/she has some learning and mental problems and than this can help us to solve the problem (Rathvon, 1996):

1. In what subjects is the child making good progress and in what subjects does she need help?
2. How often is homework given and in what subjects?
3. For elementary and middle school students, what level is the child's reading group compared with the rest of the class (remedial, average, or advanced), and what is the reading level of the textbook used in her group? Asking about reading levels is important because the child's report card may not indicate the exact grade level at which she is working in favor of more general terms such as BGL (below glade level), R (remedial), or D (developmental), which can mean anything from six months to two or more years below the child's actual grade placement. For example, the average child in the first month of third grade reads at a 3.1 level (third grade, first month). A third grader in the first month of school who is reading at a 2.2 level (second grade, second month) is nearly a year behind her grade peers.
4. Are the students grouped for mathematics, and if so, what level is the child working on and what is the grade level of her math textbook?
5. Are grades assigned by a uniform standard for all students in the school, by a standard for the class, or on an individual basis? Grading policies vary widely, especially in elementary schools, where teachers may give good grades for effort, regardless of the child's actual achievement level. Thus a child who is working at an average or remedial instructional level may be awarded as if the teacher believes that she is doing

the best she can at that level. If parents don't ask about the child's relative standing in her class and grade, they have no way of knowing that the child's good grades do not reflect satisfactory achievement.

In addition to these general questions, parents should ask following ten questions that are designed specifically to help identify underachievers:

1. Does the child ask for help in ineffective ways, either by asking too often or by not asking for help when she needs it?
2. Does she have trouble completing work, especially when she has to do so on her own?
3. Does she work well when the teacher is near her and shut down when he moves away?
4. Does she give up easily on new or challenging tasks?
5. if she is inattentive, distractible, or impulsive in class, does such behavior increase when she is working independently or is confronted with a difficult tasks?
6. Does she interpret feedback about her academic work or behavior as criticism and have trouble using feedback to improve her performance?
7. Does she have trouble getting started on and completing long-term projects and written assignments?
8. Does she often forget her school materials, such as paper, pencils, and textbooks?
9. Does she often fail to hand in homework?
10. Does she appear capable of doing better work in class?

Yes answers to three or more of these ten questions indicate a mild underachievement problem. Positive responses to five questions indicate a moderate underachievement problem, whereas positive answers to more than five questions indicate that a severe underachievement pattern exists.

Identifying underachievement is also complicated because many conditions can contribute to a child's poor school performance. Asking themselves the following questions should help parents determine whether their child is an underachiever or is experiencing some other type of learning or emotional problem.

- Is the child's underachievement her major problem, or is she having trouble in other important areas of functioning as well?
- Is the child's underachievement general or specific?
- Has the onset of the child's poor academic performance been sudden or gradual?

How can educators help bright students who are underachieving in school? Underachievers are a very heterogeneous group. Like gifted students in general, they exhibit great variability and diversity in their behaviors, interests, and abilities. Because students underachieve for so many different reasons, no one intervention strategy can possibly reverse these behaviors in all underachieving gifted students. We need to individualize programs for underachieving gifted students at least as much as we individualize programs for achieving gifted students. The most successful programs to reverse underachievement behaviors will provide a menu of intervention options for different types of underachieving gifted students. These menus should include curricular modification and differentiation options such as curriculum compacting, counseling components, and self-regulation training activities (Reis, McCoach, 2000).

Educators must also realize that home, peer, and cultural environments may impact students' levels of achievement. As educators, we may or may not be able to change the external factors that contribute to the underachievement of certain gifted students. However, students who have reversed their underachievement behaviors have noted that having a teacher who supported and believed in them helped them overcome their underachievement. Therefore, in the absence of developing formal programs for underachievers, providing underachievers with support, attention, and positive feedback could help these students reverse their underachievement (Reis, McCoach, 2000).

CONCLUSION AND DISCUSSION

The concept of underachievement, though often discussed, is still vaguely defined in the the Professional literature. We need to find the resources which make them underachievement, and have to solve problem and

take cautions working with, family, teacher, and student cooperatively. Before we have to prevent gifted students from underachievement we need to determine the main problem (Batdal Karaduman, 2009). It will be suitable to take some coutions under the lights of researchs up to now.

- It is needed to prepare and apply long lasting guidence program.
- It is needed a long lasting consultancy
- In this case if required it is needed to make individual or group therapy.
- We have to tell both student and his/her family what they need to do for achievement and help them to understand the reality.
- We have to enrich curriculum, courses and course materials for gifted students demands and learning.
- We need to find the resources which make them underachievement, and have to solve problem and take cautions working with student and family cooperatively. By this way gifted students can show high abilities and achievement. (Caglar, 2004). For teachers to abolish underachievement of gifted students:
- Definition (student certifications)
- Academically literature (Researching the related works)
- Communication between students and teachers. (Close communication with students, daily plans, sharing with other groups)
- Interview with teachers to solve the problem, systematical study suitable within the plan (Baum, Renzulli ve Hébert, 1995).

Rathvon (1996) classified some school strategies which need to be applied by school teachers for to solve underachievement problem for gifted students.

- School Strategy 1: Communicating constructively with the underachiever about his teachers.
- School Strategy 2: Communicating with the teacher about the underachiever.
- School Strategy 3: Refueling the underachiever in the classroom.
- School Strategy 4: Increasing constructive teacher-child interactions.
- School Strategy 5: Helping the underachiever listen effectively in class.
- School Strategy 6: Helping the underachiever ask effective questions.
- School Strategy 7: Helping the underachiever remedy skill deficits.
- School Strategy 8: Participating constructively in the underachiever's life at school.

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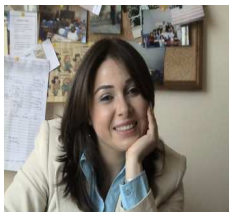

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EXTENDED WORKSHEET DEVELOPED ACCORDING TO 5E MODEL BASED ON CONSTRUCTIVIST LEARNING APPROACH

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ABSTRACT

In order to achieve the targeted objectives desired level of education and modern learning theories for learner-centered methods are recommended. In this context the use of worksheets developed and that student participation is considered to be one of the methods. This research is one of the ethyl alcohol fermentation biology issues and prepare working papers related to the effective education environment was conducted to determine the effect of learning the use of worksheets. Worksheets development process to experts in the field of material in order to developed, four teachers from working in the province of Trabzon. Curriculum subject and the subject determined by considering the behavior of the target sample selected as an achievement test was developed and Bayburt Education Faculty of Bayburt University science education to about 28students that 2 grade. Later, the interviews with teachers, and achievement test results utilizing "ethyl alcohol fermentation" A study on the leaf has been drafted. At the same teachers which prepared the necessary corrections were made in the drafts discussed the applicability of learning environments. The worksheet is applied on the sample above the spring semester of 2012. Pre-prepared students for success by developing a test applied to test parallel and compared with previous results. Student achievement is rising and the course is very relevant to the act have been identified.

Key Words: Contemporary Learning Theories, Worksheets, Ethyl alcohol fermentation, Student Success.

INTRODUCTION

It is known that many events encountered in daily life can be explained with the laws, principles, theories, concepts or facts in science. Basic science concepts have been considered as prerequisite for the understanding and explanation of subsequent science topics related to these concepts and they also take the responsibility for making sense of the associated concepts (Mann and Treagust, 2010). Therefore, it is important that these concepts should be learned correctly and significantly throughout the primary and secondary education for a good science education (Köse, Ayas and Taş, 2003). The concepts and knowledge which is skipped without learning correctly affect the education life of the individuals and also they cause the individuals to encounter greater understanding and cognitive problems in their daily and professional life (Schulte, 2001). Although many concepts in daily life and events are related to science, students have difficulty in associating nearly the entire events related to these concepts with daily life (Töman, 2011). Therefore, they underachieve in many

cases and they construct many concepts wrongly (Çepni, 2005). Biology is one of the courses in science content areas which often includes many misconceptions due to consisting of abstract topics (Konuk and Kılıç, 2002). One of the topics which students underachieve and misconceive in biology is ethanol fermentation (Yip, 2000). Ethanol fermentation topic has an important place in biology curriculum and a connection to daily life.

It is known that students have a lot of misconceptions about fermentation and they are not able to associate the cases and events with daily life (Anderson, Sheldon and Dubay, 1990; Sanders, 1993). During the implementation of constructivist learning approach in classrooms, it is indicated that learning environments where students can actively participate and explore, extend/elaborate, and evaluate any cases or events they encounter by using their own ideas must be prepared (Coştu, Karataş and Ayas, 2003). However, there is a need for materials which will guide the students to learn the core knowledge more actively, pay attention to misconceptions and promote more effective concept learning (Atasoy and Akdeniz, 2006). Therefore, the 5E model of constructivist approach was developed to minimize the misunderstandings of the students and help them associate school knowledge with daily life and it is known that many materials appropriate to this model have been developed and implemented (Şahin and Yıldırım, 1999). Conceptual change texts, concept maps, analogy and such materials are usually used in the studies which especially aim at eliminating misconceptions of the students (Turgut and Gurbuz, 2012). Worksheets are one of the teaching methods which can be done individually or in group work and enable conceptual development (Saka, Akdeniz and Enginar, 2002).

Worksheets are written materials consisting of individual activities which the students will do while learning a topic and also will enable the students to take responsibility for their own learning with the given process steps related to these activities (Michaelis and Garcia, 1996; Kurt, 2002; Çakır, 2004). Worksheets are frequently used by the teachers and the students. There are studies which reveal that worksheets enhance student interest in the lesson and have qualities which affect success positively (Kurt and Akdeniz, 2002; Özmen and Yıldırım, 2005). Moreover, it is suggested that teachers should use student-centred contemporary teaching methods to increase student interest and success in biology consisting of important topics related to daily life such as ethanol fermentation and to raise potential scientists who want to improve themselves in this field (Birbir, 1999).

It is a known fact that special materials are required in secondary education in terms of subjects (Yürük and Çakır, 2004). The aim of this study is to reveal the effect of worksheets developed about ethanol fermentation according to the 5E model of constructivist theory on student success.

PURPOSE

The aim of this study is to prepare effective worksheets about ethanol fermentation, a topic in a unit called "Energy Transformation in Living Organism" in biology course, according to the 5E model of constructivist theory and identify the effects of the use of worksheets on learning in education environment.

METHODOLOGY

The opinions of four teachers who are experts in their field and working in Trabzon were taken with the purpose of developing materials during the development process of worksheets. An achievement test was developed by taking into consideration the goals and objectives of the topic chosen in the curriculum and the test was given to the 28 students in the second year of their studies in Science Teaching Department of Bayburt Education Faculty in Bayburt University chosen as sampling of the study. Then a worksheet draft called "Ethanol Fermentation" was prepared by benefiting from the results of the interviews carried out with the teachers and the achievement test. The applicability of the drafts prepared in learning environments were discussed with the same teachers and the necessary changes were made. The worksheet was implemented on the sampling mentioned above in May, 2012 by one of the researchers of this study. Firstly, students were informed about the worksheets and their use in this process. Then, the students were informed about pre-test and the tests were distributed. After sparing enough time to answer them, the implementation of worksheets began. During the implementation each student was given a worksheet. Finally, the test which was developed

in parallel with the pre-test was given to relevant students and compared with the first results obtained. The flow diagram of this study was given in Figure 1. Moreover, the findings obtained from the analysis were presented in the next part of the study.

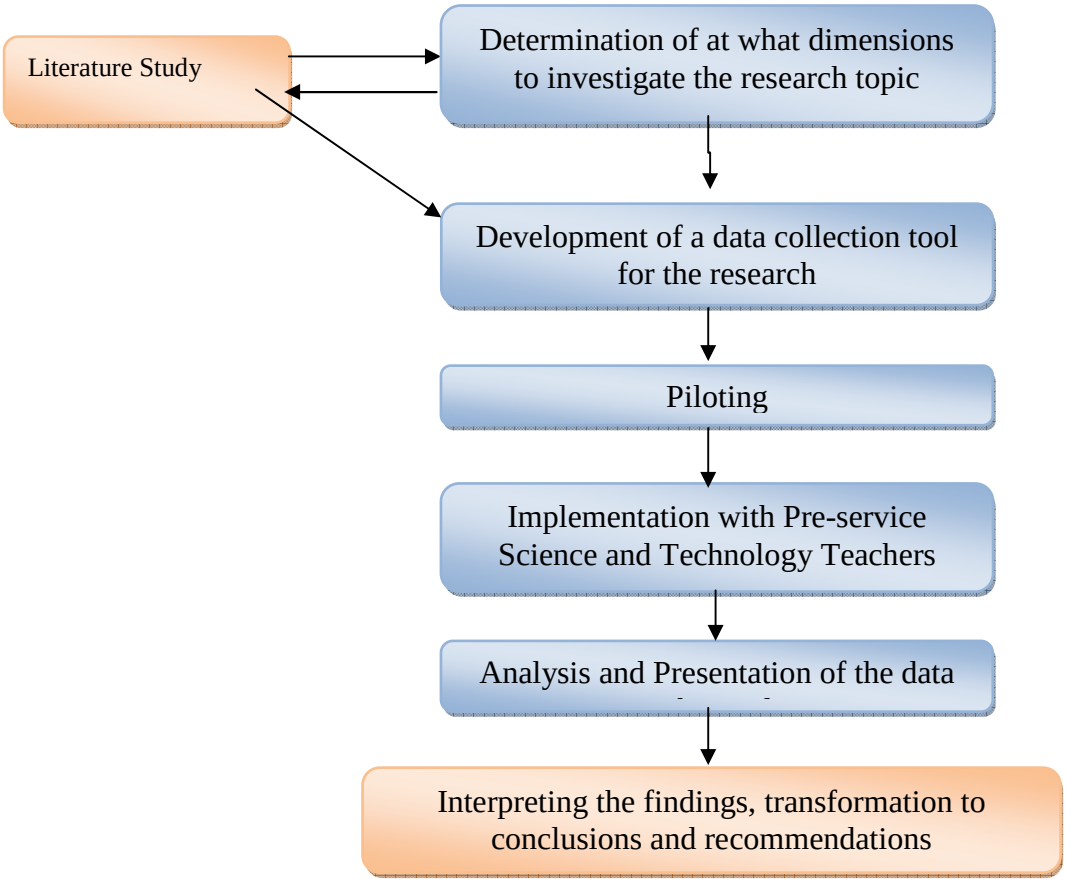

Figure 1: Flow diagram of the study

FINDINGS

The data in this section were grouped under three headings. While teacher opinions were given during the process of materials development in the first part, a worksheet developed according to the 5E model of constructivist theory was given in the second part .In the third part, the results of the parallel tests done by the students were compared.

Teacher Opinions during the Material Development Process

The opinions of the expert teachers in the field and educational and content suitability of the worksheet developed about Ethanol Fermentation according to the 5E model of constructivist approach in order to determine its visual suitability were presented in Table 1.

Table 1: Teacher Remarks

Teacher responses	*Teacher*
The content is up-to-date.	*T3*
The explanations made in the material are adequate.	*T1, T4*
There are no spelling mistakes and incoherency in the material.	*T3*
It has a quality which activates the student..	*T1, T2*
The material is motivating in terms of education.	*T2*

The material is remarkable in terms of education.	*T1, T2, T3, T4*
The material does not have time constraint.	*T2, T3*
The colours used in the material design are compatible.	*T3, T4*
The material is simple .	*T1, T4*
The material is compatible with the gains.	*T1, T2*
The material serves its purpose.	*T2, T3, T4*

While the findings obtained were presented in Table 1, some abbreviations were used. What these abbreviations refer to were given below. For example, T1 represents the first teacher whose opinion was taken, R symbolizes the researcher.
- R: What are your opinions about the material?
- T2: There is a parallelism between the gains determined and the content of the material. I believe that the material will be effective.
- R: Evaluate the material in terms of its visual quality
- T4: When I look at the material, what draws my attention is that there are colours and cartoons which can interest the students. Moreover, the material does not strain the eyes, so it looks positive.
- R: Evaluate the material in terms of its educational suitability.
- T1: In my opinion, the material will be useful for the students because when a student uses the material, s/he can actively participate. Moreover, the material is not bad in terms of education.
Necessary changes were made by benefiting from the teacher opinions and the worksheet was finalised.

Findings Obtained from the Students' Achievement Tests

True/ False questions in the achievement test given to the students before the worksheets and which gains they aim at testing were presented in Table 2. Because the post-test questions prepared were parallel with the pre-test questions, they were not specified again.

Table 2: True –false questions belonging to the achievement test and the gains intended to be developed

TRUE-FALSE QUESTIONS	***BEHAVIORS***
Fermentation is a chemical decay ofmaterial.	*Define fermentation.*
As a result of fermentation water and carbon dioxide is formed.	*It explains the products which enter and leave reaction in ethanol fermentation.*
Oxygen is used in place of carbon dioxide in fermentation.	*It explains the formation of ethanol and carbon dioxide from glucose in anaerobic respiration.*
Mushrooms both aspirate oxygen and ferment in an environment where there is oxygen.	*It explains the conditions required for ethanol fermentation.*
Fermentation is used in the production of many different nutrients. Yoghurt, boza, alcoholic drinks are some of the nutrients produced via fermentation.	*It associates fermentation with daily life.*
Fermentation is an important biochemical process which generates ATP (Adenosine-triphosphate) via glucose..	*A general evaluation is carried out about the gains obtained so far.*

The results of true/ false tests given to the students before and after the worksheets were evaluated and their responses to the questions were presented in Table 3.

Table 3: Students' responses to the questions

Question number	PRE-TEST Number of True Answers	PRE-TEST Number of False Answers	PRE-TEST Number of Blank Answers	POST TEST Number of True Answers	POST TEST Number of False Answers	POST TEST Number of Blank Answers
1	19	8	1	24	4	-
2	3	24	1	18	9	1
3	4	23	1	21	7	-
4	17	10	1	22	5	1
5	25	-	3	28	-	-
6	12	13	3	28	-	-

As shown in Table 3 when the question which aimed at describing fermentation process is examined according to the responses given before using the worksheets, it is understood that more than half of the students answered correctly. It was revealed that after the worksheets were implemented, the number of students who answered correctly increased.

It is regarded that the number of correct responses given by the students before the implementation for the second question which aimed at explaining the products which enter and leave the reaction in ethanol fermentation was rather low. However, it is regarded that the number of correct answers given by the students increased prominently after the activities done in the worksheets. It is determined that as in the second question the number of correct responses given by the students was rather low for the third question which aimed at explaining the formation of ethanol (ethyl alcohol) and carbon dioxide from glucose in anaerobic respiration. It is understood that nearly all of the students gave correct responses after the implementation.

In the fourth question which aimed at explaining the conditions required for ethanol fermentation, more than half of the students gave correct responses. It was revealed that the number of students who gave correct responses clearly increased after the activities carried out.

In the fifth question which aimed at explaining ethanol fermentation which students encounter in daily life, it is determined that nearly all of the questions gave correct responses before the activity. This contributed to the rise of correct answers with the activities based on worksheets. In the last question which aimed at asking the students to make a general evaluation about the gains, it is determined that when compared to before the activity the number of correct responses given by the students increased more than a hundred percent.

RESULTS AND SUGGESTIONS

It is a known fact that worksheets activate the students more and they usually increase success. A study was carried out in this research with the aim of evaluating worksheets while teaching ethanol fermentation which was prepared according to constructivist approach. It is also a known fact that the behaviour which individuals learn by trying them are more effective than the ones which they gain solely by hearing or seeing (Yalın, 2000). When the data obtained as a result of implementation of worksheets on "ethanol fermentation" in the study conducted is analysed, it is found that the rate of student success increased after the worksheets. When the questions are examined at length, higher response rates for the 5th question in the pre-test draw attention. It can be interpreted that the students must have acquired the 5th behaviour presented in Table 4.3.1 before. It is revealed from the responses given to the 2nd question in the pre-test that level of student success was rather low. It can be concluded that what the students know about the explanation of the products that enter and leave the reaction in ethanol fermentation is inadequate. However, when it is considered that this subject is an indispensable part of our daily life, the contribution of worksheets in teaching the subject becomes important. It was determined in the study that cartoons, pictures, attention -grabbing activities which are different from

traditional content and are included in the worksheets developed according to the 5E model and the links with the daily life increased student success. When the data obtained from the study is evaluated in general, it can be stated that the worksheets developed based on constructivist approach enable the students to actively participate during the learning process, help them to learn the subject better, and increase student success noticeably. Therefore, using these materials in many stages of learning can have a positive effect on teaching. Similar findings have been supported in the studies conducted by the different researchers (Nas and Çepni, 2011; Saka, Akdeniz and Enginar, 2002).

As all the students are expected to participate in the lesson and gain scientific process skills with worksheets, it is required that such studies should be carried out with the other subjects of biology. In this regard it must be ensured that worksheets developed according to contemporary learning theories are used by the teachers and the research concerning the problems encountered during this process must be conducted by using different methods.

IJONTE's Note: This study is presented as an oral presentation on 2nd World Conference on Educational and Instructional Studies- WCEIS.

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APPENDIX: A Developed Worksheet

A worksheet developed about Ethanol Fermentation according to the 5E model of constructivist approach was presented below by taking into consideration the necessary stages.

Engage (Introduction)

Before giving the worksheets to the students, the students are grouped. The worksheets are given to the groups and the students' prior opinions are tried to be taken with a short story in the introduction of a worksheet and a question asked about the story. The introduction of the worksheet is given below.

One day Nasreddin Hodja buys yogurt yeas and goes to Akşehir Lake. He starts pouring yogurt in the lake. Somebody sees him and asks him:
- "What are you doing, Hodja?"
- " I'm turning the lake into yogurt" replies Hodja.
The man is surprised:
- Could it be fermented?
- I know that it won't. But what if it does?"

What is the name of the process Nasreddin Hodja tries to do in the lake? Discuss it in your group.

……
……
……

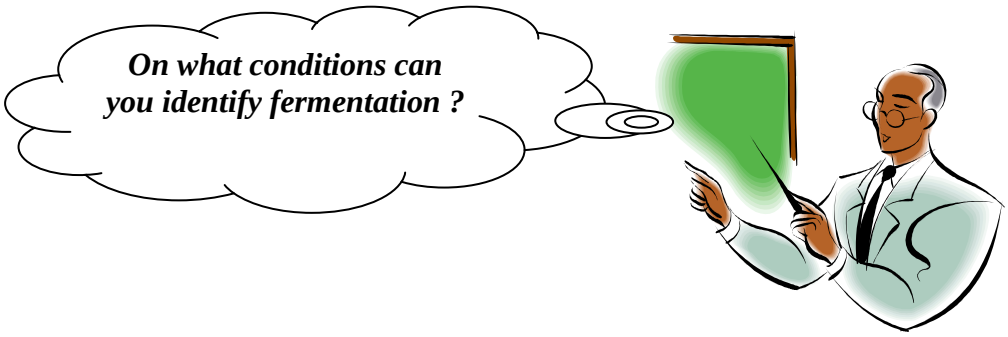
How did this process become? Discuss it in your group.

……
……

Explore

Before the experiment, the students are divided in five groups. In the activity of the worksheet which begins with the sentence "On what conditions can we identify fermentation? the students try to explore how ethanol fermentation occurs and what kind of change is observed in fermentation. While the students follow the instructions in the worksheet and try to achieve a result, the teachers roam between the groups to guide the discussions and the experiment process. The students are asked to record their observations during the experiment and these observations are discussed between the groups after the experiment. The section belonging to explore in the worksheet is given below.

Do the activities given below in order to answer the questions.



Activity number 1: Fermentation
Purpose of the activity: Analyze fermentation
Required materials: A fizzy drink bottle, sugared water, a tea spoon of fresh yeast (Brewer's yeast), a baloon.
How to make the experiment:

1. Put the sugared water in a fizzy drink bottle and add a tea spoon of fresh yeast.
2. A balloon is placed around the mouth of a bottle and it is tied. It waits at a room temperature.

WHAT DID YOU OBSERVE?

Discuss in your group and explain whether there is a change with the baloon or not by giving your reasons.
……
……

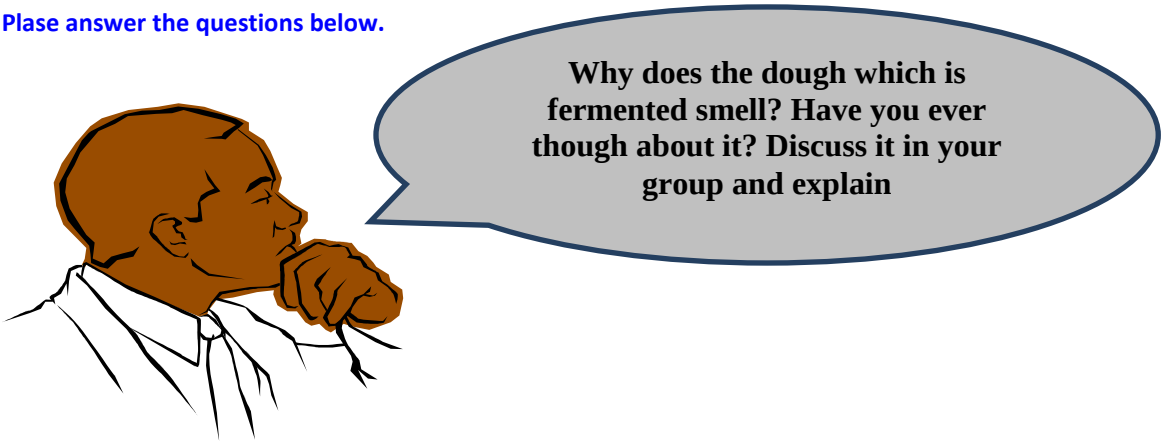
Explain

During explanation the experiment results are compared and it is explained that ethanol and carbon dioxide is formed as a result of ethanol fermentation by coming to a conclusion. Moreover, the teacher explains the required conditions for ethanol fermentation and reminds the students the stages in fermentation process

Extend/ Elaborate

In extend/elaborate stage, the students are asked questions about different fermentation conditions apart from fermentation which occurs in experiments so that they can explain these conditions. Extend / Elaborate stage of the worksheet was given below.

Plase answer the questions below.



……
……

What happens when there is oxygen during the fermentation of dough? Discuss it in your group and explain.
……
……

What are the other circumstances where we can observe fermentation in daily life? Discuss it in your group and explain
……
……

Evaluate

The study is evaluated with the open-ended questions in the worksheet. The questions belonging to evaluate section were given below.

Answer the following evaluation questions below.

1. What is fermentation ?

……
……

2. What are the products that enter and leave the ethanol fermentation?

……
……

On what conditions does fermentation occur and which living organisms perform fermentation?

……
……

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A STUDY ON THE PERCEPTION OF IRANIAN CANDIDATES TOWARDS THE GENERAL IELTS TEST

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ABSTRACT

IELTS, International English Language Testing System, is nowadays widely used as a certificating device and is claimed to be a reliable and strongly accountable measure of language proficiency by the organizations and educational centers that utilize it. Irrespective of the importance IELTS has gained in the present world, the beliefs and perceptions of those who take the test have rarely been explored. Therefore, the present study aimed at investigating the Iranian IELTS candidates' perceptions towards the IELTS test. Accordingly, a standardized perception questionnaire was administered to 40 homogeneous participants before and after taking the IELTS test. The collected data were then analyzed through a paired samples t-test to find out whether there was any significant difference between the candidates' perception before and after taking the test. The findings indicated that the participants had significantly higher perceptions after the test. Implications can also be drawn for all the stakeholders including candidates intending to sit the test, institutes running IELTS preparation programs, teachers wishing to teach such programs, and finally, IELTS test administrators.

Key Words: IELTS, Perception, Belief, Attitude, Higher education.

INTRODUCTION

To get an insight into the minds of language learners there is no more certain way than to study their beliefs. As in the area of language teaching, there has recently been an increasing emphasis on the styles and variables of learners. Additionally, learners' beliefs and perception are to join the growing body of research in the field. When learners step in a language classroom, they bring all their personality features and language styles to the learning environment. Almost all of the scholars admit that how successful people are in learning a language is exactly and directly influenced by what they think and how they evaluate the target language, the target language speakers, culture, and of course, the learning setting. Though merely investigating the attitudes, beliefs and perceptions of learners may not guarantee any success, they, in turn, can be the guidelines for the next steps taken, as learners play the main role in any learning environment.

The concept of learners' attitude and perception has been the focus of attention in explanation and investigation of human behavior offered by social psychologists. Attitude is usually defined as a disposition or tendency to respond positively or negatively towards a certain thing such as an idea, object, person, or situation. Students have positive or negative attitudes towards the language they want to learn or the people who speak it. Having positive attitude towards tests is also claimed to be one of the reasons which make students perform better on the tests (Malallaha, 2000). A large number of studies have also investigated the relationships between attitude and proficiency in the language (Bachman, 1990; Malallaha, 2000; Coleman, Strafield, & Hagan, 2003). Additionally, Gardner (1985) believes that attitude and other affective variables are as important as aptitude for language achievement.

Perception is the process by which organisms interpret and organize sensation to produce a meaningful experience of the world. Sensation usually refers to the immediate, relatively unprocessed result of stimulation of sensory receptors in the eyes, ears, nose, tongue, or skin. Perception, on the other hand, better describes one's ultimate experience of the world and typically involves further processing of sensory input. In practice,

sensation and perception are virtually impossible to separate, because they are part of one continuous process. The perceptual process allows us to experience the world around us.

IELTS

IELTS, which is now jointly administered by the University of Cambridge Local Examinations Syndicate (UCLES), the British Council, and the IDP Education Australia, is required for anyone who wishes to pursue their education in an English speaking country or anyone who desires to migrate to or work in such countries.

IELTS is taken by more than 25,000 candidates each year. The test is accepted for undergraduate or postgraduate entry by Australian and British universities, colleges, and professional and technical institutions. IELTS has been developed on the basis of new approaches to language teaching and testing. It may be claimed that IELTS is more content based, task oriented and authentic than TOEFL. The tasks in IELTS are closer to real life situations. IELTS continues to help change people's lives as they look for opportunities around the world whether that is in education, for migration, or employment. This is the reason why IELTS is a high stakes test and also why it is so critical that the test continues to be a robust and rigorous measure of English language proficiency.

IELTS, initially called ELTS (English Language Testing Service), is used to judge potential higher education (HE) students' language proficiency, the job which was previously carried out by EPTB (English Proficiency Test Battery) since the mid 1960s. It was in the late 1980s that some practical administrative issues, especially around the scope of the test, were questioned. Following a validation study (Criper & Davies, 1988; Hughes, Porter & Weir, 1988; Cited in Hyatt & Brooks, 2007), the ELTS Revision Project was set up to design a new test. Hyatt and Brooks document that to highlight the international aspect of the test the International Development Program of Australian Universities and Colleges (IDP), now known as IELTS Australia, joined British Council and UCLES to form an international partnership. The new test was simplified and shortened and also changed its name to reflect the new internationalization, becoming known as the International English Language Testing System (IELTS) and went into operation in the 1989. During the period between 1989–1994, the system was monitored through a host of research evaluations, and further modifications were introduced in the 1995, including the replacement of three subject-specific subtests with one Academic Reading and one Academic Writing modules, the removal of the thematic link between the Reading and Writing modules, the convergence of scoring on all modules to nine bands, the introduction of checks on marking consistency, an appeal procedure, new validation procedures, security procedures, and computerized administration procedures.

The change from three subject-specific subtests was based on feedback from IELTS administrators and examiners (Charge & Taylor, 1997) and from a significant body of research into ESP and second language conducted by Clapham (1993, 1995, 1996). Clapham concluded that a single test did not discriminate for or against candidates regardless of their disciplinary areas and that a single test would not hinder accessibility. More specific details of these innovations and the rationale behind them can be found in Charge and Taylor (1997). More recently, continued evaluation of the system led to the introduction of a new Speaking test in the years 2001 and 2005, the introduction of new assessment criteria for the Writing test and the introduction of computer-based testing. A recent and comprehensive overview of the history of the assessment of academic English can be found in Davies (2008). Along with such global popularity, a large number of studies have been conducted worldwide to investigate issues related to IELTS. Merrylees (2003) conducted a study to investigate two IELTS user groups: candidates who sit the test for immigration purposes and candidates who sit the test for secondary education purposes. He believed that with the increase in candidature of both user groups, there is an increasing need to investigate and analyze how each group is performing on the test in terms of nationality, age, gender and other factors.

Compared with such studies, however, it seems that fewer studies have been carried out to examine and identify the IELTS candidates' attitudes and views towards this test. The attitudes of IELTS stakeholders were once investigated in a study conducted by Coleman et al. (2003). In their study, respondents perceived the

IELTS test to have high validity in this study. Another study carried out by McDowell and Merrylees (1998) investigated the receiving institutions' attitudes to IELTS with positive results reported.

While there is a significant and growing literature on English language testing (Cheng, Watanabe, & Curtis, 2004) and on the credibility, reliability, and validity of IELTS in particular (Green, 2007), other more social and qualitative impacts also deserve consideration (Brown & Taylor, 2006; Barkhuizen & Cooper, 2004; Read & Hayes, 2003; Coleman et al., 2003). In light of this, a body of recent research has focused on impact studies on IELTS, including the consideration of stakeholder attitudes. A key overview of methodological and theoretical issues of such research is presented in Hawkey (2006) which focuses on one of its two case studies on IELTS impact testing. The stakeholders considered in this research include test-takers, teachers, textbook writers, testers and institutions. However, unlike the present study, there was no specific emphasis on admissions gatekeepers, a niche the present research aims to fill, while acknowledging that Hawkey (2006) provides an invaluable guide at both theoretical and practical levels to those engaging in impact studies. Smith and Haslett (2007) investigated the attitudes of HE decision-makers in New Zealand towards the English language tests used for admission purposes. They argued that the changing context and growing diversity were leading to the consideration of more flexible pathways to entry.

Coleman et al. (2003) contrasted stakeholder attitudes to IELTS in Australia, the people of the Republic of China and the United Kingdom. The researchers argued that students were, on the whole, more knowledgeable than staff on a wide range of themes related to the IELTS test. Students tended to have a positive view of IELTS as a predictive indicator of the future investigating stakeholders' perceptions of IELTS as an entry requirement for higher education in the UK success whereas staff were less satisfied with the predictive value of the test and wished to see minimum standards for entry set at a higher level.

The current study therefore sought to investigate if such perspectives were still reflected by institutional gatekeepers some four years after the publication of this key piece of research, though the nature of student perceptions was beyond the remit of this study. Read and Hayes (2003) also investigated the impact of IELTS on the preparation of international students for tertiary study in New Zealand. They found that even students who gained the minimum band score for tertiary admission were likely to struggle to meet the demands of English-medium study in a New Zealand university or polytechnic, though teachers generally recognized that IELTS was the most suitable test available for the purpose of admission to HE programs. The current study sought to ascertain whether the views of gatekeepers at HE institutions in the UK converged or diverged from those positions. Additionally, Kerstjens and Nery's (2000) research sought to determine the relationship between the IELTS test and students' subsequent academic performance. They reported that for students at the vocational level, IELTS was not found to be a significant predictor of academic performance, although staff and students were generally positive about students' capability to cope with the language demands of their first semester of study.

The correlation between English language proficiency and academic performance is an issue that has been researched frequently and an overview of this research theme can be found in Davies (2008). The present study therefore, examined this relationship and sought the perspectives of HE respondents as to the difficulties students encounter and whether or not IELTS fully meets their needs in terms of addressing language difficulties. Mok, Parr, Lee and Wylie (1998) compared IELTS with another examination used for purposes similar to the general IELTS paper. McDowell and Merrylees (1998) investigated the range of tests available in Australian tertiary education to establish to what extent IELTS was serving the needs of the receiving institutions. Similarly, Hill, Storch and Lynch (2000) explored the usefulness of IELTS and TOEFL as predictors of readiness for the Australian academic context. The current research project was intended to uncover whether IELTS was the dominant language testing system in UK and if stakeholders view it as meeting their needs, as well as those of their students.

Feast (2002) investigated the relationship between IELTS scores as a measure of language proficiency and performance at university. Her research revealed a significant and positive, but weak, relationship between English language proficiency and academic performance. Edwards, Ran, and Li (2007) also highlighted the

concerns of university teachers and administrators around the limitations of tests of English used in relation to university admissions, and expressed concerns around the degree to which acceptance of students with levels well below native-speaker competence represented a lowering of academic standards, or a pragmatic response to an increasingly globalised HE market. In the light of this changing context, the present study sought to elicit participants' perceptions regarding their performance on IELTS.

Perception and Belief

The recognition of the role of learners' epistemological beliefs across various disciplines contributed to a growing body of evidence which suggests that they play a central role in learning experience and achievements (Schommer, 1990) and have a deep influence on learning behavior and learning outcomes (Weinert & Kluwe, 1987). Interdisciplinary research shows how one's belief systems, social cognitions and metacognitions are a great force in intellectual performance (Schoenfeld, 1983), and that learners may be directly influenced by their perception of success in learning and levels of expectancy with realistically high expectations helping to build confidence, and low (or unrealistically high) expectations leading to de-motivation and disappointment (Puchta, 1999).

The study of beliefs in both second and foreign language acquisition is important, as it has been noted that successful learners develop insights into beliefs about language learning processes, their own abilities, and the use of effective learning strategies in the classroom and the context beyond that (Oxford, 2003). It has been argued that while some beliefs may have a facilitative effect on learning, others can hinder it. Supportive and positive beliefs help to overcome problems and thus sustain motivation, while negative or unrealistic beliefs can lead to decreased motivation, frustration, and even anxiety (Puchta, 1999).

Therefore, it can be concluded that an awareness of learners' beliefs is central to EFL classroom pedagogy. In an attempt to better understand the nature and role of beliefs in EFL context, various studies have taken up different approaches to their investigations. These can be more generally categorized as 'cognitive' and 'sociocultural' approaches. The main goal of these research efforts has been to identify psychological characteristics of individuals, such as their valuing and expectation of success and their orientation to their goals, and to try to quantify the relationship of these identified qualities to academic achievement.

For example, Pintrich (2003) makes clear that as students move to higher levels of education, their motivation in study drops. Wigfield, Eccles, and Rodriguez (1998) attribute these changes in motivation to the perceptions of the students about ability and intelligence. Students, in developmental stages, conceive that ability and intelligence are immutable. Therefore, they become less intrinsically motivated and they have lower expectation of success. There is also increasing consensus that these changes result from the interaction between developmental processes and institutional contexts, for example, the way that larger classes and fewer individual task-based lessons in schools conflict with young adolescents' felt need for more control over their lives, with negative consequences for their low academic motivation (Anderman & Maehr, 1994). Lamb (2004) carried out a study on the motivation of Indonesian adolescents toward learning English. His study aimed to track changes in students' reported motivation and learning activity and to identify internal and external factors which might be associated with the changes. It was found that the learners' initially very positive attitudes toward the language and expectations of success were maintained over the period, whereas their attitudes toward the experience of formal learning tended to deteriorate. He attributed the findings of the study to the cognitive and developmental perceptions of the students towards the concept of formal learning.

Yang (2002) carried out a study to investigate the relationship between college EFL students' beliefs about language learning and their use of learning strategies. The study found that language learners' self-efficacy beliefs about learning English were strongly related to their use of all types of learning strategies, especially functional practice strategies. Also, learners' beliefs about the value and nature of learning spoken English were closely linked to their use of formal oral-practice strategies. The results of this study suggested cyclical relationships between learners' beliefs and strategy use and their final success in learning English.

Horwitz (1988) conducted a study on the beliefs of a number of first semester foreign language learners in the University of Texas. Her learners appeared to somewhat underestimate the difficulty of language learning; 43 percent of them said that if you spent one hour a day learning a foreign language, you would become fluent within two years, and a further 35 percent that it would take three to five years. 50 percent believed in the existence of foreign language aptitude, and 35 percent said that they had that aptitude. Horwitz (1988) proposed that these gaps between teacher and learner beliefs probably result in "negative [language-learning] outcomes" (p. 292) for learners. She also suggested that a gap between teacher and learner beliefs can lead to reduced learner confidence in and satisfaction with the class and to unwillingness to participate in 'communicative' activities (p. 290). In her final conclusions, she asserted that "Teachers will likely encounter ... many unanticipated beliefs, some enabling and some truly detrimental to successful language learning ... foreign language teachers can ill afford to ignore those beliefs if they expect their students to be open to particular teaching methods and to receive the maximum benefit from them" (p . 293) .

Mantle-Bromley (1995) investigated the beliefs of 208 seventh grade middle school students taking first-year French and Spanish in Kansas. Mantle-Bromley's results indicated that some of her students' beliefs about language learning differed from commonly held teacher beliefs. In her study, learners believed in the existence of foreign language aptitude. She stressed that teachers need to have a clear understanding of foreign language student beliefs, because learners with realistic and informed beliefs are more likely to behave productively in class, work harder outside class, and (crucially) persist longer with language study. Finally, she proposed that when student beliefs and performance do not match, they become frustrated and disappointed with the class and with themselves. Additionally, Bernat and Lioyd (2007) conducted a study to investigate the relationship between beliefs about language learning and gender. They explored 155 female and 107 male EFL students' beliefs through The Belief About Language Learning Inventory (BALLI). The study revealed that females and males hold generally similar beliefs about language learning; the result which, as they claim, deviates from those reported in a previous study conducted in the U.S.

With regard to the aforementioned studies and the significance of affective factors such as perception, attitude, belief etc., influencing language learners' performance, IELTS Joint-funded research program (2006, 2007) states that one of the areas of interest for IELTS external research purposes is the investigation of attitudes and perception of IELTS test takers. Therefore, the present study sought to determine whether there is any relationship between the candidates' perception before and after taking IELTS through the following research question:

RQ. Is there any significant difference between the candidates' perception before and after taking the IELTS test?

METHOD

Participants

The participants of the study were 40 IELTS candidates (both male and female) taking part in the IELTS preparation courses in the TEFL research center, Tehran, Iran. They were selected based on the results of the homogeneity test and their performance on IELTS test. Sixty participants who were EFL learners received the test and according to the results, 40 learners whose scores fell 1 SD below and above the mean score met the requirements and were randomly selected for the purpose of the study. These participants were of various disciplines and they enjoyed different educational backgrounds.

Instruments

The present study enjoyed three instruments in the process of data collection as follows:

1. A language proficiency test of PET (2007), developed by Cambridge University Press, to homogenize the prospective candidates for the study.
2. A standard IELTS (general module, 2003) as the main test on which the candidates perform.

3. A questionnaire of perception developed and validated by Ransom, Larcombe, and Baik (2005) based on a survey of international ESL students' perceptions and expectations of English language learning needs and support at the University of Melbourne (see Appendix I).

Data Analysis

With regard to the analysis of the collected data, three levels of analysis were carried out including:
1. Descriptive statistics of the homogeneity test of PET
2. Normality tests for IELTS
3. A paired samples t-test comparing the IELTS candidates' perceptions before and after taking the test

Procedures

A group of 60 IELTS candidates taking part in the IELTS preparation courses in the TEFL research center, Tehran, Iran after completing their due course, were given a version of standardized IELTS which consisted of 25 listening comprehension items, 35 reading comprehension items, and 2 types of writing. The pilot study was also conducted before the experiment for the purpose of standardization and making sure of their homogeneity.

The participants who were EFL learners received the IELTS test and according to the results of the test 40 learners whose scores fell 1 SD below and above the mean were selected randomly for the purpose of the study. Prior to receiving the standard IELTS general module test, the questionnaires asking about the candidates' perceptions were distributed. After the test the candidates received the same questionnaires. The learners' responses to the items in the questionnaires both before and after the test were compared to see if there was any significant difference between the two situations.

RESULTS AND DISCUSSION

Descriptive Statistics

In order to select a group of homogenous participants in terms of their general language proficiency, the PET test was administered to 60 students. 40 cases whose scores were 1 SD above and below the mean were selected to participate in the study. That is to say, those whose scores fall within the ranges of 35.74 (mean - 1SD) and 46.42 (mean + 1SD) were randomly selected to participate in this study. The following table represents the results of descriptive statistics of the homogeneity test of PET.

Table 1: Descriptive statistics of PET

	N	Mean	Std. Deviation
PET	60	41.0833	5.34026

Normality Tests

In order to analyze any sets of data through parametric tests, four assumptions of interval data, independence of subjects, normality, and homogeneity of variances should be met. The present data were measured on an interval scale and the subjects were independent, i.e., none of them participated in more than one group.
The assumption of normality was empirically tested through the ratios of skewness and kurtosis over their respective standard errors. As displayed in Table 2, these ratios were all within the ranges of +/- 1.96, thus the present data did not show any marked deviations from normal distribution.

Table 2: Normality tests

	N	Skewness			Kurtosis		
	Statistic	Statistic	Std. Error	Normality	Statistic	Std. Error	Normality
PET	40	0.04	0.37	0.10	-0.78	0.73	-1.06
IELTS	40	-0.16	0.37	-0.43	-1.02	0.73	-1.38
Pretest of perception	40	-0.25	0.37	-0.67	0.33	0.73	0.45
Posttest of perception	40	0.34	0.37	0.90	-0.13	0.73	-0.17

Paired Samples T-test

In order to answer the following question, a paired samples t-test was run to probe any significant relationship between the candidates' perception before and after taking the IELTS test.

RQ. Is there any significant difference between the candidates' perception before and after taking the IELTS test?

As displayed in Table 3, the mean score of the students on the posttest of perception (M = 41.60) shows improvement over the mean score on the pretest (M = 37.72).

Table 3: Descriptive statistics pretest and posttest of IELTS perception

Perception	Mean	N	Std. Deviation	Std. Error Mean
Posttest of perception	41.6000	40	2.81753	.44549
Pretest of perception	37.7250	40	2.96983	.46957

The results of the paired samples t-test indicated that there was a significant and meaningful difference between the mean scores of the candidates on the pretest and posttest of perception (t (39 = 9.63, P = .000 < .05; R = .83, it does represent a large effect size). Based on these results it was concluded that the candidates' perception significantly improved after taking the IELTS test.

Table 4: Paired samples t-test for pretest and posttest of perception

Paired Differences					t	df	Sig. (2-tailed)
Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
			Lower	Upper			
3.87	2.54	.40	3.06	4.68	9.63	39	.000

The following figure shows the mean scores of the candidates' pretest and posttest perceptions.

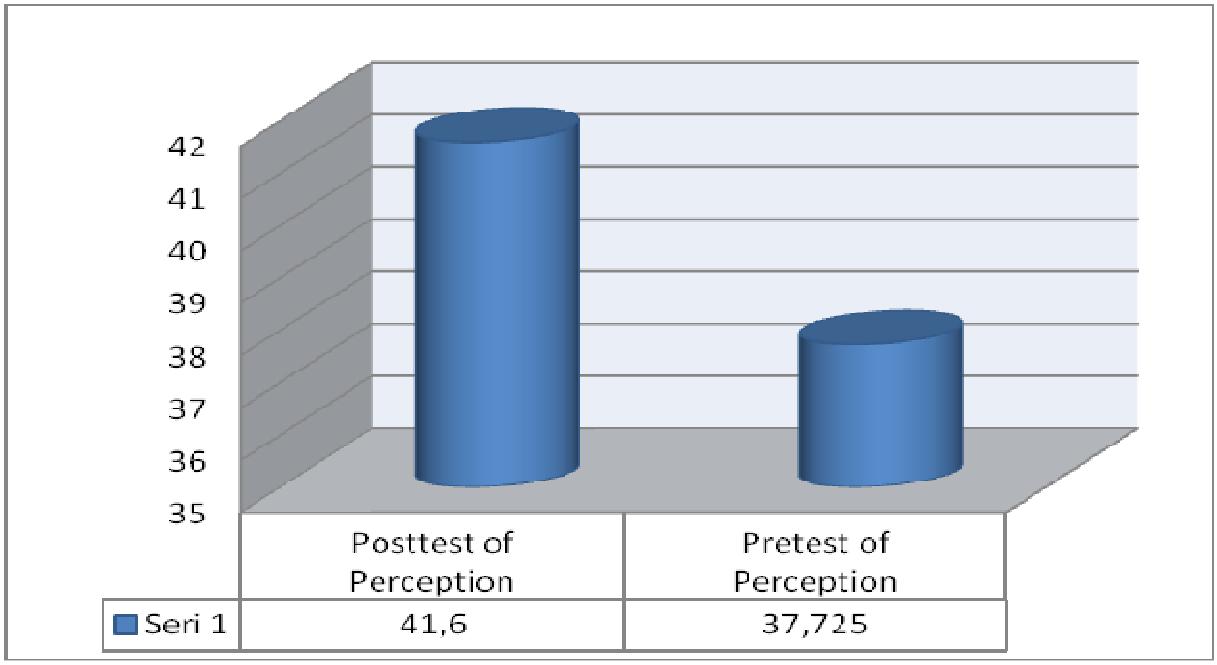

Figure 1: Mean scores on pretest and posttest of perception

DISCUSSION

The finding of the study emphasized that there was a statistically significant difference between IELTS candidates' perceptions before and after taking the IELTS test. It means that the real situation of test taking affects the test takers' perception towards the test. This finding is in line with some of the previous studies in this field (Cook, 1999; Griffith & Parr, 2001; Modiano, 2001; Sherry, Bhat, Beaver, & Ling, 2004).The overall agreement is that learners taking part in the high stake examinations might have a high degree of stress and anxiety. This might affect their performance on the test. As Skehan (1998) implies, learners' perception towards a test as well as their expectations from the test holds appositive correlation in case the assumption they have of and about their learning is true or real. Dornyei & Skehan (2003) also assert that individual differences highly affect one's assumption and perceptions towards the process of language learning and teaching.

Iranian learners mostly take part in the cramming courses aimed at preparing the learners or examinees for the high stake examinations such as IELTS and TOEFL. Such courses hold mock exams to provide the learners with an assumed status quo of their knowledge and the extent to which they would probably perform in the real exam session (Amiri, 2012). It seems that the learners taking part in the present study enjoy the same situation as their perceptions towards the IELTS exam before and after taking the test is highly different. The comparison of the mean scores of pre and post tests of perception revealed that learners taking part in the experiment enjoyed higher perception after taking the test. It might be concluded that the test itself has left a positive impact on the learners. This finding is also supported by some other investigations; for example Read and Hayes (2003), who investigated the relationship between IELTS preparation programs and candidates' performance on the actual IELTS test in New Zealand came up with the conclusion there were a number of substantial differences between the performance of the group which was undergone preparation programs and the group which was not.

The findings of the present study revealed that Iranians have a positive attitude towards IELTS. Increasingly significant growth in candidature in Iran shows how much popularity IELTS has gained among Iranians which is exactly in line with the findings of the present study. Coleman et al. (2003) also find IELTS a very popular test and according to their study, IELTS stakeholders in various countries have high positive attitudes and

perceptions towards IELTS. Such findings could be employed by IELTS administrators to do the modifications required.

CONCLUSION

The present study aimed at investigating the relationship between the candidates' perception before and after taking the IELTS test. To conduct the study, out of 60 participants who received a standard PET test, 40 IELTS candidates were selected based on the results of the pilot study. Before and after taking the IELTS test, they were provided with questionnaires evaluating their perceptions. After collecting the required data, a paired samples t-test was run to investigate any significant difference between the IELTS candidates' perception before and after taking the test. The results of the analysis revealed that the candidates' perception significantly improved after taking the test. The present study can help all the IELTS stakeholders including candidates intending to sit the test, institutes running IELTS preparation programs, teachers wishing to teach such programs and the IELTS test administrators. Further studies are suggested to be carried out to investigate issues related to IELTS in Iran and internationally including:

1. Studies involving the IELTS Listening and Reading tests.
2. Further studies on the use of IELTS for professional purposes or for migration.
3. Studies intended to establish appropriate IELTS score levels for specific uses of the test (for access to a university department, for professional registration, for access to a vocational training course).
4. Studies of test preparation practices and investigation of the cognitive processes of IELTS test takers.
5. Finally, further studies must be carried out to investigate the process of writing IELTS test items.

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Appendix I

Language learning perception questionnaire

No.	Item	1	2	3	4	5
1	How do you rate your current English language skills?	Low	Inter-mediate	High	Very high	Native proficiency
2	How MANY HOURS PER WEEK do you plan to spend outside your classes further developing your English language skills this year (other than by social conversation)?	None	1-2	3-4	5-6	7+
3	Which ONE of the four key English language skills do you think is most important for getting high marks in your exam? (select only one)	Writing	Reading	Speaking	Listening	All skills
4	Which ONE of the four key English language skills do you think you need to improve most? (select only one)	Writing	Reading	Speaking	Listening	All skills
5	What is the lowest mark that you would be happy with for the test?	4-5	5 – 6	6 -7	7 -8	8 -9
6	How important was the opportunity to develop English skills in your decision to study in Iran?	Not	A little	Somewhat	Much	Very
7	How important is it for you to improve your CONVERSATIONAL English?	Not	A little	Somewhat	Much	Very
8	How important is it for you to improve your ACADEMIC English?	Not	A little	Somewhat	Much	Very

9	For your major, do you think English language proficiency will be important for getting a better admission overseas?	Not	A little	Somewhat	Much	Very
10	How much do you think the results of the exam will affect your future life?	Not	A little	Somewhat	Much	Very

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PRE-SERVICE SCIENCE TEACHERS' VIEWS ABOUT TEACHING THEORIES AND METHODS

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ABSTRACT

The purpose of this study is to explore the secondary school pre-service science teachers' views about teaching theories and methods. Qualitative research method and purposeful sampling were used in the study. The participants of the study were the five students in the final year of their studies in Science Teaching Department of Bayburt Education Faculty at Bayburt University. The interviews were carried out face to face with the participants by one of the researchers and they were recorded with a recorder after they gave their consent. After the interviews, the data recorded was transcribed. Then the texts were given to the participants so that they could verify the accuracy and completeness of the data. Therefore, the reliability of the data was obtained. Content analysis was used for data analysis. When the data obtained as a result of data analysis was examined, it was found that pre-service science teachers attributed conceptually similar meanings to teaching theories and methods. Moreover, it was discovered that pre-service teachers expressed opinions mainly about behaviourism and constructivism as teaching theories and recitation and discussion as teaching methods.

Key Words: Pre-Service Science Teachers, Teaching Theories, Teaching Methods.

INTRODUCTION

Human beings gain knowledge, skills, attitudes, and values as a result of their interaction with the environment throughout their life. These experiences serve as basis for learning. In general terms, learning is defined as modification of existing behaviours within the individual (Driver, 1989: Ertürk, 1993). According to another definition, learning is a change in beliefs, perceptions and behaviours of an individual as a result of his interaction with the environment. However, there are different views about how this change occurs. How learning takes place is tried to be explained with cognitive and behaviourist theories. According to cognitive theorists, learning is a cognitive process and it occurs by attributing meaning to the knowledge which reaches the brain (Ebenezer, 2001). This sense-making changes according to the student's acquiring his own experience, the culture he has, the nature of interaction where learning occurs and the student's role in the process (Nakiboğlu, 1999). Behaviourist theory which aims at acquiring the desired behaviours within the individual proposes that external environment must be modified in order to obtain the desired behaviours. In addition to this, many theories are suggested in order to explain how learning takes place and the commonly used theories in science teaching are the theories which are developed by Jean Piaget, Jerome Bruner, Robert

Gagné and David Ausubel. Besides these, learning cycle and the generative or constructivist model have been suggested.

The countries try to improve their science education programs, improve teacher quality and equip the education institutions with the tools and instruments (Ayas, Çepni and Akdeniz, 1993). As teachers are the practitioners of science education curriculum in schools, it is important that teachers should be trained to have contemporary knowledge, skills and attitudes and they must be aware of the new teaching and learning theories and methods used in science teaching (Özmen, 2004; Taber, 1995; Turgut and Gürbüz, 2011).

Science course which started to be taught in 2006 was based on constructivist approach. The core of this approach is to actively involve the knowledge constructed in learning process. Teachers' role has changed with this approach. They are not traditional teachers who attend the classes and transfer the knowledge in the book to the students anymore but they adapt to the role of facilitator (Sözbilir, Şenocak and Dilber, 2006; Solmaz, 2007). Constructivist approach supports student-centred teaching methods. Some of them are role-plays, field trips, projects, discussions, and problem-solving. Teacher-centred methods such as teacher presentation and question-answer are underemphasized (Küçükahmet, 2005).

Today the purpose of science teaching is not to transfer more knowledge but to have them gain critical thinking skill as knowledge changes over time. Moreover, technological advances make it easier to access any kind of information (Kaptan and Korkmaz, 2002; Töman, Çimer and Çimer, 2012).

There are individual studies which involve the use of teaching theories and methods in education in literature; however, there are not studies in literature which present the pre-service science teachers' views about science course. This qualitative research aims at presenting secondary school pre-service science teachers' views about teaching theories and methods in order to close the gap in this field.

Purpose of the study

This study aims at revealing the secondary school pre-service science teachers' views about teaching theories and methods.

METHOD

Qualitative research method was used in the study. Qualitative research is a method where data is produced without any statistical operations or any other numerical means (Çepni, 2009). The main characteristics of qualitative research techniques are that they are context sensitive, the researcher has the role of a participant, they have holistic perspectives, they are concerned with process, they have flexibility in design, they have naturalistic inquiry and they have inductive reasoning for data analysis (Yıldırım and Şimşek, 2004).

Sampling

Purposeful sampling was used in the study. In qualitative research smaller samples are used for an in-depth understanding. Therefore purposeful sampling is preferred rather than random sampling (Munn, Johnstone and Holigan, 1990). In this sampling the criteria important for the sampling are determined and the sampling chosen according to the criteria is thought to represent the population with its all qualities (Yin, 2003). The research was carried out with the students in the final year of their studies in Science Teaching Department of Bayburt Education Faculty in Bayburt University. The participants' names were not used due to research ethics, so the participant pre-service teachers were coded as PT_1, PT_2, PT_3, PT_4, PT_5. The qualities of secondary school pre-service science teachers were presented in Table 1.

Table 1: The qualities of secondary school pre-service science teachers

Participants	*Education Level*	*Gender*
PT_1	*University*	*Female*
PT_2	*University*	*Female*
PY_3	*University*	*Male*
PT_4	*University*	*Female*
PT_5	*University*	*Male*

Data Collection and Analysis

Semi-structured interviews were used in the study as a data collection tool. This technique is advantageous as it is open, allowing new ideas to be brought up during the interview as a result of what the interviewee says and in-depth understanding of a specific topic (Çepni, 2009).

The interviews were carried out face to face with the participants by one of the researchers and they were recorded with a recorder after the participants gave their consent. The data recorded was transcribed after the interviews. Then the texts were given to the participants so that they could verify the accuracy and completeness of the data. Therefore, the reliability of the data was obtained. Content analysis was used for the analysis of data. Content analysis is defined as the technique which enables the researcher to include large amounts of textual information and systematically identify its properties by summarizing it into categories using codes based on specific rules (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz and Demirel, 2008). The raw data obtained from the interviews were coded and the categories were determined. The data were classified under these categories and became a meaningful content for the reader. Coding and categorization were done repetitively by one of the researchers. Therefore, unnecessary codes were eliminated adhering to the problem and purpose of the research and new codes were added to the necessary parts. The researchers worked together while naming the categories. Tables where each participant's views about the subject were presented were obtained. Besides these, the reliability of the questions were obtained with expert views, related literature, and piloting. In results and discussion section of the study, the findings obtained from the analyses were presented.

FINDINGS AND INTERPRETATIONS

The findings obtained from the pre-service teachers were presented in tables for each question asked.

Question 1: "*What does the term "teaching theories" mean to you?"*
The responses of pre-service teachers to question 1 were presented in Table 2.

Table 2: The analysis results of the pre-service teachers' responses for question 1

PR-SEVICE TEACHERS	*CATEGORIES*
PT_1	*The way teaching and learning takes place*
PT_2	*Means to transfer knowledge*
PT_3	*Methods and approaches in learning and teaching*
PT_4	*Methods and approaches in learning and teaching*
PT_5	*The way teaching and learning takes place*

The question "*What does the term "teaching theories" mean to you?"* aims at exploring what pre-service teachers thought when they first heard the term "teaching theories" and when the responses of pre-service teachers PT_3 and PT_4 were examined, most of the teachers stated that they were the methods and techniques in learning and teaching. While PT_2 explained teaching theory as the way to transfer knowledge, PT1 stated that it was how teaching and learning occurred. The responses of PT_3 and PT_4 are able to explain the present situation.

PT_3: "They cover methods and techniques appropriate for the student's way of thinking and developed as a result of a specific research carried by the experts in the field to teach a new knowledge to an individual."
PT_4: "They are learning and teaching practices and also they are the entire techniques which comprise of prescribed methods, techniques, and concepts."
PT_5 states that teaching theory is the way how teaching and learning occurs:
"What I understand from the teaching theory is that how teaching occurs and how it is taught. In other words, it is the most comprehensive way of how a student understands the lesson and how he makes it more productive."

Question 2*:"What teaching theories do you know" Which theories are the most useful in teaching environment? Please explain it by giving your reasons. "*

The responses of pre-service teachers to question 2 were presented in Table 3.

Table 3: The analysis results of the responses of the pre-service teachers to question 2

PRE-SERVICE TEACHERS	***CATEGORIES***		
	Teaching theories	***Most appropriate one/s for teaching environment***	***Reasons***
PT_1	*- Gestalt theory* *- Discovery learning* *- Progressive teaching method*	*- Constructivist teaching theory*	*- Class environment, physical conditions and most appropriate in terms of time*
PT_2	*- Behaviourist teaching theory* *- Constructivist teaching theory*	*- Constructivist teaching theory*	*- Student learns by doing and through experience*
PT_3	*- Constructivist teaching theory* *- Multiple Intelligence theory* *-Behaviourist teaching theory* *-Cognitive teaching theory*	*- Constructivist teaching theory* *- Multiple Intelligence theory*	*- In constructivist theory, students construct their own understanding of the knowledge* *- Multiple intelligence theory takes into consideration individual differences*
PT_4	*- Behaviourist teaching theory* *- Constructivist teaching theory*	*- Constructivist teaching theory*	*- Student learns by doing and through experience*
PT_5	*- Behaviourist teaching theory* *- Constructivist teaching theory* *- Discovery learning*	*- Discovery learning theory*	*- It guides students to do research and discover new things*

When Table 3 is examined, the responses given by the teachers to question 2 are classified under three categories. These categories are the teaching theories they know, the most appropriate theory and why they are appropriate for teaching environment. When the responses of pre-service teachers about teaching theories are examined, all the pre-service teachers except PT_1 centre upon behaviourist and constructivist theories. The second and third part of the question "Which theories are the most useful in teaching environment and why?" aim at obtaining in-depth knowledge and all the pre-service teachers except PT_5 considered mainly constructivist teaching theory and stated that it was effective in learning environment. What draws attention is that most pre-service teachers who stated that constructivist teaching theory was effective in learning environment argued that students should learn by doing and through experience.

The responses of PT_3 and PT_4 given below are able to explain the present situation.

PT_1: "The most appropriate teaching theory is constructivist theory because a student learns by doing something in the class and through experience. The student is actively involved in learning process and the theory encourages the student to do research and question.
PT_4: "In my opinion the most appropriate one is constructivist teaching theory. Because the student is involved in learning process, he learns by doing or through experience."

Another pre-service teacher (PT_5) stated that the most effective theory in teaching environment was discovery learning because this theory encourages the student to do research and discover new things. PT_5 explained the situation as follow:

"This method encourages the student to do research, develop himself, discover new things, think, and express what he thinks. In short, the main quality of the method is to make the student study. The student is not spoon-fed with the new knowledge but he does research on his own to learn. Moreover, in order to create a future where individuals who develop themselves under the guidance of their teachers will be raised, we should raise individuals who are used to studying."

Besides these, pre-service teachers' views about the theories they know and their frequencies were presented in Table 4.

Table 4: Pre-service teachers' views about the theories they know and their frequencies

Teaching theories	***Frequency***
Constructivist teaching theory	*4*
Behaviourist teaching theory	*4*
Discovery learning	*2*
Cognitive approach	*1*
Multiple Intelligence theory	*1*
Gestalt theory	*1*
Progressive learning theory	*1*

Question 3:*"In your opinion, what does teaching methods refer to?"*

The responses of pre-service teachers to question 3 were presented in Table 5.

Table 5: The analysis results of the responses of the pre-service teachers to question 3

PRE-SERVICE TEACHERS	CATEGORIES
PT_1	*The ways teachers used while teaching the course to the student*
PT_2	*The ways teachers used while teaching the course to the student*
PT_3	*The ways teachers used while teaching the course to the student*
PT_4	*The ways teachers used while teaching the course to the student*
PT_5	*How and in what ways teaching will occur*

The question "*In your opinion, what does teaching methods refer to?*" aims at exploring what pre-service teachers thought when they first heard the term "teaching methods" and all the teachers except PT_5 stated that teaching methods comprise the principles and methods used for instruction by the teachers while teaching the students . The statements PT_2 and PT_3 were given as examples for teaching methods.

PT_2: "Teaching methods mean how teaching and learning occur. In other words, while teaching occurs, it is the choice of a method or a way which largely depends on the student and content."
PT_3: "Teaching methods are the methods which teachers use while explaining the lesson. They are also the methods which increase the student's interest in the lesson or help them to understand the lesson."
However, PT_5 used the following expressions about teaching methods:
"Teaching methods comprise how and in what ways the teaching practice will take place."

Question 4*: "Which teaching methods do you know? What are the most appropriate teaching methods for learning environment? Please explain giving your reasons."*

The responses of pre-service teachers to question 4 were presented in Table 6.

Table 6: The analysis results of the responses of the pre-service teachers to question 4

PRE-SERVICE TEACHERS	CATEGORIES		
	Teaching methods	Most appropriate one/s for teaching environment	Reasons
PT_1	- *Question-answer* - *Discussions* - *Brainstorming* - *Recitation*	- *Brain storming*	- *Encourages free thinking*
PT_2	- *Creative drama* - *Cases study* - *Projects*	- *Recitation*	- *Has advantages in terms of time*
PT_3	- *Recitation* - *Discussion* - *Question-answer* - *Problem solving* - *Demonstrating*	- *Recitation* - *Question-answer*	- *Has advantages in terms of time* - *Has advantages in terms of physical conditions*
PT_4	- *Recitation* - *Discussion* - *Question-answer*	- *Discussion*	- *Develop critical thinking* - *Learn to respect others' ideas*

	- Recitation	*- Discussion*	*- Develop critical thinking*
PT_5	*- Discussion*		*- Make contributions to raise productive individuals*

When Table 6 is examined, the responses given by the teachers to question 4 are classified under three categories. These categories are the teaching methods pre-service teachers know, the most appropriate theory/ theories and why they are appropriate for teaching environment. When the responses of pre-service teachers about teaching theories are examined, all the pre-service teachers except PT_2 centre upon recitation and discussion. The second and third part of the question 4 "Which theories are most useful in teaching environment and why?" aim at obtaining in-depth knowledge and all the pre-service teachers except PT_1 considered mainly recitation and discussion. What draws attention is that most pre-service teachers who stated that recitation was effective in learning environment argued that this method had advantages in terms of time and physical conditions. The teachers who supported discussion in teaching environments argued that this method developed critical thinking and made contributions to raise productive individuals. The expression of PT_3 who stated that recitation was effective in teaching environment can be given as an example.

"Recitation is the most appropriate method for teaching environment because the other teaching methods are difficult to implement due to class size, time and space constraints. Recitation has advantages to both students and teachers in terms of time and physical conditions."

The expression of PT_5 who stated that discussion was effective in teaching environment can be given as an example.
"In my opinion discussion eases student learning. It enables the students to think critically. It especially teaches them to respect the others' ideas."

Apart from these, one pre-service teacher (PT_1) stated that brain storming was the most effective teaching method in teaching environment:

"In my opinion, brainstorming is the most appropriate method because it activates the free thoughts of the students. The students express what they think freely with this method." Moreover, the pre-service teachers' views about the teaching methods they know and their frequencies were presented in Table 7.

Table 7: Pre-service teachers' views about the teaching methods they know and their frequencies

Teaching methods	Frequency
Recitation	4
Discussion	4
Question-answer	3
Demonstrating	1
Problem solving	1
Projects	1
Case method	1
Creative drama	1
Brainstorming	1

DISCUSSION AND RESULTS

Based on the findings obtained from the study which was carried out to explore the secondary school pre-service science teachers' views about teaching theories and methods, the findings and interpretations obtained revealed that most of the teachers attributed similar meanings to teaching theories and methods. The reasons for this result is that conceptual differences and the hierarchical structure for teaching theories and methods were not clearly defined in text books and teaching environment. Moreover, it was concluded that most of the pre-service teachers expresses their views in favour of behaviourist and constructivist learning theories. The main reason for the emergence of such a situation is that these two theories are addressed predominantly both in school environments and also in pedagogical courses in universities. The students mainly focused on recitation and discussion methods as teaching methods. The reason for this result is that pre-service teachers mainly carried out practices about recitation and discussion throughout their education. It can be stated that pre-service teachers consider constructivist theory as the most effective theory in teaching environment as this theory is student-centred (Laney, 1990). In parallel with this, it is considered that the reason why pre-service teachers find discussion effective in class environment is that this method encourages students to think critically and makes contribution to meaningful learning (Ebenezer, 2001). Apart from discussion method, although pre-service teachers find recitation effective due to teaching methods and techniques intended for constructivist theory, it can be stated that recitation used commonly in class environments are effective. Moreover, some pre-service teachers expressed their views about the other teaching theories besides behaviourist and constructivist theories. Similar situations were experienced with teaching methods and pre-service teachers expressed their views about the other teaching methods besides recitation and discussion. It can be stated that the reasons for the emergence of such situations are that theories and methods are student-centred and they lead the students to active learning (Harwood and McMahon, 1997).

The following suggestions can be made in parallel with the findings obtained from the study which aimed at exploring the secondary school pre-service science teachers' views about teaching theories and methods:

- Pre-service teachers should be trained according to the principle of "active learning and teaching" in science teaching.
- The courses which pre-service teachers take during their education should be promoted with multiple teaching methods as far as possible.
- Reorganizations must be done for the pre-service teachers' meaningful learning in relation to cognitive and content intended for teaching theories and methods

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