

The relationship between female teachers' gender beliefs and expectations and elementary school students' verbal, mathematical and social learning in two cities of Isfahan and Yazd in 2010- 2011 academic year

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Abstract: The aim of the present study is to determine the relationship between teachers' gender beliefs and expectations and elementary school students' verbal, mathematical and social learning in two cities of Isfahan and Yazd of Iran, in 2010- 2011 academic year. The research method is descriptive-correlative and the statistical society consists of 4131 female teachers from Isfahan and Yazd in seven educational zones. Amongst them 330 teachers are chosen randomly as samples. Two devices are used to gather data. The first one is students' average in verbal, mathematical and social learning. For determining verbal and mathematical learning, students' average in three lessons of reading, writing and mathematics in five school levels is considered. Besides, the scores which the first and second level students gained in social learning and activities and their average in the third, fourth and fifth grades are counted. The second device is researcher-made questionnaires; the validity of which is verified by five specialists from educational sciences department at Isfahan University and also by ten experienced teachers from Isfahan Teachers Research Center. The reliability rate of gender-belief questionnaire and gender-expectation questionnaire are estimated 0.88 and 0.96 respectively through Cronbach's Alpha rate application. The results demonstrate that there is no significant relationship between teachers' gender belief and students' verbal and mathematical learning but there is meaningful relationship between students' social learning and gender beliefs of teachers from Isfahan and teachers as a whole. Moreover, there is no significant relationship between gender expectations and verbal learning, but there is significant relationship between teachers' gender expectations from Isfahan and teachers as a whole and students' mathematical learning. Also there is significant relationship between gender expectations and students' social learning, i. e. as teachers' gender expectations rise, students' mathematical and educational learning also increase.

Key words: *Gender beliefs; Gender expectations; Verbal learning; Mathematical learning; Social learning*

1. Introduction

"Is it a boy or girl?" This is the first question commonly asked when a baby is born. Why do we need to know the gender of the baby? This question indicates that the predictions about the baby's future and our expectations are based on his/her gender. Without knowing the child's gender, it is difficult to decide about the proper behavior with him/her (Burr, 2004). Thoughts that are formed in the mind of a growing person of gender and gender roles specify the types of activities, interests and his subsequent achievements. In the early childhood, boys and girls are encouraged to and punished for their different behaviors, and by observing others, they lean the behavior proper to their gender. They learn and internalize norms and expectations that are compatible to their biological gender. So they get the roles and identity of man and woman (Gidnes, 2008). About the ages of 4 and 5, children come to know the proper behavior of the genders and enter the world of school with a set of gender beliefs and

expectations, that family and the peers play a role in their formation. Most of the time, school has different gender beliefs and expectations for boys and girls.

2. Theoretical base of the study

Gender: While gender is relevant to physical characteristics and the type of human chromosomes, it is in fact a social label that is associated with social and cultural expectations (Santrock, 2008; Holmes, 2008; Raudrad, 2008; Zahrvand, 2004; Caboki, 2003). Gender refers to the personal and psychological characteristics that are determined by society; this leads to various differences between men and women. On one hand, gender makes us show certain behavior and on the other hand tells us what will be the judgment of others about us for that behavior (Holmes, 2008: 80). Gender acts as a basic principle for organizing social relationships in everyday life (Ridgeway and Correll, 2004). According to Eckert and Mcconnell-Ginet (2003), Gender is not something that we are born with, but something that we act and play our role accordingly.

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Gender gives shape and meaning to people and social relations and institutions. Without gender we cannot understand the world completely; but the reverse is also true, because we cannot understand gender without understanding the social world. Gender is made, and with the making of gender, social life is revealed (Safiri and Imanian, 2009: 23).

2.1. Teachers' gender beliefs and expectations

Being born son or daughter has important effects on all aspects of a person's life, from the expectations that others have to their treatment to that person and also to him/her own behavior (Bastani, 2008). Social psychology researchers state that people, quickly and unconsciously, classify others according to their gender (Fiske and Neuberg, 1990). When humans are classified, the beliefs and expectations are shaped according to this classification (Hamilton and Sherman; Hamilton and Trolier, 1986). In the process of socialization, children learn to behave according to their gender. Societies encourage boys to have the attributes of men and encourage girls to have the attributes of women (Crain, 2005). Gender-based behaviors and the abilities that both genders believe they have are based on biological differences, Gender beliefs, and gender expectations. Artzt and Armour Thomas (2002) define "beliefs" as a unified system of personal assumptions about the nature of an object. "Gender belief" is the traditional beliefs about gender roles (Nanda, 2011). According to Martin and Halverson (1981), gender belief is the subjective perception of what a man or woman should be or how he/she should behave. In social cognitive theory, expectations are defined as the prediction and guessing that happens as a result of a certain behavior or in a particular situation (Pervin and John, 2007). Gender expectation is the reflection of the beliefs and judgments about the person's ability of doing a work and being successful in it according to the gender (Pintrich and Schunk, 2007). In fact, gender expectation is the different interpretations that people have of others due to their sexuality (Raydon and Levin, 2010). From childhood, humans learn that society expects boy and girls differently and their standards are also different. Tayler (2003) calls these expectations and standards Gender Codes, and believes that the gender ideology of society is internalized by these gender codes (i. e. a regular set of signs and symptoms). According to the experts of this theory, schools, as formal education centers for children, play an important role in their socialization. In fact, school is a social experience where social beliefs and views transport (Forootan, 2010).

One of the most important factors influencing the growth and development of the quality and the content of education are the teachers, because education is the result of human interaction and the result of instructor's action and student's reaction. Teachers are the beginning point of any educational reformation and are able to change themselves with the knowledge and skill that they learn; and by

transferring the cultural elements to the new generation and using proper educational methods, they can provide grounds for the personality development of children and adolescents. Gender has a basic role and is the organizing principle in elementary and pre-elementary school stages. Gender is the variable that affects the teacher's beliefs and behaviors and the students' behaviors, beliefs and achievements (Li, 1999). Observational studies suggest that teachers in the classroom at primary school behave differently to boys and girls; in average, they pay more attention to boys (Hyde, 2004). Teachers have very stereotypical views that are effective on their behavior in the classroom activities and educational materials. Some believe that such behavior by teachers is harmful (especially for girls). Because the role that girls are led to is incidental and secondary (Bastani, 2008). Though most of the teachers believe that they treat students fairly and don't have any gender beliefs and expectations about them, in many classrooms teachers do not do as they say (Sadker and Zittleman, 2005). Pajares (1992) and Richardson (1996) believe that teachers' beliefs are their private structures that can help them to understand their decisions and teaching methods. Teachers' beliefs consist of environment, vision, values, theories and hypotheses about teaching, learning, students, and other aspects of teaching (Moeini, 2009). According to a research by Johnson (1994), teachers' beliefs affect their judgments, perceptions and classroom activities and can help him/her in improving the quality of teaching and training programs. Some of the different approaches of the teachers relates to the subject of teaching. For example, in the classes of science, mathematics and technology teachers expect more of male students than female students, and male students receive more positive feedback than female students (Duffy and Warren and Walsh, 2001; Lynch and Feeley, 2009). As a result of different behavior of teachers in favor of boys, students get the message that boys are superior in academic achievements and their learning needs are more important (Jones et al, 2000).

At the beginning of the academic year, teachers get expectations of the students on the basis of their gender and the first relationships with them, then the teachers according to their different expectations treat differently to the students. For example, most of the teachers at the elementary school level expect the female students have less behavior problems and better academic performance; however, the student's behavior can be influential on the teacher's expectations. It is important that the teachers' gender expectations about talents and future of the students may be transferred to and internalized by the students (Burr, 2004). Teachers' beliefs and expectations of the students are important in the relationship between the teachers and the students. These beliefs and expectations can be an important factor in the development of gender equality in schools (Education, Audiovisual and Culture Executive Agency, 2010). Gender beliefs and

expectations instigates to the notion that boys are superior in math and science skills and girls in verbal skills such as reading and writing. But Hyde states that only 5% of the scores of the students in each of the above skills are related to their gender. In other words, the difference between the scores of two genders in these skills is low (Khosravi, 2003). Along with these stereotypes of the adults, children immediately realize what academic disciplines and skills are masculine and feminine. They consider reading, spelling, painting and music mostly for girls, and mathematics, sports and technical skills for boys, these views impact on the students' attitude about their competency in certain courses (Berck, 2010).

Different researches done in different countries show that teachers tend to encourage girls towards passivity and conformity, and boys towards individuality and independency. They also let boys be naughtier, because they believe that it is the nature of the boys. For this reason, they expect girls to have activities like helping others or cleaning the classroom. Generally, it is considered that girls are flexible and have more cooperation with others and boys have more ability and self-confidence. If the girls are seen as the top students, teachers prefer to think that it is for the behavioral reasons, not cognitive reasons. This means that teachers believe that female students are more meticulous and careful in their works and have more study than boys, and this is the reason for their superiority to boys (Chetcuti, 2009). Teachers might have little knowledge of how their use of gender as an important organizing and grouping factor and their underlying assumptions about gender profoundly affect students' behavior (Tsouroufli, 2002).

Li (1999) suggested a model for the relation of the teacher's gender beliefs and the students' mathematics learning that contains six variables. Three variables are for the teacher and three variables are for the student. Variables of the student are belief, behavior, and mathematics success of the student and variables of teacher are gender beliefs, behavior and gender of the teacher. As seen in this model, the behaviors of the teacher are under the influence of his/her beliefs. The teacher's beliefs also influences on the behavior and beliefs of the students.

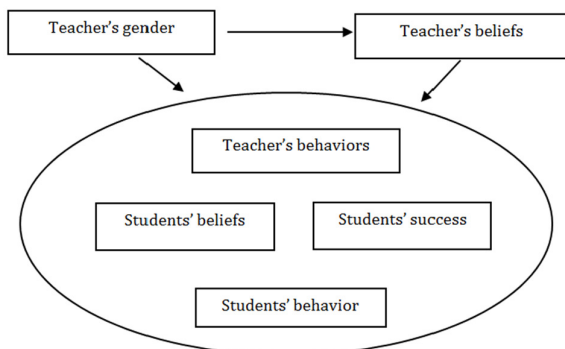


Fig. 1: The relation between the teacher's gender beliefs and learning of the students of source (Li, 1990)

According to this model, there is a correlation between teacher's beliefs and other four variables. As teacher's behavior is determined by his/her beliefs, the students' beliefs, behavior and success influence on the teacher's beliefs.

In recent years, with increase in the gender issues in schools, teachers try to behave equality with boys and girls to provide them equal opportunities (Kohen, 2008). Teachers' gender beliefs and expectation about the students' talents and future life are conveyed to them and influence their learning.

2.2. Learning

The aim of education is learning; and the basic fact is that the developments of societies through years have been the result of education. Learning is one of the most important issues in today's psychology and at the same time one of the most difficult concepts to define. The most famous definition of learning is suggested by Kimble (1961). He defined learning as relatively permanent changes in behavior (Behavioral potentiality) that occur as a result of reinforced exercise (Hergenhahn and Olson, 2006).

Verbal learning is the way that students learn verbal issues (Slavin, 2008), or somehow involvements in the tasks of learning with elements that are expressive in nature (Kausler, 1974. quoted in Samani and Khayyer, 2002). Mathematics learning is the relationship between mathematical understanding and reasoning and problem solving during the discovery process in problem solving, in order to improve and expand relational and cognitive knowledge (Kadivar and poortash, 2005). In fact mathematics learning is an active process that contains the relationship between ideas, facts, concepts and processes (Queensland Studies Authority). Social learning is defined as collaborative making of social values and knowledge that have been possible through social structural opportunities (Hoy and Miskel, 2008). Bandura (1986) believes that social learning is an active process in which the persons actively learn in interaction with others through cognitive processes and then expand social and behavioral skills in themselves. In third grade through fifth grade, elementary school students have civics lesson. Civics is to prepare people to live better and to educate good citizens. Through civics, students analyze different aspects of social living to obtain the ability of citizenship in all of its aspects. This course is a basic area of learning based on the interaction of human beings with each other and with the environment in which they live - in a time process. So that it can be argued that time, place and society are three majors of civics course (Office of Planning and authoring textbooks, 2008).

3. Research hypothesis

Research hypothesis are:

- 1-There is a significant relationship between teachers' gender beliefs and students' verbal learning.
- 2-There is a significant relationship between teachers' gender beliefs and students' mathematics learning.
- 3-There is a significant relationship between teachers' gender beliefs and students' social learning.
- 4-There is a significant relationship between teachers' gender expectations and students' verbal learning.
- 5-There is a significant relationship between teachers' gender expectations and students' mathematics learning.
- 6-There is a significant relationship between teachers' gender expectations and students' social learning.

4. Methodology

This study is a quantitative research based on the type of data that will be collected and analyzed. In terms of dealing with the examined issue and entry into it is a field study. The nature of the study is descriptive. Descriptive study is a kind of quantitative study including accurate description of the phenomena being studied (Gall and Borg, 2007). Descriptive study is divided into types such as the correlation method. The method includes researches in which it is tried to determine the relationship between variables using correlation coefficient (Delavar, 2008). Then, because the aim of this study is to examine the relationship between teachers' gender beliefs and expectations and students' verbal, social and mathematics learning in Isfahan and Yazd, this study is descriptive and correlative.

4.1. Statistical population and research sample

Statistical population of this study is all the elementary school female teachers of Isfahan and Yazd in 2010-2011 academic years that include 4131 teachers (3106 teachers from 5 zones of Isfahan and 1025 teachers from two zones of Yazd); three zones of 1, 2, and 3 of Isfahan and two zones of Yazd were selected. Because of the essence of the study and that the female teachers have relation with both genders

of students; the female teachers are selected for this study. According to Kerjcie and Morgan formula and calculations made, the resulting sample size consisted of 330 female teachers, 184 were randomly selected from Isfahan and 146 from Yazd.

4.2. Data collection tools

To collect data in this study, two devices were used. One was the average of the students in verbal, social and mathematics learning. For verbal and mathematics learning, the average of students of the class in three courses of reading, writing, and mathematics in five levels, and for social learning, the scores that teachers gave the students for their social activities and learning in first and second levels, and also the class average number in civics in third, fourth, and fifth levels. To achieve the learning of students in the three types of learning, the average of students of each class, classified as good, very good and excellent, was used. The teachers were asked to mention the average grade of their class in three courses of Persian, mathematics and civics. Because of descriptive evaluation of the first to third levels, the quantitative evaluation of fourth and fifth levels was converted to quantitative scale of good (14-16), very good (16. 25-18) and excellent (18. 25-20). Because the lowest average obtained in three types of learning was 14, this numerical range was considered for qualitative scales.

The second device was researcher-made questionnaire. The questionnaire consisted of two formats, in any format 45 questions in five degrees of Liker scale (completely agree, agree, somewhat agree, disagree, completely disagree). The questions are in two formats of teachers' gender beliefs and teachers' gender expectations in relation to the students' verbal learning, mathematics, civics. The number of questions for each learning was 15. The validity of the questionnaire was verified by five experts of the Department of Education, University of Isfahan and ten experienced teachers at Isfahan Teachers Research Center. The internal validity of the questionnaire was obtained by Cronbach's alpha coefficient, Table 1 shows Cronbach's alpha of the questionnaire items.

Table 1: Cronbach's alpha of the questionnaire items

Cronbach's alpha coefficient	The number of items	issues	structure
0.88	15	Verbal learning	Gender belief
0.95	15	Mathematical learning	
0.94	15	Social learning	
0.88	45	Main index	Gender expectation
0.94	15	Verbal learning	
0.97	15	Mathematical learning	
0.95	15	Social learning	
0.96	45	Main index	

4.3. Data analysis

Capabilities and statistics of SPSS18 software were used in the present study to analyze data. Kendall coefficient of concordance (Kendall tau-b and Kendall tau-c), Cramér's V coefficient, and Chi-square test were used to test the hypothesis. Kendall coefficient of concordance is used when the variables are measured using ordinal scale or higher (Delavar, 2006). Cramer's coefficient is used to determine the amount of correlation between the two nominal variables or nominal and ordinal variables. If the data collected is discrete or categorical and its measuring scale is nominal or ordinal, the Chi-square test is used (Delavar, 2006).

4.4. Descriptive data

In this study, 55% of the respondents were students in Isfahan and 44% of them were students in Yazd. The findings indicate that the teachers of Yazd served less than teachers of Isfahan but had higher degrees. Mathematics learning of Isfahani

students was slightly higher than Yazdi students, but Yazdi students were at a higher level in verbal learning and civics.

The teachers of Isfahan in verbal, mathematics and social learning's had higher gender beliefs than the teachers of Yazd. Analysis of the mean of gender belief dimensions showed that in verbal learning, civics, and mathematics in order, teachers had the highest gender beliefs about female students. Besides, the teachers of Isfahan, compared to the teachers of Yazd, had higher gender expectations from female students. In civics, verbal learning, and mathematics, in order, the teachers had the highest gender expectations from female students.

Hypothesis testing

In inferential statistics, the hypotheses were tested.

Hypothesis 1: There is a significant relationship between teachers' gender beliefs and the students' verbal learning.

Table 2: The relationship between teachers' gender beliefs and students' verbal learning in two cities

city	X ²	Degree of freedom	Significant level	Kendall tau-b coefficient
Isfahan	3.425	4	0.489	-
Yazd	2.982	4	0.561	-
total	1.536	4	0.820	-

The first 15 questions were about the first hypothesis. The highest mean was for item 11 (higher ability of female students in reading in appropriate tone and intonation) and the lowest mean was for item 2 (higher ability of female students in understanding the message).

Findings of the study about the first hypothesis indicate that there is no significant relationship between the teachers' gender beliefs and student's

verbal learning, because the significant level was higher than 0.05, therefore the first hypothesis was rejected.

Hypothesis 2: There is a significant relationship between the teachers' gender beliefs and the students' mathematics learning

Table 3: The relationship between the teachers' gender beliefs and students' mathematics learning in two cities

city	X ²	Degree of freedom	Significant level	Kendall tau-b coefficient
Isfahan	3.144	4	0.534	-
Yazd	5.675	4	0.225	-
total	4.121	4	0.390	-

Questions 16 to 30 were about the second hypothesis. The highest mean was for item 13 (higher ability of the female students in calculation) and the lowest mean was for item 17 (higher ability of female students in understanding mathematics). According to table 3, the amounts of X² and

significant level show that there is no significant relationship between the teachers' gender beliefs and student's mathematics learning.

Hypothesis 3: There is a significant relationship between the teachers' gender beliefs and the students' social learning.

Table 4: The relationship between the teachers' gender beliefs and students' social learning in two cities

city	X ²	Degree of freedom	Significant level	Kendall tau-b coefficient
Isfahan	12.461	4	0.014	- 0.097
Yazd	4.106	4	0.392	-
total	15.950	4	0.003	- 0.101

Questions 31 to 45 were about the third hypothesis. The highest mean was for item 40 (higher responsibility of the female students in group activities) and the lowest mean was for item 44 (higher ability of female students in thinking about different issues of the country). Table 4 shows the relationship between teachers' gender beliefs and social learning in the sample in two cities. The amounts of X² and significant level indicate that there is a significant relationship between the gender beliefs of teachers of Isfahan and all of the

teachers and student's social learning. But this relationship is not significant in the teachers of Yazd. Kendall tau-b coefficient for the relationship between two variables indicates negative, meaning that as teachers' gender beliefs increases, social learning of students decreases.

Hypothesis 4: There is a significant relationship between the teachers' gender expectations and the students' verbal learning.

Table 5: The relationship between the teachers' gender expectations and students' verbal learning in two cities

city	X ²	Degree of freedom	Significant level	Kendall tau-b coefficient
Isfahan	8.260	4	0.082	-
Yazd	1.054	4	0.901	-
total	6.340	4	0.175	-

The first 15 questions of the second questionnaire were about the fourth hypothesis. The highest mean was for item 1 (more careful listening of female students) and the lowest mean was for item 2 (higher ability of female students in understanding the message). The findings indicate that there is no significant relationship between teachers' gender expectations and students' verbal

learning, because the significant level is more than 0.05. Therefore the fourth hypothesis is rejected. Besides, no study was found to support or refute this hypothesis.

Hypothesis 5: There is a significant relationship between the teachers' gender expectations and the students' mathematical learning.

Table 6: The relationship between the teachers' gender expectations and students' mathematical learning in two cities

city	X ²	Degree of freedom	Significant level	Kendall tau-b coefficient
Isfahan	9.317	4	0.05	0.156
Yazd	6.397	4	0.171	-
total	12.851	4	0.012	0.168

Questions 16 to 30 of the second questionnaire were about the fifth hypothesis. The highest mean was for item 30 (higher ability of female students in calculation) and the lowest mean was for item 17 (higher ability of female students in understanding mathematical concepts), item 18 (more rapid understanding of the meaning of mathematical symbols, such as signs +, -, /) and item 19 (faster understanding of the meaning of mathematical diagrams).

Table 6 shows the relationship between teachers' gender expectations and mathematical learning in

the sample in two cities. The amounts of X² and significant level indicate that there is a significant relationship between the gender expectations of teachers of Isfahan and all of the teachers and student's mathematical learning. But this relationship is not significant in the teachers of Yazd. Kendall tau-b coefficient for the relationship between two variables indicates positive, meaning that as teachers' gender beliefs increases, mathematical learning of students also increases.

Hypothesis 6: There is a significant relationship between the teachers' gender expectations and the students' social learning

Table 7: The relationship between the teachers' gender expectations and students' social learning in two cities

City	X ²	Degree of freedom	Significant level	Kendall tau-b coefficient
Isfahan	4.119	4	0.390	-
Yazd	7.886	4	0.105	-
Total	9.452	4	0.05	0.135

Questions 31 to 45 of the second questionnaire were about the sixth hypothesis. Like the case about teachers' gender beliefs and students' social learning, the highest mean was for item 40 (higher responsibility of female students in group activities) and the lowest mean was for item 44 (higher ability of female students in thinking about different issues of the country). According to table 7, the amounts of X² and significant level indicate that there is a significant relationship between the teachers' gender beliefs and student's social learning. But this relationship is not significant in the teachers of Isfahan and Yazd separately. Kendall tau-b coefficient shows a positive relationship between the two variables, meaning that as teachers' gender expectations increases; social learning of students also increases.

5. Conclusion and suggestions

It is a common belief that female students are smarter in theoretical courses such as literature, history and civics and male students are smarter in technical and practical courses such as mathematics. On the other hand, it is believed that boys have more curiosity and ingenuity than girls, and then should learn math better. But Hyde (Safiri and Imanian, 1388) points out that only 5% of the scores of individuals in each of the three mentioned abilities can be attributed to gender. In other words, the difference between the scores of genders in these abilities is little. These beliefs and expectations are transferred over time to the students and might have influence on their attitude. Noting individual differences without prejudice about the strengths of girls and boys is a valuable discussion and understanding the effect of conventional beliefs about gender and common views about the children's learning can be a useful means to eliminate many false beliefs. It is noted that teachers mostly pay attention to the abilities of the students in the class and prevent their gender beliefs from involving in teaching and interacting with students. In an interview with the teachers in Isfahan Teachers Research Center, teachers pointed out that they don't let their gender beliefs and expectations to involve in the class activities and that they treat equally to girls and boys, and equally attempt towards their success. Perhaps it is because of the sense of motherly that female teachers equally try for success of both sexes. According to the

description and analysis of the data of statistical population, the following suggestions are presented.

According to the findings of the first to third hypothesis of the study, there is no significant relationship between the teachers' gender beliefs and expectations and verbal, mathematical, and social learning of the students. Regardless of their gender beliefs and the students' gender, the teachers teach the students and try for their learning equally. Therefore, to maintain and reinforce the positive belief about the two sexes, it is recommended to produce a systematic design of learning and to reinforce positive attitudes toward school programs in course designers and teachers. Making positive changes in parents' and society's beliefs about gender differences and abilities are also effective to maintain the teachers' gender beliefs.

To reinforce the teachers' gender beliefs, we should involve them in programs and researches about gender and through in-service training for teachers we should increase the teachers' awareness of the gender. To reinforce the teachers' gender beliefs, creating a positive attitude towards gender differences and abilities in the planners and authors of textbooks can be helpful.

According to the findings of the third to the sixth hypothesis, there is no significant relationship between the teachers' gender expectations and the students' verbal, mathematical, and social learning. Meaning that teachers have not put their expectations on the basis that boys are stronger in some fields and girls are stronger in other fields. Therefore, this proper expectation of the teachers should be enforced through these recommendations:

To maintain gender expectations, the teachers should have high expectations of all students in learning different courses and explain about the value of each course for students. Teachers should speak about female and male scientists alike and avoid telling that certain fields are male or female.

To reinforce the teachers' gender expectations, it is recommended that through the school council meetings, the positive effects of equal gender expectations of the teachers on the students' learning be mentioned, and to inform the teachers about the researches done on this subject.

To reinforce the teachers' gender expectations, it is recommended that through the school council meetings the parents' gender expectations be modified, so that they have equal expectations of their daughters and sons. Therefore, girls and boys

enter school with equal attitudes about their values and abilities. Positive attitudes of the students can have influence on the teachers' gender expectations.

In the findings of the first and forth hypothesis, the lowest mean was for the girls' better understanding of the message, therefore it is recommended that:

To increase the female students' understanding, teachers use activities, games, and simple plays to convey verbal concepts and expansion of the students' vocabulary. To strengthen understanding of the girls, the teachers use a charming narrative forms to deliver messages and ask the students to explain these stories.

In the findings of the second hypothesis of the study, the lowest mean was for the female students' more ability in understanding mathematics. It is recommended then:

To increase the female students' understanding, teachers, instead of giving information to them, should engage and encourage students to try to understand the concept of mathematics and to try to think mathematically. To increase mathematical understanding of the female students, teachers can use the objects to teach mathematical concepts. Since the students are at the stage of concrete operations, this method can also be influencing on learning mathematical concepts.

In the findings of the third and sixth hypothesis of the study, the lowest mean was for the female students' more ability in thinking about the different issues of the country. These recommendations are therefore given:

To increase the girls' understanding of different issues of the country, teachers using provocative questions, ask students to think and make them to explain their thinking, and so teacher is keen to encourage students' ability. In order to enhance the girls' ability of thinking about the different issues of the country, teachers should encourage the students to observe their surroundings and report.

In the findings of the fifth hypothesis of the study, the lowest mean was for higher ability of female students in understanding mathematical concepts and more rapid understanding of the meaning of mathematical symbols, such as signs +, -, ., /, and faster understanding of mathematical diagrams. It is recommended then:

To increase these abilities of female students, teachers provide simple and rational samples to help the students create a form for symbols and diagrams in their minds. The teachers should have student-oriented and problem-solving approach, and use the students' interest in teaching issues related to symbols and diagrams. To increase the ability of female students, attending to the children's individual needs and differences of the basic aims, teachers should provide a context to each child understand the mathematical concepts according to his/her capacity to understand them.

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