The Study of the Effect of Teaching Styles (Interventional, Interactional, Non-Interventional) on Self–Efficacy: A Case Study of Secondary School Female Students

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Abstract

This study aims to investigate the effect of different educational styles including interventional, interactional, non-interventional on self –efficacy rate of female students of second-grade of secondary school in Physic lesson. Research method is quasi-experimental by using pre-test - post-test with control group design. The statistical population consists of all female students in second-grade of secondary school in mathematics courses and their total number is 420. The statistical sample of this study consists of 60 subjects that were selected through random sample clustering from the statistical population. The instrument used for the purpose of this study was standard questionnaire of self-efficacy measurement of Sherer and colleagues (1986). The validity of this questionnaire in previous research was reported to be at an acceptable level. In this study, Cronbach's alpha was used to assess the reliability and its rate was calculated 0/78. In this study, the statistical analysis methods included descriptive statistics and deductive statistical test and one-way ANOVA and LSD post hoc tests. Research findings showed that there is a significant difference between students' self-efficacy rates in experimental and control groups F ((3 and 56)=5/441 and P=0/002) and students' self-efficacy has increased through interactive and intervention educational styles. Moreover, different educational styles have had different effects on self-efficacy parameters including the focus on purpose, reflecting on purpose, intrinsic motivation, the ability to solve problems and students' self-assessment.

Keywords: interventional style, interactional style, non-interventional style, self-efficacy, high school

Introduction

One of the issues of interest to educational teachers refers to identification of variables that can affect on students' engagement rate in the school assignments and lead to their difference academic performance. In this regard, variables such as self-efficacy (Linnenbrink & Pintrich, 2003) as well as classroom structure (Hejazi & Naghsh, 1999) have been identified and emphasized as a regulator of academic behavior. Educational systems always expect their outputs can meet the ability of critical thinking, self- control and rational behavior in facing with the complex issues of life. One of the ways to create and nurture these abilities is self-efficacy.

Bandura in the context of cognitive-social approach defines self-efficacy beliefs as an individual's perceptions from his ability to perform a particular task and believes that self-efficacy is considered as a determinant of human behavior and leads to the readiness of human for initiating and doing the efforts. If individuals do not feel self-efficacy for performing any attempt, he/she has re-

quired readiness to start and continue (Bandura, 1997). Self-efficacy or perceived self-efficacy contains individual's pleasure feeling in performing assignments which are increasingly related to motivation and successful performance of assignment in all humans. In other words, efficacy is an increasing ability in which behavioral, cognitive, social and emotional skills should be organized and for innumerable purposes to be coordinated effectively. Certainly, there is a clear difference between having skills and the ability to combine them to perform an action in difficult circumstances. However, people know what they are doing and have the skills to do it, but they are not successful in a desired manner. Personal-efficacy activates the emotional, cognitive, and excitement flow which influence on transferring of knowledge and ability to professional performance (Schwz & Schanauzer, 2002). Self-efficacy is one of the important structures in the area of education. Because self-efficacy of people influence on academic performance (Lorsbach & Jinks, 1999), critical thinking (Fox, 2003) and problem solving skills (Bound, 2006). Self- efficacy has components like internal motivation, reflect on the purpose, focus on goals, problem solving and self-evaluation. Intrinsic motivation refers to the inner pleasure and satisfaction that arises from a specific activity and it is experienced when individual feel growth, development, motivation and challenges in performing work. This motivation is recognized in individual's needs with competence and pride (Vecchio & Wanger, 2012). A group of social learning theorists believe that in intrinsic motivation, students are made to attempt because of challenging, complexity, or non-conformance of assignment or because the assignments strengthen the sense of competence, mastery, control or autonomy (Gottfried, 1990). Patrick & et al (2000) believe that student's intrinsic motivation be increased when the teacher presents lesson meaningfully; student know his choice determinant; contents' presentation doesn't be higher or lower than his ability; contents be challenging and student after providing of appropriate responses receives positive feedback from the teacher. Intrinsic motivation towards an activity is due to its enjoyable nature, even if without any external reward for individual (Zumbrunn 7 et al, 2011). Reflection on the purpose is the nature of any purpose and dimension analysis process and considering the implicit and explicit consequences that are associated with purpose. In other words, reflection on the purpose emphasizes on the appearance avoiding and superficiality, and adherence to reflection and elegance thinking. Researchers have frequently spoken of the nature of purpose and its relationship with reflection. They have mentioned the three types of purpose; first, mastery goals and it is when a student follows his talents with development and promote of his abilities. Second, performative purposes, in which the learner is only concerned about showing his capabilities and third, avoidance goals, in which a student pays more attention to hide his lack of ability. Researchers with much agreement have concluded that only the mastery goals are associated with positive learning patterns and success and self-efficacy (Hsieh et al, 2007). National Association of Psychologists of France School states that give opportunities to students to control their environments; making decision; and choose different paths to gain success in order to their reflect on purpose be increased (Journal of Communication, 2010). In perspective of Theodorakis and his colleagues (1996), reflection on purpose means students try to apply techniques to improve their performance by considering and guiding of topic and expand development of new strategies for promoting of performance. Margan, (19993) believes that when one considers his personal values important and knows himself committed toward them and based on this creates a targeted framework to guide his performance and have access to them, so he can concentrate on purpose. Self-efficacy can increase with techniques of problem-solving and providing the self-management opportunities. Problem solving is a cognitive - behavior process that the individuals try to identify or discover effective or compliance solutions to solve daily problems that faced to them (Nezu, 2004). Self-assessment is known as the self-concepts of ability and interest and measure how people think about themselves and how they

want to be (Luo & colleagues, 2010). Self-evaluation in organization of education can be defined as a form of internal evaluation that allow student to measure his work quality based on the his facilities and abilities and it is a process that leads to the answer to this question; how is my work quality? (Brjic & colleagues, 2011).

Teachers can provide appropriate, positive and constructive feedback to encourage learners' self-evaluation and based on this provide the opportunity to comment particularly in group work and thereby make learners aware of their abilities and disabilities (Ristevska, 2010). Therefore, a teacher should find that how to increase the self-efficacy through using of principles that are effective in design of instructional strategies (Poton et al, 2001). Classroom structure, mode of interaction, the psychological atmosphere in the classroom and most importantly, instructional strategies, provide various situations that can play a significant role in the development of learners' self-efficacy. Educational strategies represent execution style of tasks in education. The concrete example of these strategies can be seen in the classroom management strategies and content presentation and most importantly, how students respond. Although various categories of teaching strategies are provided in methods and techniques of teaching literature, but studies show that these teaching strategies are classified to three categories of intervention, interaction and non- intervention (Yusef-Zadeh &Marofi, 2010). According to Vermunt and Verloop (1999), educational intervention is a kind of education in which the teacher tries to do all three activities of cognitive, affective, and meta-cognitive rather than the students. Teacher has control over his entire teaching and manages his teaching process. The organization of this classroom has most common utilization (Mangal, 2008). This teaching method is a structured teaching in which the eacher often begins the classroom with a brief review of previous learning., introduces teaching subject, states learning objectives of new lesson and tries to transfer his data to Learners (Westwood, 2006). In organization of such atmospheres, all students receive the same information because the teacher monitors the time and much time is saved for teaching because the interaction of the teacher and students is minimal. This type of organization does not provide motivation. When students are asked to contribute, it means achieving those responses that the teacher has already considered as question (Mangal, 2008). This method of teaching is often effective when the goal of achieving is mere information and reproducing them and frequently in surface processes, such as reading and memorizing is used (Swaak et al, 2004). Students are passive and do not usually pay considerable attention to content between 15 to 25 minutes. The information provided by this method is often forgotten. If the teachers do not consider the students' level and teaching style in content providing, this method will have the lowest minimum educational efficiency. Usually, in this method, learning done by listening and learning achievement is the least activity for those students who prefer to perform tasks and activities (Olatoy &Adekoya, 2010). The second style is teaching interactive style. Jing Dong (2009) argues that interaction is a dynamic process that involves communication and interaction between students and teachers. Sue and colleagues (2005) know interaction as an activity in which teacher and students provide their comments surrounding an issue or various issues and they are going to provide solutions based on the group idea. Interactive education refers to an education in which three activities of cognitive, affective and meta-cognitive are done by the help of teachers and students. Although, organizing of the learning environment is the responsibility of teachers, but does not impose their ideas to students. Muijs, and Reynolds (2002), in this view, have consensus that the wrong behaviors are targeted and directed to achieve the recognition. Interactive teaching style aimed to consciously promote students' autonomy, ability to innovate and interest in light of learning. Non-educational intervention is an education in which strategies of cognitive, affective and meta-cognitive and learning takes place by the student and the student is responsible for implementing the learning task. The

teacher believes students' abilities and his role is the monitoring of their performance (Vermunt &Verloop, 1999). A non-intervention oriented teacher believes to the fundamental principles in humanistic education, namely, gives opportunity to select and manage learning and this does not mean that students have chosen quite freely, but let's them participate in what are studied and what will study and how to continue the classroom process. In this way, the students do not receive any guidance from teacher or receive small tips. Although there are enough necessary sources, they are provided by the teacher. Students should decide for themselves to face with issues, search about the data and finally draw a conclusion about it. This, without structural approach sometimes is used in the sciences, mathematics and in some cases in social studies. But, feedbacks are not always good, especially for students who have weak study skills and self-management and have problem in resulting arguments (Westwood, 2006). Of course, the autonomy rate in performing tasks has varying degrees. Sometimes, the teacher can give the student a topic or theme selected by teachers and students together or the students are completely independent. The extent to which students should be independent depends on factors such as the level of growth and maturation and educational objectives. This method is a kind of discovery in which teacher does not provide none of the required principals or solutions for the exploration and is a situation that is called a guided discovery method (Gage and Berliner, 1979). In some studies, the effect of different learning styles on students' self-efficacy has been studied. Akbari and colleagues (2012) showed that the training methods of problem solving, conflict resolution and decision-making practices have clear and significant influence on students' general self-worth and self-efficacy. Amin Yazdi and Eali (2008) found that there is a significant difference between the meta-cognitive and students' meta-cognitive regulation in two groups of interaction and intervention teachers. In other words, the teacher's interaction and generally classroom management based on the interaction atmosphere can be a suitable environment for the growth of students' meta-cognitive skills. Hejazi and Naghsh (2008) showed that perception of mathematic variables (classroom structure) can effect on direction of personal achievement objectives, level of self-efficacy believes and ultimately on self-regulation of mathematic. Shank (1991) in a research found that intervention programs were effective to enhance students' sense of self-efficacy and thereby promote the mathematical achievement. In these programs, instructional strategies were designed to enhance individuals' competence, skill and knowledge. These strategies included modeling, teaching of learning strategies, objectives chosen and providing feedback and encouragement for students. High self-efficacy beliefs had valuable and positive impact on the students' progress through enhancing the competence and skill. In another research Pintrich and Schunk (1996) found that self-efficacy believes has positive relationship with the level of effort and perseverance in assignment. Studies of (Barry et al, 2005; Gayn et al, 2006) show that self-efficacy sense has a positive relationship with responsibility regarding task performance and the average final exams of school and student achievement. The study done by Guttman (2006) showed that mastery on goal orientation certainly raises self-efficacy in mathematics. Skarti and colleagues (2010) showed that teaching pattern based on the interactional learning can increase students' self-efficacy. Lan et al (2004) found that the use of research strategy in education and friendly relationship between teacher and student is effective on enhancing students' self-efficacy. Hinten et al (2008) found that teaching method based on learning stages can increase self-efficacy among secondary students.

By considering the above issues and by emphasizing this point that it is the responsibility of education and training to train efficient learners, who can believe in their own capabilities and finally by taking this issue into account that teaching methods are of paramount importance in order to pave the way for achieving these goals, the main research question of the present study is whether different teaching methods can have an influence on self-efficacy among Iranian students or not.

Methodology

The research design used in this study was quasi-experimental design by using pretest-posttest with control group. The participants included 420 high school students studying physic-mathematics course at 2nd grade in the fourth region of Esfahan city during the educational year (2011-12). The sample consists of 60 students including three experimental groups (45 students) and one control group (15 students), who were randomly selected based on random sample clustering. The instrument used for the purpose of this study was a standard questionnaire of self-efficacy measurement designed by Sherer and colleagues (1986). The validity of this questionnaire in previous research was reported to be at an acceptable level. In this study, Cronbach's alpha was used to assess the reliability and its rate was calculated to be 0.78.

Results and Discussion

After analyzing the data, the following table were obtained:

Table 1. Descriptive statistics for self-efficacy pretest among the students in control and experimental group

Variable	Control group		Interventional group		Interactional group		Non-interventional group	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Focus on purpose	16/06	2/57	16/53	2/44	16/46	2/41	16/13	2/80
Reflection on purpose	16/60	2/22	15/80	2/49	17/33	3/37	16/40	7/4
Intrinsic motivation	13/26	2/84	12/46	2/94	13/40	2/74	13/33	2/43
Problem-solving ability	17	3/66	19/13	3/9	18/8	4/37	17/2	4/6
Self-assessment	21/86	2/87	21/6	4/40	23/2	3/58	21/46	4/43
Self-efficacy	84/8	9/6	85/53	9/22	89/2	12/32	84/53	10/26

By considering the above table, we can conclude that the mean of the students' self-efficacy in pretest was 84.8 for the control group, 85.53 for the interventional group, 89.2 for the interactional group, and 84.53 for the non-interventional group.

As it is evident from table 2, we can come to this conclusion that there is no significant difference between the self-efficacy skills of experimental and control group in total and the related variables individually (F=0/588; P (3,56)= 0/646).

Table 2. Results of ANOVA for self-efficacy pretest scores of samples in experimental and control group

	Group	Sum of Squares	Df	Mean Square	F	Sig.
Self-efficacy	**Between Groups**	210/717	3	70/239	0/646	0/588
	Within Groups	6084/267	56	108/648		
	Total	6294/983	59			
Focus on purpose	**Between Groups**	2/467	3	0/822	0/100	0/960
	Within Groups	460/133	56	8/217		
	Total	462/600	59			
Reflection on purpose	**Between Groups**	18	3	6	0/802	0/498
	Within Groups	418/933	56	7/481		
	Total	436/933	59			
Intrinsic motivation	**Between Groups**	8/583	3	2/861	0/378	0/769
	Within Groups	423/6	56	7/564		
	Total	432/183	59			
Problem-solving ability	**Between Groups**	53/4	3	17/8	1/031	0/386
	Within Groups	966/533	56	17/26		
	Total	1019/933	59			
Self-assessment	**Between Groups**	28/467	3	9/489	0/630	0/599
	Within Groups	843/467	56	15/062		
	Total	871/933	59			

Table 3. Descriptive statistics for self-efficacy posttest score among the students in control and experimental group

Variable	Control group		Interventional group		Interactional group		Non-interventional group	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Focus on purpose	16/26	3/32	17/20	1/93	17/20	2/11	16/91	2/53
Reflection on purpose	17	2/80	17/20	2/30	18	3/18	18/53	2/35
Intrinsic motivation	12/06	2/93	13/33	2/49	15/46	2/50	15/2	2/70
Problem-solving ability	17/20	4/85	19/46	3/68	21/73	3/01	19/13	4/10
Self-assessment	21/6	3/50	21/93	3/49	24/26	2/93	24/86	2/94
Self-efficacy	84/13	12/53	89/13	6/85	96/66	8/80	94/73	8/56

By considering the above table, we can conclude that the mean of the students' self-efficacy in posttest was 84.13 for the control group, 89.13 for the interventional group, 96.66 for the interactional group, and 94.73 for the non-interventional group.

Now, in order to see whether three different teaching styles play any significant role on enhancing self-efficacy or not, first the effect of teaching styles on self-efficacy was taken into account and the related variables were studied.

Table 4. Results of ANOVA for self-efficacy pretest scores of samples in experimental and control group

	Group	Sum of Squares	Df	Mean Square	F	Sig.
Self-efficacy	**Between Groups**	1448/6	3	482/867	5/441	0/002
	Within Groups	4969/733	56	88/745		
	Total	6418/333	59			
Focus on purpose	**Between Groups**	8/850	3	2/950	0/447	0/721
	Within Groups	369/733	56	6/602		
	Total	378/583	59			
Reflection on purpose	**Between Groups**	22/850	3	2/617	1/055	0/375
	Within Groups	404/133	56	2/217		
	Total	426/983	59			
Intrinsic motivation	**Between Groups**	116/583	3	38/861	5/462	0/002
	Within Groups	398/400	56	7/114		
	Total	514/983	59			
Problem-solving ability	**Between Groups**	155/383	3	51/794	3/286	0/027
	Within Groups	882/800	56	15/764		
	Total	1038/183	59			
Self-assessment	**Between Groups**	121/133	3	40/378	3/864	0/014
	Within Groups	585/200	56	10/450		
	Total	706/333	59			

By looking at table 4, we can see that there is a significant difference between the amount of self-efficacy of the students in control and experimental group (F= 5/441; P= 0/002). Regarding the variables , there is no significant difference between the students in control and experimental group based on focus on purpose and reflection on purpose. However, the difference was significant between the experimental and control group regarding the variable of intrinsic motivation, problem-solving skills, and self-assessment. With regard to mean table, the students who were taught by interactional and non-interventional teaching styles had better performance in comparison to those students who were not taught by these methods. Furthermore, those students who were taught based on interactional style had higher self-efficacy, in comparison to those taught by interventional style. Also, those taught by interactional and non-interventional style had higher intrinsic motivation and self-assessment, in comparison to those who were not taught by any methods. Lastly, the students who were taught by interactional teaching style had a better problem-solving skill, in comparison to those taught by interventional teaching style and those who were not taught by any methods.

Conclusion

The results showed that teaching styles including interventional, interactive, and non-interventional can enhance the students' level of self-efficacy, intrinsic motivation, problem solving skills and self-assessment . Method of teaching, the appearance of classroom, and the way of interaction between students and teachers can have an influence on self-efficacy. It is the teachers' responsibility to encourage the students to try their best for following and designing new classroom activities and tell them they are successful if they insist on their purposes and make use of appropriate strategy and independent levels. They should come to this belief that suitable effort can lead to success.

It is worth mentioning that over-activity can be interpreted as lack of ability as Pintrich and Schunk (2002) state. The teachers can help the students to internalize this approach that teaching models or skills with low level of self-efficacy can lead to non-adaptive bahaviors, escaping from training or education, and lack of interest in school. According to Pajares (2003), the teachers can direct students in a way that belief on their own capabilities becomes a habit in their life.

In general, we can say that individual self-efficacy plays a significant role in educational development and can motivate a person to become well-acquainted with different subjects. General self-efficacy is positively related to learning, goal orientation, and motivational behaviors such as the need for success and conscious imitation. According to Soheil Iman (2007), self-efficacy can be created along with basic learning tools and official education. As Kolb (2011) believes, if the school programs or plans performed for creating the students' self-efficacy are not successful, the educational contexts or environments should become efficient by teaching social skills for the purpose of enhancing self-efficacy and motivation among students.

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