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Students' Academic Self-Efficacy in Iranian Primary Schools: The Impact of Using Multimedia

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Abstract: The purpose of this study is to find out the impact of using multimedia on students' academic self-efficacy in Iranian primary schools. The sample of the study consists of 250 students in Tehran, Iran. The Morgan-Jinks Student Sell-Efficacy Scale (MJSES) was completed by 250 students in grade sixwith a random sample (cluster random sampling). The self-efficacy survey data were gathered by Likert scale questionnaire. The difference in students' self-efficacywas calculated using inferential statistics (t-test); in addition, the relationships between the self-efficacy of two groups of students were investigated. The analysis of the data indicated that students' level of self-efficacy is medium (3.28) and there is a significant difference in the academic self-efficacy between bothgroups (t-value 3.004) = 0.003, p>0.05). Based on these results, recommendations are made which will improve the quality of our classroom via using multimedia in students' academic self-efficacy.

Key words: Multimedia, academic sell-efficacy, student, Iranian primary school, MJSES

INTRODUCTION

Gilakjani (2012) mentioned three reasons and the rationale for usingmultimedia in the classroom. According to him, employing multimedia increases students' interest level, enhances their understanding and improve their ability to memorize. Thus, making use of technology to enhance learning is not a new undertaking and the potential benefits of technology integration (improved motivation, enhanced instructional methods, increased productivity and information age skills) have been well documented (Roblyer and Doering, 2010). As a result, multimedia supports the transferring of knowledge sufficiently and offers good environments to students to avoid feeling bored in the classroom. However, exploiting technology presents both opportunities and challenges to learners (Sandars, 2012). For example, Ghanizadeh and Razavi (2015) note that early references of technology integration in Iran date backto as far as the early 20th century.

Over the decades as information communication technologies have emerged and come of age in the marketplace, different types of multimedia have sooner or later found their way into the classroom (e.g., radio, television and personal computers). So, the twentieth century, some schools in Tehran, Iran experienced an explosion of internet and network computing combined with the use of personal hand held devices such as tablets and mini laptops (Zarei and Hashemipour, 2015). Nevertheless, many students find it still hard to adapt themselves to and perform in multimedia classrooms in schools because many Iranian schools needIT and ICT infrastructures. Despite the fact that providing training and support for schools and learners isrequiredto maximize the adoption and integration of technology in classroom, research is still scant on how students perceive the multimedia learning environment.

The present study analyzes the impact of using multimedia on students' academic self-efficiency. It is useful for policy-makers in the field of education, curriculum developers, school administrators, principals, teachers, parents and students. In this study, we have developed and validated an academic self-efficiency from an Iranian student's perspective. Similarly, it is helpful for further research in the same field. This study was guided by the following objectives:

- To find the effectiveness of multimedia in students' academic self-efficacy
- To compare the use of multimedia in classrooms with the traditional methods of instruction

Theoretical framework: Theoretical framework was adopted Bandura (1977). He stated self-efficacy as the

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belief with which one can successfully perform certain behaviors. He hypothesized that individuals obtain information about their self-efficacy in four ways:

- Students' own performances affect their self-efficacy: students who successfully graph data will feel more confident when again asked to graph data
- Students' vicarious experiences affect their self-efficacy: when a student sees a peer successfully graphing data, she/he may feel more confident when asked to graph data himself
- Students' self-efficacy can be affected by others' verbal persuasion: a teacher may persuade a student that she/he can successfully graph data and thus she/he approaches the next graphing task confidently
- The fourth factor is emotional arousal: for example, a student's confidence in approaching a graphing exercise depends inversely on his/her level of anxiety induced by that assignment. All of these experiences can affect self-efficacy either positively or negatively

There are currently no context-specific instruments available for measuring self-efficacy in primary-school students using multimedia either with or without the associated use of learning technologies. A more specific instrument, a Self-Efficacy in Technology and Science (SETS) instrument is needed to measure academic self-efficacy reliably and validly in research on scientific inquiry including within a technology-based learning experience. Thus investigator's work deals with learning higher order scientific inquiry skills via a Multi-User Virtual Environment (MUVE) which has implications for the larger context of game-related or simulation-based science curricula. Such an instrument could also find its use in the larger context of game-related or simulation-based science curriculum as well as technology-based learning experiences in general.

Although some researchers may use unpiloted survey instruments in their research, conducting a measurement pilot to establish reliability and validity of a new instrument in the intended empirical context is considered crucial by most (Litwin, 2003; Popham, 1981). For example, in creating their online self-efficacy instrument for college students, Miltiadou and Yu estimated internal consistency reliability as measured by Cronbach's alpha to establish the precision of their instrument. Midgley *et al.* (1996) also estimated Cronbach's alpha reliability for their instrument.

In addition, self-efficacy researchers have adopted a variety of methods for demonstrating the validity of their instruments. Midgley *et al.* (1998, 1996) provided evidence for the construct validity of their instrument by examining correlations between scores on their instrument and those on instruments measuring other closely-related constructs as indicated in the literature. To create a measure of academic self-efficacy Jinks and Morgan (1999) demonstrated the convergent validity of their instrument by correlating self-efficacy scores with students' self-reported grades. Finally, they validatedthe content validity of their scale by having experts review and commenton their instrument.

MATERIALS AND METHODS

A research study was implemented to provide answers concerning the aforementioned questions.

Participants: Participants in this study were students in sixth graders in primary school of Tehran in Iran. Cluster sampling was utilized to identify the sample group by dividing the schools for using multimedia in classroom into five schools: North, South, East, West and Centre. A total of 250 students were originally targeted for the study sample. Following this division, questionnaires were distributed to each school. As therewas little variability in the students' population and <100% returns were expected for the questionnaire. The percentage of returned questionnaires was sufficient at 84%.

Instrumentation: Jinks and Morgan (1999) indicated that academic self-efficacy is the most common type of collected data in attitude studies. Questionnaires are simple to administer and provide researchers with quantitative data. In this study, statements were composed concerning students' attitudes toward using multimedia to assist them in academic self-efficacy. The four point Likert scale was designed to provide answersto the questionnaires. The scale which included subcategory questions concerning students' talents, efforts and context were used to assess the students' affective reaction to the use of multimedia in classrooms. A reliability analysis was computed for the questionnaire. The reliability results were (Cronbach's alpha) 0.78 for all the questionnaire items. It was felt that the reliability estimates were very high and acceptable.

Data collection and analysis procedures: Data collection was conducted in the schools and on a regular school day during the school year of 2014. Data analysis was conducted in accordance with the research questions all of which were concerned with the students' attitudes towards using multimedia in classrooms. Frequency, descriptive analysis tests and mean scores were employed

to measure the students' attitudes and provide a picture of the population under study. Levin test and t-tests for independent samples were used to test the differences between the participants' traditional school and the smart school. The Levin's test and t-tests were alsoexploited to measure the differences that occurred between the students experiencing traditional method of instruction and those in the smart schoolas well as their attitudes toward using multimedia in classrooms. The study results are reported below.

RESULTS AND DISCUSSION

A mean score was used to examine the difference in their academic self-efficacy andcontext, efforts and talents as shows in Table 1. The mean score and standard deviation results inTable 1 were 3.17 (0.266) for traditional method of instruction and 3.28 (0.258) for the smart school. Here, the mean score resultof traditional method of instruction was lower than that of the smart school. This is statistically significant at 0.05 levels with 95% confidence level among them. Thus, the mean score and standard deviation results of context, efforts and talents were3.20(0.348), 3.19(0.469) and 3.08(0.364) for traditional method of instruction and 3.26(0.334), 3.31(0.557), 3.26(0.333) for the smart school.Therefore, the mean score result of context, efforts and talents for traditional method of instruction was lower than that of the smart school.

Levin's test and t-test were used to examine the difference in their total self-efficacy score and context, efforts and talents that would exist between traditional method of instruction and the smart school as shows in Table 2.

Levin's test and t-test were used to examine the difference in their total self-efficacy score and context, efforts and talents that would exist between traditional method of instruction and the smart The Levin's test score self-efficiency was F(1.670 = Sig. 0.198) for traditional method of instruction and t (3.004 = Sig. 0.003) for the smart school. Although, the collective self-efficacy scoreof the traditional method of instruction was slightly lower than that of the smart school, this difference failed to reach significance.

Nearly all students' responses to the questionnaire and their comments reflected greater positive attitudes and academic self-efficacy beliefs when using multimedia in the smart school. As expected, the students claimed that when multimedia was used, they were more organized and their main points were emphasized more. This perception of organization influenced the students' self-efficacy beliefs. In addition, the students believed that the classes with multimedia were more interesting and entertaining.

The current findings show that the use of multimedia impact uponstudents academic self-efficiency. In addition, this study extends the previous studies confirming the fact that using multimedia aided student's self-efficacy (Gilakjani, 2012; Roblyer and Doering, 2010). As multimedia allows information to be easily presented in bulleted format, students may be more confident recording the main points. Future research should examine whether multimedia affects students' academic self-efficacy. There were a few areas where multimedia did not have a positive influence. In addition to the aforementioned null results for the amount of time studying, students claimed that they were more motivated to attend multimedia classes; however, they did not feel worse missing them. As they believed it was easier to take useful notes from their book, they may have felt that other students' notes would be better with multimedia as well.

Therefore, it may have been viewed less detrimental to traditional method of instruction to borrow someone else's notes when multimedia was used than when it was not. Furthermore, A number of these studies lacked a comparison group of multimedia (Ghasemi, 2010) whereas in others, students compared the multimedia to traditional method of instruction in other courses (Szabo and Hastings, 2000). However, our findings indicate that the use of multimedia in classrooms with the traditional methods of instruction were low. Therefore, the results suggested that:

Table 1: Overall mean scores for self-efficacy scales and context, efforts, talents

	Gain scores			
	Traditional method of instruction		Smart school	
Measure	n	M(SD)	n	M(SD)
Self-efficacy score	120	3.17(0.266)	119	3.28(0.258)
Context score	120	3.20(0.348)	119	3.26(0.334)
Efforts score	120	3.19(0.469)	119	3.31(0.557)
Talents score	120	3.08(0.364)	119	3.26(0.333)

Table 2: Levin's test and t-test self-efficiency, context, efforts, talents

	Levin's test		t-tests						
Items	F-value	Sig.	t-value	df	Sig.	MD	SEM	Lower than	Upper than
Self-Efficacy	1.670	0.198	3.004	235	0.003	0.106	0.035	0.037	0.176
Context	0.460	0.498	1.413	237	0.159	0.062	0.044	0.025	0.149
Efforts	3.885	0.050	1.760	230	0.080	0.117	0.067	0.014	0.248
Talents	0.803	0.371	4.092	237	0.000	0.182	0.044	0.094	0.270

- Students should be use of multimedia (including movie, animation, sound, etc.) in practice classroom
- The subject curriculum should be revised by including use of various educational software's in the practice classroom
- Students need to instructional material in classroom

CONCLUSION

This study aimedat finding out the impact of using multimedia on students' academic self-efficacy in Iranian primary schoolsand identified the difference in academic self-efficacy between the traditional method of instruction and the smart school. The mean score of the students' academic self-efficacy in the smart school was 3.28. And there existed a significant difference in students' self-efficacy in traditional method of instruction and that of students in the smart school. However, students' self-efficacy in traditional method of instruction was slightly lower than that of students' in thesmart school. In addition, their academic self-efficacy was positively and significantly related.

Since students' self-efficacy beliefs were found in this study to be considerablyand optimisticallyrelated to their achievement in classrooms, the importance of the influence of self-efficacy on academic performance in courses cannot be underestimated. According to Bandura (1977), self-efficacy refers to a person's belief in oneself to complete or perform specific behaviors. Academic self-efficacy indicates the children's belief in their ability tohandle various school works at different levels (Schunk, 2003). Therefore as students' academic self-efficacyis highly connected, educators and counselors should identify students with low self-efficacy and subsequently implement methods to raise the low self-efficacy levels in those students.

LIMITATIONS

The present studyhad several limitations, the most important of which was the small sample size. This was the only daily-school program specifically for the smart school; therefore, it was not possible to expand the sample to include other students or schools involved in a similar program. However, the small sample reduced statistical power to detect small effect sizes and potentially limited the extent to which findings were generalized to other Iranian students in different primary schools. Thanks to both of these reasons, a larger study is needed.

In addition, this study was not an experimental one that allowed for intervention control group comparisons. The main focus of this study was the impact of using multimedia on students' academic self-efficiency in Iranian Primary Schools. In terms of effective multimedia and academic self-efficacy, the difference in using multimedia in the smart school and traditional method of instruction was also a limitation. The mean score of studentsin the smart school (M = 3.28) were higher than that of or those of students following traditional method of instruction (M = 3.17), indicating that many students in the smart school were stronger than those experiencing the traditional method of instruction. This could be accounted for by a variety of reasons, including more active learning approach, increased participation in learning and involvement with other students (e.g., several students were in the teamwork). Regardless of the reasons for students' learning activity, we would have been better able to evaluate their research and the outcomes.

RECOMMENDATIONS

Because of the significant link between academic self-efficacy and achievement in courses, it is highly recommended that educators and teachers assess the existing levels of self-efficacy in students at classroom level. If lower levels of self-efficacy are identified, then appropriate measures should be taken to help raise students' self-efficacy levels. Primary factors such as enactive mastery experience, vicarious experience, verbal persuasion and physiological and emotional states that determine self-efficacy are prime targets on which educators and teachers should focus their efforts. Additional areas that can be addressed to help increase student self-efficacy would be goal-setting, rewards and active learning. Finally, the following recommendations are forwarded:

- Teachers should be responsible for their students to enhance their academic self-efficacy
- Additional teachers should be provided for students to increase their achievement
- Educators should develop techniques that help lower anxiety and stress and increase students academic self-efficacy

For further research, it is necessary to consider, for example, factors which may influence academic self-efficacy such as aptitude, motivation, and past academic achievement. Such factors were not controlled in this study. Even we did not consider significant difference(s) between female and male students in academic self-efficacy in this research. There is significant

difference in academic self-efficacy and as a result, further researchers need to focus on identifying those factors that brought this difference.

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