

Examining Educational Achievement Motivations Changes in Elementary School based on Advance Organizer Teaching Pattern

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ABSTRACT: This research was executed aiming at examining effect of advance organizer teaching pattern on students' educational improvement motivation. In this regard, 30 students in fourth grade of one of Schools in Tehran were chosen through available sampling method, and distributed randomly in two groups of 15, which one of the groups was trained under advance organizer teaching pattern, and the other considered as control group. Devices used for data collection were author-made multimedia software, and Verland's educational improvement motive test. Findings indicated positive effect of learning based on advance organizer teaching pattern on educational improvement motive of students in fourth grade of elementary school, which was followed by increase in both internal and external sub-scales in educational improvement. The obtained results are consistent with cognitive theory of multimedia learning and its three underlying hypothesizes. These are: learners have separate audio and visual canals, the canals capacity is limited, and meaningful learning occurs when the learner actively selects, organizes, and composes visual and audible information.

Keywords: Educational Improvement Motive, Advance Organizer Teaching Pattern, Student

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INTRODUCTION

Despite of numerous studies executed in learning, findings and results in teaching methods are different, because of many factors influencing in learning, so that there is not a common opinion between education instructors in using special teaching method in enhancing learning. One of the teaching methods is teaching based on advance organizer pattern (Shah Nemati and Vafaei, 2008; Jafari and Hashim, 2012). David Ausubel (1963), suggested idea of using advance organize pattern in education and believed that, in any time and stage, the learner has a stable structure and clear picture of knowledge in a special matter. He believed that this structure forms the learner ability in confrontation with new ideas, and new matters are meaningful for learner only when they are associated with available cognitive structures which are results of their prior learning (Safavi, 2003). Sometimes, the learner gets a more brief and general concept which deduces more relevant special concepts during a process that Ausubel (1963) called it comprehensive learning. This meaningful learning process creates a comprehensive framework of concepts and matters that hierarchically organized for special domain of knowledge. Formation of this skill needs to a continual process of meaningful learning. Also, there is an emotional positive advantage in significant learning. The learner feels he has controlled his acquired knowledge, and he is ready to use this knowledge in problem solving, or facilitates a more significant learning (Novak, 2010). Mayer and Bromage (1980) have stated that, the best usage of advance organizer occurs when information is unknown and exclusive, or on the other hand they can be connected with

past experiences. They also found that, not only learning and recalling meaningful information, but also unfamiliar matters may be increased by advance organizer (Azobel, 1960; cited of Leen, 1993). Studies have shown that, using advance organizer makes courses more meaningful for learner, and leads to a better learning and more educational motivation of learners (Mielr et al., 2002; Georgy et al, 2009; Aslani et al., 2013).

Technological developments during the last years have increased creation of more affluent and effective environments. Now, we are simply able to expand multimedia teaching through displaying information in different forms such as text, pictures, and voice. Few studies have shown that, learning increases when educational matters comprises explanations and descriptions (Ozcelik et al., 2009). Advance organizer is observed when Ausubel, as structuralize psychologist, emphasized on its importance, he has considered advance organizer teaching methods besides teaching methods such as speech and explanatory methods. According to him, passive or inactive learning of speech or explanatory teaching methods will change to active methods by applying advance organizers. Students are not inactive in this method, because according to Ausubel's belief, advance organizers presented by teachers can motivate learners' mind. This will be achieved by advance organizers through associating learner's past knowledge with matters should be learned by them (Aghazadeh, 2011).

In advance organizer pattern, concepts, from whole to details, are directly provided for learners, this pattern is classified in two categories: 1-explanatory 2-comparative

Phases of teaching advance organizer:

Organizer pattern includes three phases: presenting advance organizer, presenting desired courses or matters, strengthening cognition structure (Joyce, Weil and Calhoun, 2000).

Aseton (1983) in his analysis showed that, organizers are effective for all ranges of age; however, their effect on students who are in objective phase and in all subjects is a little more. Providing matter with explanation and demonstration that lead to action and generalization will improve organizers effectiveness and their related effects. Very likely, effect of organizers is due to advantage which is given to students to make knowledge while they are studying, watching slides, and listening to speeches. Students, indeed, learn how to being thought and will settle to a higher conceptual level than when intellectual and meta cognitive framework skills are not used by them (Joyce et al., 2000). Smith and Gratton, (2001) in answering to the question that, why advance organizers are useful, explained that, advance organizers can provide a mental framework for lecturer to plan teaching. So, the learners can more easily outline their learning. An effective advance organizer uses concepts, expressions, and logical theorems which are stated to involve learner, and it is no need to be long, but it should be provided clearly. It can simply present a list of headings and sub-headings of a part or a chapter which are indicated as points in a table, or as a conceptual plan. Ausubel stated that, to become effective, advance organizers should be presented at the highest level of abstraction and generality towards future training materials (Aghazadeh, 2011).

Ausubel- Fitz Gerald, have conducted many studies to examine effectiveness of advance organizer and confirmed plan effectiveness of these training policies. The study showed that, using advance organizers has made learning very easy, especially when the teacher is working with learners who are weak in terms of verbal ability or have little previous experiments on the subjects. Other studies have been executed in this regard and have shown that, teachers who start their teachings with advance organizers, students will find their new subjects meaningful, and their teaching method leads to a better learning by students (Aghazadeh, 2011). Learning is assumed, as other activities, a work, and in some cases is very difficult. If any difficult action is don enthusiastically, its difficulty feeling will be disappeared and will follow with interest. The best factor which enhances students' motivation to continue learning activity is that, the students should understand the lesson well. The students who understand the lesson will pass different exams well; will be encouraged by his teachers and classmates; and this will enhance his motivation (Safavi, 1996). Keller (1983) in his incentive design pattern classified learning motivation in four components:

- **Interest:** interest is a state that is identified by focusing attention to one thing, or preferring one thin to other things, or feeling pleasure resulted from special

attention to some things, or attending in some activities (Shoari nejad, 1985).

- **Communication:** The more relevant is learning content to main needs, the more students' learning motives increase. Any activity which is more responsive to the needs of learners, will establish motives in them. Keller believed that, teaching should meets different aspects of learners' needs so that, the learners have had incentives for active participation in training.

- **Expectation:** Expectation of oneself and others' expectation (such as teachers) from the individual is one of the factors effective in educational success or failure of a person. The more confidence, based on previous experience, has an individual about his/her ability for success acquisition, the more success will have in practice.

- **Consent (Results).** He consent comes from achieving to goals increases individual's motivation in pursuing similar goals in future (Fardanesh, 1993).

Hence, given to role of advance organizers in students' learning, and given that, schools and educational system in our society emphasizes in teaching special content, so it requiring that changes should be performed in order to emphasize on more general skills that can be more generalized and applied in different learning situation (Afrouz et al. , 2006). In the recent study, effect of advance organizer applied in some educational media on students' educational improvement motivation in the fourth grade in civics course has been investigated. Most of the time, students' learning methods is the main reason for lack of academic achievement of students and reduce in their motivation towards theoretical learning. Although many schooling specialists have been identified correct procedures in learning and studying, they are not functionally used in schools and teaching. It is evident from literature that many researchers have been paid to educational motivation and teaching based on advance organizer pattern. Heydari et al. (2010) compared effect of teaching English language with teaching software and traditional method on educational development of students, and suggested that, not only using learning software in teaching can affect educational development of students in English language, but also teaching English by software is effective in motivating students to learn English language. The study conducted by Almekhlafi (2006) titled "effect of learning language by computer on development and motivation of elementary students" showed a significant difference between control and experiment group. Fetsco and McKlor (2005) have stated that, for a person with a strong development motivation, the joy degree which he/she experiences in success depends on the level of perceived challenge. On the other hand, the more level of challenge increases, the more increases enjoy with success (Seif, 2012).

The results of Klark's study in effect of new media and informational and communicational technology (including, computer and educational software) on motivation shows that, active choice increases among

learners due to communicational and informational flexibility; using recent technologies hasn't had a significant effect on mental effort of learners, and teachers have had more motives to teach, and this leads to their empowerment in schooling (cited of the same resource).

Sherbo (1979) investigated effect of photo advance organizer on learning principles of Physics on 579 ninth-grade students, findings indicated that, experiment group had higher scores than control group in both tests (cited of Kalantari). Heron (1994) reported that, audio understanding of students from a video tape on foreign language by a advance organizer which is composed of some short sentences in a way that events are summarized by chronologically method will facilitate. His study showed that using description as an advance organizer is effective in both understanding and memorizing. Kiewra et al. (1997) examined a test to investigate effects of three advance organizers (matrix, linear, and standard advance organizers) and repeated presentation of a speech about Radar on performance of three different tests (Recall test, Recognition of isolated facts test, Facts test). Findings have shown that, repeated presentation of matters, increases recalling facts, and on the other hand, those learners who had been used matrix or linear advance organizer didn't get higher scores than learners who had been used standard advance organizer. Leen and Chen (2006) in their study investigated effect of ten advance organizers, such as descriptive and questionable advance organizers, in increasing learning comprehension of learners in English language course for foreigners, based on animations of contents of a course. Results showed that, questionable advance organizers are more effective cognition approaches to improve reading comprehension of English course learners for foreigners based on content-based courses.

Chen (2007), in a study about "effects of advance organizers on learning and recalling of a completely web-based class" concluded that, advance organizers, specially general summary of text, may improve short-term learning of students but, contracts the long-term learning function of the students. Advance organizers don't help to students with higher learning abilities. Mohammadi et al. (2010), in an article of "The role of advance organizers in learning English language course as the second language" found that the graphical advance organizers make a significant improvement in learning English language as the second language. Kalantari (2002) in his MA thesis has examined effectiveness of advance organizers on male students' learning in high school second grade, and concluded that, there is a significant difference between control and experiment groups in terms of learning level, namely, advance organizer has a positive effect on learning.

Afroz et al, (2006), in a study examined effect of advance organizers on learning geography by mal students in high school second grade, Findings showed that the group who had been comprehended advance organizer had a significant difference in post-test results than the group

who hadn't been comprehended the advance organizer. Fathi nia (2007) in his study, after examining 105 math educational videos in fifth elementary grades has concluded that, some educational applications of learning hypothesizes considered in this research haven't been considered in producing these videos, the most important of them including, goals clarity, reviewing requirements matters, providing advance organizers, attracting attention, matters organization, summing up, and finishing each section of videos. Findings of the study also show that, reviewing requirements matters, and providing advance organizers- especially in first, second, and third grades of elementary schools- have been rarely seen. Other application of Gerandick's theory (using example, audience and learners motivation) is observed. Shah Nemati and Fani (2008) in a study compared effect of advance organizer pattern and speech method in increasing retention and transfer extent and its relation with performance level of female student of fourth grade. According to the research findings, using advance organizer in comparison with speech method has increased retention matters and transferring learning circle and educational performance of students. Jafari sani et al. (2009), in their research examined effect of advance organizer pattern on learning general chemistry course. Findings showed that using advance organizer pattern has had a significant effect on students' general chemistry score. It is possible that, advance organizers could have a positive effect on increased student's learning and motivation. The recent study is important in examining effects of one of the new methods effective in learning. In this study, the researcher wants to weight effect of this method on students' motivation for academic achievement than the usual method of teaching through using a multimedia program. Undoubtedly, the study is important in helping to improve teaching methods of teachers, and raising students' learning. Thus, the aim of the recent study is examining effects of teaching based on advance organizer pattern on educational motivation of fourth grade students, so based on this goal, the research hypothesis will be as follows:

1-Multimedia program teaching based on advance organizer teaching pattern has a positive effect on internal exciting.

2-Multimedia program teaching based on advance organizer teaching pattern has a positive effect on external exciting.

MATERIAL AND METHODS

Sample size and Sampling method: The statistical universe composed of all elementary students in fourth grade who are studying in one of Schools in Tehran. A sample of 30 subjects was chosen and studied through available sampling method, and the class was classified in two groups of 15 experiments and control group.

Measuring Devices

The research- mad multimedia software:

Multimedia teaching is one of the proper methods in student-based learning. Today, with tremendous advances occurred in computers power and the probability to record audio and video by computers, we can in whole install multimedia on computers or compacted disks. Designer of such programs often asks students to take decisions, then given to answer, his decision or choice will design the program so that it reviews part of matter and presents new part, or display a part to review, or takes forward the plan.

Academic Motivation Scale (AMS): The academic achievement test which had been provided by Verland, Blasé, and brayer, based on D.C Vryan's autonomy theory (1985) was used in this study. The test composes two sections: internal motivation, with 16 questions; external motivation, with 12 questions. This scale has been normalized by Bagheri (2000). The results showed that, this scale is exposed to change in population of high school students in Tehran, so that it will reduce from 28-items to 26-items. To evaluate its reliability, Bagheri (2000) has used test-retest and internal consistency methods. The results showed that:

a) The reliability achieved through test-retest for internal motivation is 0.76 for understanding, 0.74 for stimulation experience, 0.70 for progress, 0.70 for identified set up, 0.83 for interjected regulation, 0.79 for external regulation, and 0.77 for lack of interest.

b) The second way to estimate AMS was sub-scales internal consistency computation using Cronbach's alpha. The smallest value of alpha, 0.70, is related to "internal motivation sub-scale for stimulation experience", and the highest value, 0.85, is for "internal motivation for understanding". These findings are consistent with Verland et.al (1992, 1982, P 1012, cited of Bagheri, 2000) in which alpha value varies between 0.62 to 0.68, so alpha values show that academic motivation scale (AMS) has a proper internal consistency (Bagheri, 2000).

Scoring method of Verland's academic achievement motivation: The subjects' answers were scored in this test, based on Likert seven degrees scale through which people identify their agreement or disagreement levels toward questions.

MATERIAL AND METHODS

Quasi-experimental research was used, and subjects were distributed in experiment and control groups. Pre-test and post-test were used in this study to assess effectiveness

of multimedia learning program. Students were selected randomly, and divided in two groups of 15. Among available Quasi-experimental designs, pretest-posttest design with control group and random assignment (Classical design) was used in this study (Biabangard, 2011).

RESULTS

Findings were analyzed through using SPSS software and inferential and descriptive statistics. Descriptive statistics included mean and standard deviations (Table1), and inferential statistics included MANCOVA, and also Shapiro-Vilk's test, and Lovin's consistency test of inter group variance are used.

To examine normality of scores, when participants are 40 or less, Kolmogrof Smirnov and Shapiro-Vilk are used. Otherwise, reported amounts of a distributed index: skewness and kurtosis, or scores visual graph drawing is enough. Because the sample size of the study is less than 40, so results of Shapiro-Vilk's test are presented in table 2. According to the results obtained from Shapiro-Vilk, since the values obtained for these tests in a group is not significant at 0.05 level, so the equality condition of within group variance and normal distribution of the data is established.

Co-variance consistency hypothesis of pretest scores was examined using Lovin test (Table3), and given that Lovin'a F value was not significant at $\alpha=0.05$, so congruency assumption of data co-variance and making regression slop were deducted, and using co-variance analysis test for examining hypothesizes by consistency assumption was allowed.

Results of table 4 show that, significance levels of all tests allowed using MANCOVA. These findings show that, there is a difference in study groups in terms of one of the dependent variables. Ata square shows that, the difference between two groups considering dependent variables in whole is significant, and is 52.5 percent. It means, 52.5 percent of variance related to difference between two groups is caused by mutual effect of dependent variables.

Given to data presented in table 5, since F value in internal motivation component with 11.955, and in external motivation with 8.230 with freedom degree (28,1) at $\alpha=0.05$ is significant, so we can conclude that , teaching based on advance organizer pattern has an effect on educational development of students in fourth grade elementary schools.

Table 1 - Descriptive criterions of internal and external motivations variables in experiment and control group

Variable	Group	Pre test		Post test	
		Mean	Standard Deviation	Mean	Standard Deviation
Internal motivation	Experiment	29.066	9.19990	39.466	9.66486
	Control	28.866	8.91120	28.466	7.64261
External motivation	Experiment	27.733	8.03978	35.666	10.2097
	Control	27.333	6.26403	26.733	6.41946

Table 2- Examining data distribution normality of research variables through Shapiro-Vilk

Variable	Group	Shypro-Vilek		
		Value	Freedom degree	Significant level
Internal motivation	Experiment	.960	15	.690
	Control	.956	15	.616
External motivation	Experiment	.942	15	.404
	Control	.921	15	.201

Table 3- Lovin's test results for examining co-variance consistency of participants' within group scores

	F	Df1	Df2	Sig
Internal motivation	1.847	1	28	.185
External motivation	2.240	1	28	.146

Table 4- The significance test results of multivariable analysis of co-variance (MANCOVA) in two study groups in post test by controlling pre test effects.

	Test	Value	F	Df hypothesis	Df error	Significant level	Ata square
Group	Philae effect	.525	14.935 ^a	2.000	27.000	.000	.525
	Lambda Vilks	.475	14.935 ^a	2.000	27.000	.000	.525
	Halting effect	1.106	14.935 ^a	2.000	27.000	.000	.525
	The highest root of error	1.106	14.935 ^a	2.000	27.000	.000	.525

Table 5- Results of MANCOVA test for comparing post test scores of educational development in study groups by controlling pretest effect.

Indicators of change		Sum of squares	Freedom degree	Mean of square	F	Significant level
Group effect	Internal Motivation	907.500	1	907.500	11.955	.002
	External motivation	598.533	1	598.533	8.230	.008
Error	Internal Motivation	2125.467	28	75.910		
	External motivation	2036.267	28	72.724		
Total	Internal motivation	37645.000	30			
	External Motivation	31838.000	30			

DISCUSSION

The results of the recent study showed that, learning based on advance organizer teaching pattern influence on educational improvement motivation of four grade elementary students, and this interference leads to increased internal and external motives of students in educational achievement. The study findings are consistent with Heydari et al. (2010); Bahrami and Rezvan, (2006); Malekian and Akhondy (2010); Mahdi Zadeh et al, (2011); Ramezani (2011); Kalantari (2002); Afrouz et al, (2006); Fathi Nia (2007); Shah Nemati and Fani (2008); Yousefi et.al, (2008); Jafari Sani et al. (2009); Salighedar (2009); Almekhlafi,(2006); Fetsko & McKlor (2005); Kayora et al. (1997); and Leen and Chen (2006).

In explaining the results, multimedia learning is one of the suitable methods in student-centered learning. Designer these kinds of programs usually ask students to make a decision, then based on the response, their decision or selection will design so that he/she reviews some parts of the matters and presents new parts, or demonstrates a part to review, or take forward the plan. The obtained results are consistent with cognitive theory of multimedia learning and its three underlying hypothesizes. These are: learners have separate audio and visual canals, the canals capacity is limited, and meaningful learning occurs when

the learner actively selects, organizes, and composes visual and audible information.

The first principle that can be explained by cognitive theory of multimedia learning is "multimedia principle". When the mere words are presented, the learners only attempts to select, organize, and arrange words with their existing knowledge, but when both pictures and words are presented, they can involve themselves in selecting and organizing pictures and arranging mental words. Arranging words and associated pictures is considered as one of the key phases in meaningful learning.

The second principle that can be explained by cognitive theory of multimedia learning is "spatial proximity". Separation of words and associated pictures and their remoteness from each other on the screen leads learners to have less chance in simultaneous keeping in working memory visual and verbal representations. The process of arranging words and pictures occurs when the words and associated pictures are at the adjacent to each other.

The third principle that can be explained by cognitive theory of multimedia learning is "time proximity". The time mismatch in representation of words and associated pictures leads learner to have less chance in simultaneous keeping verbal and visual representations in

its working memory. Conversely, concurrent representation of words and associated pictures gives learner more chance to keep verbal and visual representations simultaneously.

The fourth principle that can be explained by cognitive theory of multimedia learning is "fluency principle". Presenting unnecessary matters causes that, working memory accumulates with unrelated words and pictures, thus encounter a problem for concurrent keeping words and associated pictures. On the contrary, presenting topics associated with matter causes that working memory saves words and associated pictures simultaneously. So, observing fluency in presenting topics will facilitate the process of arranging words and related picture (meaningful learning).

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