

# **Investigation on the Amount of Attention Given To Educational Applications of Learning Theories in Educational Math Films at Primary School Level**

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## **Abstract**

The present research aims at appraising educational applications of learning theories practiced in mathematics instructional videos at primary level produced by Educational Technology Bureau of Ministry of Education in Iran. To conduct this research, principles of educational presentation were extracted from learning theories once these theories were studied. The extent to which these principles are followed up in each and every episode of the films mentioned earlier has later been examined through method of “content analysis”.

The results of examining 105 episodes of “mathematics educational films” at primary level 5<sup>th</sup> grade revealed that certain educational applications of learning theories have been overlooked in production of such programs. The most frequent applications of such methods are as

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**follows: transparency of objectives; review of prerequisite materials; draw-up of advanced organizers; attraction of viewers' attention; organization of educational materials; rational conclusion; and ending of each episode.**

**The research came up with the findings below:**

**1) Behavioral goals are not fully and explicitly defined in any of the episodes. 2) Pre-requisite materials are scarcely surveyed and advanced organizers are almost not presented, particularly in educational programs for first, second and third grades students (only in one out of 62 episodes the pre-requisites have been reviewed and in 6 episodes the advanced organizers have been displayed). 3) Drawing addressees' attention through non-verbal methods has been accomplished far and large in 12% of episodes at each grade, while they are not assisted by various advantages of motion pictures and video-capturing systems. 4) Materials have not been organized in most episodes (77%). And 5) concluding as well as ending most parts of the videos for first, second, and third grades (concluding in 89% and ending in 81% of episodes) are unclear.**

**Key Words: Education, learning Theories, Instructional Video**

## **Introduction**

A proper combination of “education” and “entertainment” is what keeps the producers of educational movie clips for children and youths busy. This is because of the danger that exists in producing an educational clip for this age group: if there is more than enough emphasis on the educational aspects, the film content becomes so tiring and boring that the audience will bypass watching it. And if there is more than enough emphasis on the

attractiveness and the entertainment aspects, the program content will be empty from educational strength..

Two matters, the identifying a framework for each of the “entertainment” and “education” aspects, and reaching principles for maintaining each of these aspects, if possible, make a positive step toward calculated combination of the two in educational films. It seems that dissimilar to the “entertainment” aspect, the “education” aspect can be fit in a framework regarding the principles for the offering of educational content. By considering this framework in educational films, the educational strength can be increased.

In Schultz's study, principles such as learners' involvement in the education process, having them ask questions and discuss topics, and to summarize and repeat the important points at the end of each class have been approved. Kaplan and Pasco conducted two different teaching methods for two groups of students, one of which was carried through with fun and jokes, and the other method without. The two researchers showed that the students who had learned the content with fun had been able to better absorb and recall the material. In a similar study Kotz & Schmitz investigated the impact of teacher's enthusiasm and change in voice and gestures while teaching the students in the same way (in experimental method). The researchers concluded that the learning done by students who had this type of teacher was more (Sha'bani, 1992, p. 285 – 287).

Ulson has summarized the results of a hidden control over students watching famous educational films such as Sesame Street and “Electronic Company” as follows:

The parts including music and out-of-scene sound addition were more attractive for the students. Developing interaction with the audience and exiting him to personal activities result in the program audiences more attention. Multi-episode programs were in more favor compared to linear and without-change programs. Contracts

and abilities of the TV media in conveying special meanings and grabbing the audiences' attention to the programs have been effective. These contracts include the following: flashback, special effects, gradual fade-out (dissolve), fictional elements such as doll or cartoon characters, creation of magical effects such as sudden appearance and disappearance of things (Ulson, 1998, p. 430-423).

Besides such studies, the main source of extraction of the most important principles for educational content offerings are learning theories, which make it possible to draw out principles that can be more trustfully spoken about. The fact that different descriptions for "learning" are offered is rooted in theory-makers' different viewpoints toward how learning is done and what its conditions are. However, the most comprehensive description in this field is provided by Hilgard and Marcouis: "Learning is consisted of the process of relatively stable change in a person's potential behavior, based on experience" (Seyf, 1989, p. 48).

With a small bit of tolerance, the contemporary theories, which have influenced the education systems learning, can be categorized into two big collections: The behaviorism theory and the cognitive theory (Sha'bani, 1998, p.24). "(Hergenhan & Ulson) separate two functionalist and associationist model paradigms in the behaviorism theories and emphasize that "the learning process cannot move forward by learning only on one of the mentioned models This is because each of the models emphasize a set of truths about the learning process and ignore another set. Therefore, in order to have the correctest image from the learning process, it should be looked at from different angles (from the point of view of different models). (Hergenhan & Ulson), 2003, p. 75).

Based on this, several theories were recognized as closer to this research subject after reviewing various learning theories. These theories included "Zhrendyke" and "Skins" from the functionalist model, Pavlof's and Gatry's theory from the associationist model, and theories by Azoubel and Bandoura from the cognitive model.

The mentioned studies and theories stated some of the principles for educational content offering. Considering these in the teaching-learning process will help in further fulfilling the educational goals. The current research will investigate the accomplishment of these principles in educational math films for primary schools developed in the office of educational technology of the ministry of education.

Facts provide that educational films developed in the office of educational technology were not as successful as they should be in reaching their educational goals. This lack of success is possibly due to various reasons that had remained hidden from the eye of the researches conducted so far. The initial reviewing of the produced educational films for the primary school level shows that these films, especially those for mathematics education, have not paid attention to principles of psychology of education & learning and the principles for offering educational content. It is possible that one of the reasons for the students lack of attention for these films is this very reason. Due to it, the current research focused on exact and referable investigation of the subject to understand the extent with which the principles of offering of educational content, driven from theories of learning, were considered in these films for teaching mathematics in the primary school level. As a result, the following research questions were developed and investigated:

- To what extent are the educational applications of learning theories – separated to behaviorism, associationism, and cognitivism – involved in the production and development of educational mathematics films in the primary school level, separated to each grade?
- To what extent were principles related to “educational stability” used in the teaching-learning process in the films (principles such as use of teaching-aids, setting the ground for high level mental activities, etc.
- To what extent is the teachers' behavior parallel with principles mentioned in this field?

## Research Method

This research was conducted with the content analysis method. This research's statistical population consisted of the mathematics education films for the primary school (grade one to five), produced in the office of educational technology of the ministry of education. These films were produced for showing in primary schools, however, after the establishment of the education channel on the Islamic Republic of Iran's TV broadcasting service in year 2002, the films were also broad casted on this channel through-out the year.

## Findings

The extent to which educational applications of the theories related to functionalism models were considered in the investigated films represented certain facts in the research findings. The facts were that some of the educational applications such as Zhrendyke's theory especially in “making emotional relationships and creating the ground for a start” and “asking the audience” were not usefully considered in the films.

Other educational applications of Zhrendyke's theory (use of example and learners' and audiences' motivation) in the investigated films were considered and it seems that the “learners' and audiences' motivation” needed more work in these films.

Regarding the educational applications of Skinner's theory in “clarity of goals” as an educational application, the theory is not considered in the investigated programs.

In the investigated films, unlike “clarity of goals”, the variable for strengthening the correct answer is correctly considered in most parts. We need to realized that the film's communication method with the audience is one way in the form of vocal strengthening,

and verbal encouragement of the learners and sometimes the persons who have correctly responded.

Also, fun and jokes were seen in most parts of the studied parts. Poetry and Music was only used in grade one films. No poetry or music was used in films of grade four or five, a matter which we think is possibly due the age increase in the next grades.

Regarding the use of music, it should be said that the cases of use are very limited and include “the separation of used forms in a piece” or “in the field of some of the forms (background music)”. It should be said that the films for the second grade and grade four and five in particular have not even made the smallest use.

Regarding the educational applications of Bandura's theory through film and camera capabilities, certain features were not used as they should have been. For example, appearing and disappearing objects at the service of teaching, showing the stages of a phenomenon, etc. were not considered in grade one and two films, and also, film and camera capabilities as tools to grab attention, such as camera close-up and movements and unusual camera angles, etc. were not considered in grade one films. All of this was regarding the level of consideration for educational applications of theories related to cognitive model in the films being investigated.

Research findings about the educational applications of Azoubel's theory show that this theory and its applications in teaching and learning have not been considered by the educational film producers. This is such that “reviewing the pre-requisites content” and “offering of the pre-organizers is not apparently planned and goal oriented in the investigated parts in any of the grade levels, especially grades one, two, and three.

With respect to level of consideration for topic of education stabilizers in the investigated films, the topics that were the stabilizers of the educational content in the learners' mind were also investigated in addition to the educational applications of learning

theories. The research findings in the field of education stabilization show that these topics are not considered as they should have in various school grades.

Taking advantage of education-assistance equipment in these films is minimal. "Invitation for active participation in the learning process", which includes actions such as inviting the audience for giving an example, asking the audience or inviting them to solve a problem, encouraging the audience to make concluding statements, and the other elements were not considered in any of the film parts for grade one. However, this issue is considered in films for grade three, four, and five.

Investigation of teacher's behavior in educational math films in the primary school level shows that the teacher's utilization of non-verbal methods for grabbing attention, in completion of verbal methods, not considered, which include grabbing the learners' and audiences' attention by movements of the pointing stick, nodding, and hand movement for different purposes, having moments of silence, etc.

### **Discussion, Conclusion and Suggestions**

A good beginning, is the first step for providing a successful education. This matter has high importance in educational films. This is due to the fact that television is mainly a one-way communication system with the audience; if the educational film is not able to keep the audience at the set and grab his attention and interest to the learning, the rest of the efforts will be pointless. Learning theories by Zhrendyke, Skinner, and Azoubel consider certain elements as the next steps after grabbing attention and motivating the education audience. These include, clearly stating the educational goals, reviewing the pre-requisite content, and offering the pre-organizers. This is while lack of attention to these issues in most parts of the investigated films, creates doubts for the



successful start of most of them. Considering the importance of a good start in a successful teaching, negligence to consider these topics can negatively influence the rest of the educational stages. However, as there is a section at the beginning of each film for “preparation for starting the teaching”, it seems that it is possible to include sections with these topics to the beginning of the investigated films without messing up the the current film structures.

After preparations for beginning the education, the next steps in the education process include, “grabbing attention”, “guiding the attention”, and “continuation of the attention”. This is in the form of issues being investigated in areas such as vocal attention grabbing, grabbing attention using camera and film capabilities, clarification and emphasis of the main topics, content organization, using fun & jokes & poetry & music, diverse use of music, coordination of the atmosphere with the subject of education, coordination of sound and picture, inviting the learners to participate in the learning process and asking questions from the learners. The importance of these issues is mostly emphasized in Pavolf's conditioning theory and Gaatry's contiguity learning theory, as well as in studies conducted by Ulson and Kaplan & Pasco, offered in the introduction section. Despite all this, most issues mentioned here were not considered in the production and development of the investigated films. It is possible that this issue influences these films' audience negatively. The other matter that can be pointed out is the teacher's monotone voice and gestures and lack of diversity that is proportionate with different emotional circumstances and figures, especially in grade four and grade five films. As Koutz & Schminz showed, difference in voice and face forms and the teacher's enthusiasm are among influential elements on learning. In the mentioned films, the teacher's monotone voice and his forms of face make the audience bored and as a result distracts them away.

It seems that to modify the investigated films we can add some of the issues mentioned to these films without touching the current structure in these films. These issues include the sections for inviting the audience for active participation in the learning process, asking questions from the audience and clarifying the learning topics and having emphasis over them.

In order to clear the issue of lack of coordination of sound and picture, it is possible to recompile the films that have this problem to improve their quality.

Among other essential steps in the teaching process are stabilizing the taught material in the audience's mind by various methods, including, the setting of the ground for mental activities such as reasoning, inference, and comparison which is done through inviting the learners to think and discuss about specific aspects of the subject, and utilization of education-assistance equipment. ■ Lack of enough attention to these issues in the investigated films causes difficulties for deepening of the content in the learners' mind and results in their shallow and short-term learning. To overcome these deficiencies it is suggested that items be included in the films which state certain aspects of the subject and set the ground for the learners' thought, discussion, reasoning, and inference in the investigated films.

“Summing up and conclusion” and “the finishing method” is also among effective topics in education due to their providing an opportunity for reviewing the main topics of the discussion and stabilizing them in the learners' mind and the continuation of the learning process. The study by Schoutz, referred to in the introduction, also emphasizes the importance.

The film producers have not paid attention to the learning process completion. This is observable by realizing their lack of attention to the above two topics in most parts of the investigated films, especially in films for grade one, two, and three, as well as lack of diversity and efficiency of methods used to summarize and

end many parts which have regarded these issues in the films. This is while a set of elements could have an effective role in the completion of the learning process and its continuation, which include, more use of diverse effective methods of reviewing the topics and organizing them, requesting the learners to remember and summarize, stating a question about the subject at hand and raising the learner's curiosity for further examining the matter, and referring to the next section of the film.

Of course, considering that the summarization and ending is included in each part of the film, it seems that addition of the mentioned parts to the end of the necessary films is possible without any further change to the current film structure.

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