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Research Article

Examining the effect of tutoring on motivation in teaching mathematics

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Abstract

This study aims to analyze the effect of edutainment method on mathematics learning motivation in elementary school students in tutoring environment by comparing it with non-edutainment method and Identify the factors that influence the effectiveness of edutainment method in increasing mathematics learning motivation. 75 elementary students (37 received edutainment and 38 received a non-edutainment method) were involved in this study. Primary data was on a motivational scale, and secondary data was done by interview. This research was conducted using a mixed method approach consisting of a quantitative approach and a qualitative approach. The quantitative approach was used to determine the effectiveness of the teaching method, while the qualitative approach was used to collect additional data on what makes students happy and motivated in learning. From the results of the focus group discussions conducted, qualitative information was obtained about various things that can make students happy and excited in undergoing learning, including the availability of friendly and good teaching staff, the availability of teaching aids, interesting subject matter, having studied the material before, and comfortable learning space conditions.

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Introduction

Education is one of the platforms for self-development, if used in accordance with the right portion. The education in question is often perceived as formal education only, namely higher learning schools, even though there are many other forms and concepts of education that might provide many benefits for students. Education is beneficial when teachers at schools are able to create a pleasant atmosphere for the entire learning process. Education in Indonesia consists of several types, including but not limited to formal education, non-formal education, and informal education (Situmorang, 2010).

Formal education is a structured learning system organized in stages and continuously, including primary, secondary and higher education. This system is designed to develop students' potential comprehensively through a systematic and planned learning process (Tilaar, 2015). In formal education, the education process is designed by integrating various competencies that enable students to actualize their potential holistically (Mulyasa, 2016). Formal education is a learning activity organized in schools and has a clear level of education, as well as complete learning facilities in the form of classes, laboratories, libraries and teachers or teaching staff, principals and so forth. Formal education has a standardized curriculum, and students must complete several standard materials for each level of education at schools. Many benefits

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are obtained by students in formal education, including academic agility, strengthening mental, physical, discipline, and self-identity (Situmorang, 2010). Given the importance of schools for the community, which is used as a place of learning and a space for social interaction, schools must be able to become a place to form the basis of student character that is useful in the social space and establish closeness between students. Schools need to be a place to get to know each other more closely (Given, 2002).

Education, especially in formal education, has experienced a decline in quality in efforts to improve students' ability to learn. This is due to the conventional system that have the following characteristics: using a classroom that is closed from the surrounding environment, formal and static room settings, the teacher becomes the source of students' knowledge in learning, using the blackboard as the main media in learning, striving for silent learning conditions to get a high level of concentration, using mandatory books in the classroom, and using multiple choice questions as a measure of student success in learning (Suryadi, 2007). These facts indicate that the quality of education affects students' ability to learn.

The level of a student's intelligence also affects the quality of the students' learning. The theory of intelligence that is considered a more objective concept of learning approach is the theory of multiple intelligences. The theory was proposed by Howard Gardner who assumed that every individual has the intelligent potential within the individual. There are eight types of multiple intelligences proposed by Gardner, including linguistic, mathematical-logical, spatial, kinaesthetic-physical, musical, intrapersonal, interpersonal, and natural intelligence (Gardner, 2003).

These multiple intelligences greatly support the development of student's in learning and understanding something, there are two aspects used in the multiple intelligence approach, including aspects of learning methods and learning materials. The learning method in question is a method that is able to create the development of learning variations and create the best learning conditions for students.

In addition to learning motivation, the teaching teacher's method is one of the most important things in the realization of student quality and the level of student understanding in a learning material. A good teaching staff is able to guide students to find the knowledge and knowledge they need without intervening or imposing the level of understanding of the teaching staff on students.

The national education system have several aspects of subjects that are assessed for graduation rates, including Indonesian language, mathematics, and natural sciences. The general public assumes that the subject that makes it difficult for students during their education in mathematics, but mathematics is just one aspect of the Ministry of National Education's assessment in meeting national standards and is used as a subject that is tested on all students in Indonesia. This is stated in the Regulation of the Minister of National Education Number 74 of 2009, article 7 regarding the subjects tested in the UASBN for the 2009/2010 academic year including Indonesian Language, Mathematics, and Natural Sciences.

This fact that takes into account many schools pay special attention to the subject and in schools the teachers provide math tutoring for students. However, math learning will be less effective if the students who learn do not like math. There are still many complaints that math is a boring, uninteresting, and confusing subject and makes students less responsive during lessons and becomes a negative perception of math.

The education system in Indonesia has various forms. In addition to the formal education system, there is also a non-formal education system that becomes an alternative education for students who are less developed in the formal education system. One of these systems is tutoring. Tutoring is a forum for students' development, in terms of school lessons and the development of students' verbal abilities in language. In some tutoring systems, students are freed to choose their own learning process, thus creating a comfortable and enjoyable atmosphere for students in learning something (Situmorang, 2010).

Edutainment learning methods allow the transformation of the learning process from activities that are connoted as monotonous to experiences that are expected to be more interesting and meaningful. Through an approach that combines educational elements with entertainment, students can develop cognitive, affective, and psychomotor abilities simultaneously (Zainuddin, 2016). In line with that, the Edutainment learning method is an innovative approach that

integrates elements of education and entertainment. This method is designed to create a learning experience that is fun, interactive, and meaningful, so as to increase student motivation and involvement in the learning process (Munir, 2017).

Tutoring that implements an edutainment system can make students' learning motivation tend to increase. This is because edutainment systems are more entertaining, fun, and makes students feel as if they are playing (Situmorang, 2010). Based on this, the tutoring system, which is an alternative to formal education, will greatly help increase students' learning motivation that supports learning outcomes and student achievement, especially for subjects that are mandatory material for all students.

The edutainment method is used as a way of learning that is fun for students. A good and productive classroom is a classroom that is comfortable spatially, raises students' internal motivation to learn, directed teacher activities and monitoring activities for students (Gagne & Berliner in Anonymous, 2010). Another thing that is no less important to note is how the fun method is able to make students pay more attention to mathematics subject matter, which is mostly considered difficult by the community.

The learning concept has an attractive classroom layout and the teacher's method of explaining is edutainment and is able to bring out students' internal motivation in learning. Alternative learning in the form of tutoring can be an option for students who feel they do not get enough knowledge at school. The concept of tutoring that uses edutainment methods will greatly affect the quality of students in learning. This is based on the fun and interesting nature of the edutainment method, as well as the importance of the learning process that raises students' internal motivation in learning so that the quality of students in understanding lessons will be high.

It is important to apply edutainment methods in math lessons for students in Indonesia. The intended concept is math edutainment that is applied in an easy way and in a fun atmosphere. The concept of math edutainment is a new thing in Indonesia in improving the ability to understand math lessons. In the application of such learning, the intended learning concept focuses on the teaching system of elementary school students, considering that at that time individuals are still affected and prefer to play and entertainment.

The results of research on edutainment on improving foreign language skills show that the edutainment method is able to improve students' ability in foreign languages as well as, increase students' learning motivation better than students who use conventional learning methods (Bird, 2005). The results of another study that used audio-visual media to improve early reading skills in children with reading learning difficulties (dyslexia) showed that the method was able to improve reading skills in children who had difficulty learning to read (Yulianti, 2011). The results showed that the edutainment method using audio-visual media was able to increase learning motivation and students' ability to learn.

Hypothesis

The hypothesis in this study is that there is a difference in motivation to learn mathematics between elementary school students who take tutoring and get the math edutainment method and students who get the conventional math method. Elementary school students who take tutoring and get the math edutainment method will be more motivated in learning mathematics compared to elementary school students who take tutoring, but get conventional methods.

Method

Research Model

This research was conducted using a mixed method approach consisting of a quantitative approach and a qualitative approach. The quantitative approach was conducted to determine the effectiveness of the teaching method, while the qualitative approach was conducted as additional data collection based on the subject's condition using interview techniques.

Participants

The population in this study were elementary school students in grades IV, V, and VI who attended tutoring (bimbel). The tutoring in question is tutoring that applies the math edutainment method and tutoring that applies conventional learning methods. The sampling technique used incidental sampling. The incidental sampling technique is used based

on sampling by chance, where the subject found by the researcher can be used as a sample, if the subject is deemed suitable for the research criteria (Sugiyono, 2009).

The data in this study were obtained using the Mathematics Learning Motivation Scale. The scale used is prepared based on the form of an attitude scale with the answer choice agree given the number 1 and disagree given the number 0 for the type of favourable statement and the number 0 on the answer choice agree and the number 1 for the answer choice disagree for the type of unfavourable statement. The math learning motivation scale was compiled by researchers based on learning motivation indicators consisting of; duration, frequency, persistence, fortitude, devotion and sacrifice, aspiration level, achievement qualification level, and direction of attitude towards activity goals (Makmun, 2004).

Data Collection and Data Analysis

The scale that has been prepared is then validated based on professional judgment conducted by Widyastuti, S.Psi., M.Si., Psychologist and Ahmad Razak, S.Ag., S.Psi., M.Si., to correct the overall items made based on the standardization of logical validity and provide suggestions to researchers in validating the measuring instruments made. The items that have passed the validation test are then tested to determine the discrimination power of the items by looking at the corrected an item-total correlation value. The results showed that out of a total of 32 items tested, there were 17 items that had good discrimination power with the corrected an item-total correlation coefficient moving from 0.273 to 0.612. The resulting reliability is 0.7 using the Kuder Richardson correlation technique. The reliability coefficient value is said to be steady (consistent and stable) is 0.70 (Linn in Mansyur, Rasyid, and Suratno, 2009). The research data that had been obtained were then analysed using the Mann-Whitney technique to see the differences between the two groups given different methods (edutainment and conventional).

Table 1. Blue print of math learning motivation scale

Component	Indicator	Favorability	
		F	UF
Motivation to Learn Mathematics	Duration: how much time is spent doing the activity.	B	A
	Frequency: how often the activity is performed in a given period.	C, D	
	Persistence: how precise and sticky it is to the purpose of the activity.	E	
	Its fortitude, tenacity, and ability to overcome obstacles and difficulties to achieve goals.	G	F
	Devotion and sacrifice are made, whether in the form of money, energy, thoughts, even soul and life to achieve this goal.		H
	The level of aspirations (intentions, plans, ideals, goals or idol targets) to be achieved by the activities undertaken.	I	J
	The level of qualification of achievements, products, outputs achieved from their activities (how much, adequate or not, and satisfactory or not).	K	L
	The direction of their attitude towards the purpose of the activity (like or dislike).	M	N, O

Results

Some of the students who participated in tutoring expressed the following characteristics that made them happy and excited to learn: friendly and kind teaching staff, availability of teaching aids, interesting subject matter, having studied the material before, and comfortable study room conditions. The data is the result of FGD (Focus Group Discussion) by researchers at a tutoring center on October 4, 2011, with 7 subjects and an age range of 9-11 years (grade IV, V, and VI). The FGD results indicate that students will be happy and excited to learn when these characteristics are met. From the results of the focus group discussions conducted, qualitative information was obtained about various things that can make students happy and excited in undergoing learning, including the availability of friendly and good teaching staff,

the availability of teaching aids, interesting subject matter, having studied the material before, and comfortable learning space conditions.

The results of descriptive analysis using the help of the SPSS 16.0 For Windows program obtained empirical data scores and hypothetical data which can be seen in table 2.

Tabel 2. Empirical and hypothetical score

From the results of data analysis, it can be seen that the learning method using edutainment is more significant than the non-edutainment method (conventional) in building students' motivation in participating in the learning process.

Group	N	Empirical				Hypothetical			
		Mean	SD	Min	Max	Mean	SD	Min	Max
Learning Motivation Edutainment	37	14	1,9	8	16	8	2,67	0	16
Conventional Learning Motivation	38	15	1,5	10	16	8	2,67	0	16

Table 3 shows a descriptive picture based on the categorization performed. The score categorization uses three categories: high, medium, and low based on the groups given different methods.

Table 3. Score categorization

Categories	Learning Motivation Edutainment		Conventional Learning Motivation	
	f	%	f	%
Low	0	0	0	0
Medium	3	8	1	3
High	34	92	37	97
Total	37	100	38	100

In answering the hypothesis, researchers conducted an analysis using Mann Whitney to determine the difference in motivation to learn math based on the method given.

Table 4. *Mann-Whitney results*

Group	N	*Mean Rank*	p
Learning Motivation Edutainment	37	35.24	0.254
Conventional Learning Motivation	38	40.68	

The results obtained are presented in Table 4, that the proposed hypothesis is rejected, which means that there is no difference in the motivation to learn mathematics in elementary school students who take tutoring who get the math edutainment method with students who get the conventional math method (p = 0.254). This can also be seen based on the mean rank score of the two groups, where the group given the edutainment method (M = 35.24) is lower than the conventional method (M = 40.68).

Conclusion and Discussion

The results of the descriptive analysis obtained in general show that the learning motivation of tutoring students who get the edutainment method is in the high categorization. This is based on the results of the subject's score which is between 5.33 to 10.67 only three people, while the subject's score above 10.67 amounts to 34 people. High motivation to learn mathematics is influenced by supporting facilities in the room such as air conditioning, educational posters that display various kinds of mathematical formulas with attractive displays, props in each material in the form of blocks, cubes, balls, and other spatial shapes, creative formulas that are simulations and games, giving gifts for several sessions of learning material from teaching staff, and lures from parents if they get good grades. This is an illustration of what happens to students who take math tutoring with the edutainment method. Sardiman (2011) argues that there are several ways to foster motivation for learning activities in students including giving gifts, but the gift will not be effective if the student who receives the gift feels unworthy of receiving the gift. This is based on the results of the subject's score

which is between 5.33 to 10.67 only three people, while the subject's score above 10.67 amounts to 34 people. High motivation to learn mathematics is influenced by supporting facilities in the room such as air conditioning, educational posters that display various kinds of mathematical formulas with attractive displays, props in each material in the form of blocks, cubes, balls, and other spatial shapes, creative formulas that are simulations and games, giving gifts for several sessions of learning material from teaching staff, and lures from parents if they get good grades. This finding is a description of what happens to students who take math tutoring with edutainment method. Sardiman (2011) argues that there are several ways to foster motivation for learning activities in students including giving gifts, but the gift will not be effective if the student who receives the gift feels unworthy of receiving the gift. This is reinforced by Uno's (2007) statement that one of the motivational techniques in learning is using simulations and games, which aims to create an interesting atmosphere and make meaning in learning, so that it is easy to understand and understand. Sardiman (2011) and Uno (2007) have suggested several ways and techniques in increasing students' learning motivation and have synchronized with the condition of students in tutoring that applies the edutainment method, so it can be said that the motivation to learn mathematics that lives in the tutoring students is in sync with the theory put forward.

In addition, from the hypothesis test, it was found that there was no difference in the learning motivation of students who attended math tutoring, with the provision of edutainment methods and the provision of conventional methods. The tutor who applied the edutainment method had a different teaching pattern when the researcher was still part of the tutor. The teachers used edutainment methods that lacked development so that students who were initially interested in the method eventually became accustomed to it and tended to consider the method mediocre. The teachers who are in the guidance who apply the edutainment method do not get an upgrade of edutainment material so that the significance between students who use edutainment methods and students without the application of edutainment methods is not much different. This is also influenced by tutors who apply conventional methods that often upgrade the abilities of their teaching staff regularly and periodically so that the teaching staff at the tutors get a lot of teaching ideas compared to teaching staff who never upgrade their teaching materials.

The facts and results illustrate that each student has a high level of motivation, hypothetically students who get the edutainment method should have higher learning motivation than students who get conventional methods, but the reality found in the field, there are several factors that cause the edutainment method to not run optimally. The factors that cause the method to not run smoothly include, among others, the unstable tutoring system, so that it affects the teaching staff and produces edutainment methods that are less than optimal, besides the problem of multiple tasks and responsibilities received by teaching staff causing the teaching concentration of the teaching staff to be divided, so that it does not show different significance to student learning motivation. Ahmadi and Supriyono (2004) suggest that teachers who are not qualified in the teaching methods used will cause students to feel bored and consider the method monotonous, especially if the teacher lacks mastery of the material, lack of preparation which results in less clear material and difficult to understand by students.

In accordance with the statement above, the factors that cause student motivation to increase are not from the teacher's teaching method, but rather other learning support factors so that they do not show differences in motivation with students who get conventional methods. This is because high student learning motivation in students who get conventional methods is influenced by many learning support factors, not from the teaching methods applied.

Recommendations

Tutors who have not implemented the edutainment method, should determine the right edutainment program and in accordance with the psychological conditions of students when learning, so that the method can be a fun method for students. In addition, tutors who will apply the edutainment method, should create a teaching structure and material deepening that is more directed towards increasing student learning motivation in the classroom. Teachers throughout Indonesia are advised to study and explore aspects of student motivation in learning, so as to be able to provide appropriate teaching materials to students and foster students' intrinsic motivation which is considered capable of bringing major changes to the development of students' mindset in the future. For further researchers, it is

recommended to conduct research that examines aspects of student motivation in acting in a social environment, as well as connecting other learning methods to learning motivation, because learning motivation is an important factor in learning.

Limitations of Study

The limitation of this research is that efforts are needed to properly construct the edutainment method, conduct trials and see its effectiveness before use, so that it has advantages in method and technology so that students who experience learning with the method are able to see the fundamental differences in the methods presented.

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