

Original Research Article

The Role of Education Technology in Mathematic of Third Grade Students in MI Ma'arif Pademonegoro Sukodono

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ABSTRAK

Penelitian ini bertujuan untuk mengetahui pentingnya peran teknologi pada Mata Pelajaran Matematika Kelas 3 di MI Ma'arif Pademonegoro, mengetahui faktor penunjang dan faktor penghambat dalam penerapan pada Mata Pelajaran Matematika Kelas 3 di MI Ma'arif Pademonegoro. Penelitian ini merupakan penelitian lapangan (Field Research) dengan menggunakan pendekatan deskriptif kualitatif. Teknik pengumpulan data menggunakan wawancara, observasi dan dokumentasi dan dianalisis dengan menggunakan teknik analisis triangulasi. Perangkat teknologi pendidikan tiga besar yang sering digunakan oleh pendidik di MI Ma'arif Pademonegoro pada mata pelajaran Matematika Kelas III adalah 1) laptop, 2) slide Power Point, 3) LCD. Dalam penerapan teknologi pendidikan ada beberapa penunjang diantaranya adalah : Persiapan tenaga pendidik dalam pembelajaran dan alat teknologi yang memadai. Namun ada beberapa penghambat dalam penerapan teknologi pendidikan tersebut, diantaranya adalah gaya mengajar Pendidik yang monoton dan Peserta didik yang pasif.

Kata Kunci: teknologi pendidikan; matematika

ABSTRACT

This research aimed at finding out the important rule of technology, and supporting and inhibiting factors in math among the third grade students of MI Ma'arif Pademonegoro. This research was field research by the design qualitative description study. The data collections were interview, observation, documentation, and analysis by using triangulation analysis. The tools of technology that often used by the teachers in Mathsss of third grade students in MI M'arif Pademonegoro were 1) laptop, 2) power point slide, 3) LCD. There were some supporting tools of education as: the preparation of teachers in learning process and technology tools. On the other hand, there were some obstacles in application such as the monotonous of teaching styles and passive students.

Keywords: education technology; math

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INTRODUCTION

Nowadays, there are many changes education system in Indonesia not only in curriculum but also in technology. It is because the development of era and technology in the modern era is very rapid, such as the development of technology in education. The advancement of globalized technology has affected many aspects including in education system that hold important rule in the learning process. It has been listed in the Act. No 20 Year 2003 Article 1 Paragraph (2), that "National Education is an education based on

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Pancasila and the 1945 Constitution of the State of the Republic of Indonesia which is rooted in the values of religion, national culture of Indonesia and responsive to the demands of the times."

The role of technology is not only written in Act. No 20 year 2003 article 1 paragraphs (2) but also in *Al-Qur'an* and *Hadist* from the prophet Muhammad SAW much explained about technology and science justification had only been reached by human after decades. According to the scholars, there are 750 articles in *Al-Qur'an* explains about the world and phenomenon of it, and asks the human to learn and use it (Rahma, 2015). *Qur'an* states that the universe was created and subdued by God for man clearly and repeatedly, such as in Q.S. Al-Anbiya': 30

The meaning: "Have not those who disbelieve known that the heavens and the earth were of one piece, then We parted them, and we made every living thing of water? Will they not then believe?"

Technology of education and learning process are two components which are bound to each other, for example the learning process is still running despite the absence of educators as a means of delivering material, however the students are able to get the knowledge by the technology as their need. Based on Fatah Syukur said the learning process is more effective if there is supporting media or tools such as film or video, etc (Fatah Syukur, 2008:25). This statement is supported by Yusufhadi Miarso that the role of technology in education for students are needed, both in solving problems micro or macro that are micro or macro (Yusufhadi Miarso, 2005: 55).

The education world must innovate in a whole. It means that all the devices in education system have its role and be the factors which take the important effect in successful of education system. Technology in education is able to change the conventional to modern styles in learning. It is often assumed in the perception that leads to the problem of electronics or technical equipment alone, whereas education technology in it has a very broad understanding.

The usage of technology of education in learning in every school is very important in application of every learning process or subject especially math because is known as difficult to understand subject. There are many factors in helping for understanding math, one of them is material delivery. Research found that the use of technology in learning process especially for math was patchy. It was caused by knowledge factor, confidence and the access to the

technology, teacher participation in the professional development community that affected the ability in implementing the technology for the development of the learning it pursues.

The study in Queensland (Australia) states that the use or integration technology in math can increase the student ability in understanding and mastering the content of learning. Yet, encouragement and support for increasing teacher the ability and urge in using technology for math is very needed (Anne Bennison & Merrilyn Goos, 2010).

In addition, New South Wales Australia affirms the study in the utilization of technology that give more positive effect for ability in implementation of learning process by the math teacher (Boris Handal dkk, 2013).

This case finds in learning math in Indonesia. Based on this case, the researcher tried to observe how far the technology role in learning math especially for elementary school. It is important to look at and conduct the research that focus on it because the crucial education technology especially for math “ The role of education technology in mathematic of third grade students in MI Ma'arif Pademonegoro Sukodono”.

METHOD

This research was field research by using qualitative descriptive research. The techniques of data collection were interview, observation, documentation, and analysis by using triangulation analysis. It is used three stages 1) reduction data, 2) presentation, and 3) conclusion.

RESULT AND DISCUSSION

The role of education technology in mathematic of third grade students in MI Ma'arif Pademonegoro Sukodono

There are three crucial roles of technology in mathematic in third grade students of MI Ma'arif Pademonegoro Sukodono namely; 1) source of study, 2) education management, and 3) education development. The role of technology is important for every learning process and subject especially math. Learning mathematic is not or less effective without existence or lack of educational technology utilization.

According to Mr. Muslimini, S.Pd.I as the headmaster of MI Ma'arif Pademonegoro said source of learning as the technology education gives positive effect for teacher and students. For this reason they prosecute to learn more and their knowledge wider than before.

This was conveyed by Mr. Muslimin, S.Pd.I as the Principal of MI Ma'arif Pademonegoro. With the use of learning resources as one of the roles of educational

technology, it had a positive impact on educators and students. Because with the development of technology today, they are required to learn more so that the knowledge they can expand.

There are some kinds of learning sources, such as (Bambang Warsita, 2008: 209-210):

1. Messaging. The learning information will be delivered such as idea, reality, learning, value and data. In school system, this message is all the subjects that are taught to the students.
2. Human. The man roles as seeker, storage, manager and message viewer.
3. Material. The software which contains values for learning, is presented by certain tools or by its self.
4. Tool. The hardware is used for delivering message from the materials.
5. Technique. It is certain procedure or steps that well prepared in using the material, tool, environment and delivering the message. For instance; demonstration, discussion, experiment, independent learning etc.
6. Background/ environment. The situation happens around the students in learning process and receive the message. Background/ environment is divided into two parts; physical and non-physical.

According to the Umi Ziadatul Hikmah, S.Pd.I as vice of curriculum in MI Ma'arif Pademonegoro said that education technology and source of study have tight bonded in learning process. Using the education technology in learning process can make the learners more concentrate and have high spirit while the learning process happens.

In Madrasah Ibtida'iyah Ma'arif Pademonegoro, the educators had already used some education technology tools in every learning process. Especially for math, they often used educational technology in software then hardware tools. The reason behind of it causes the utilization of educational technology can help the educator to deliver the lesson easily. The math teacher of third grade, Maria Ulfa, S.Pd explained the education technology make the teacher feel easy in delivering the material. The use of it appears when doing observation in the classroom, that the use of it facilitates educators in the delivery of materials have been ascertained if learners can understand easily and quickly. As the result, it will be effective learning. The effective learning means the learning process that bring the educator and learners being active in learning process from starting lesson till the learners are able to do the task in the end of study. In addition, they get good result.

During the observation, the teacher had already used laptop, LCD/OHP and slide as their technology tools in mathematic in the third grade students. But the limitation of LCD/OHP makes the teacher to use white board and learning book as their tools. White board is used for presentation the task because white board or black board can stimulate the learners to be active. It means that the students understanding appear from their own question of material. Besides, white board uses for the students to make their hand writing neat and diligent.

Similarly, the use of textbooks as one of the educational technology tools used in the subjects of Mathematics, because the textbook is the most popular tool used in every learning or in every subject, especially on this subject Mathematics. Besides, textbook is the most practical technological tool to take anywhere.

In learning mathematic, the teacher often uses picture as their media to make the students understand easily. Picture is one of media that can be took the students' interest quickly and they more interest to the real or concrete thing.

Laptop and projector (LCD/OHP) are used in learning math. Nevertheless, this media is rarely used because availability is very limited. On the other hand, this media is helpful in learning math for "counting the square area". The utilization of both media, educator uses slide to show some square pictures to help the students know the concrete square. It is also make the educators explain the material easily and can increase the students' motivation in learning. Then, the educators give the questions to stimulate the learners' questions or opinions. The learners are very enthusiastic. They also have higher spirit and concentration. The next step, the educator shows the formula to count the square area. It is expected to make the learners to know how to count the square area correctly.

Mathematics' learning process is ended by playing the game. They are given the questions. Learner, who is able to answer correctly and quickly, will get the reward. It is form of star, which for certain value, takes it in the white board. The more stars are got by the learners means they have good understanding.

To know that education technology plays an important role in this Mathematics subject, it can be seen from the value obtained by students in their mark with the limitation 65. It can be shown in this table 1 for one semester:

Table1.
List of mathematic mark in the second semester : 3B
2014-2015

NO	NAME	L/P	DAILY MARK				UTS	UAS	RAPORT (KKM : 65)
			1	2	3	4			
1.	Ahmad Ubaidillah Abid	L	65	70	65		73	70	75
2.	Aufa Prasna Rakha I.	L	80	88	60		81	82	85
3.	Dina Novita	P	60	70	60		65	69	70
4.	Faricha Ulin Nuha	P	65	88	85		86	73	80
5.	Firdina Aurelia F.	P	65	88	70		78	73	75
6.	M. Choiru Thohirin	L	65	88	60		79	80	85
7.	Maulana Nur Sabilah	L	70	100	80		88	91	90
8.	Miladiyah Mufarikha	P	65	88	80		68	73	75
9.	Mirta Indra Kurniawati	P	70	88	80		86	65	75
10.	Misbahul Huda	L	70	100	80		83	85	90
11.	M. Fitransyah	L	70	75	80		78	79	80
12.	M. Muis Zulkarnain	L	65	88	65		71	70	75
13.	Nadia Imro'atun N.	P	65	88	70		81	74	80
14.	Nadya Shafa Az Zahra	P	65	75	80		87	77	85
15.	Nur Aisyah	P	65	75	80		90	96	95
16.	Nur Zahrotus Shafara	P	65	100	80		83	73	80
17.	Priyo Utomo Santoso	L	65	70	90		82	86	85
18.	Revalina Cinta Ajeng	P	65	70	90		65	66	70
19.	Suci Alfiatur Rohma	P	100	100	90		94	97	95

Based on the result of interview or observation, it can be concluded that educational technology has important role for learning mathematics subject especially in the third grade, those are 1) as the source of study, 2) help the educators to deliver material and 3) increase the students' result.

Supporting Factors in Application of Educational Technology in Mathematics Class 3 in MI Ma'arif Pademonegoro Sukodono.

Good learning process is not escape from the role of educational technology especially for math subject in the third grade students of MI Ma'arif Pademonegoro Sukodono. According to Maria Ulfa, S.Pd as the mathematics' teacher in the third grade of MI Ma'arif Pademonegoro concludes that supporting factors in the application of education technology in Mathematics subject are;

1. Preparation of educators in learning process

The preparation for educators means they have the role for delivering the material. The preparation is needed to make the classroom as their expectation. It must be well prepared.

They have to prepare the curriculum, material, teaching method, and scoring rubric. But, it needs commitment to make all the preparation well prepared.

2. Education technology

Good education technology can help the educators in deliver the material to the learners easily. Comparatively, the learners get enough knowledge easily too.

If education technology is in adequate, the educator or learners feel uncomfortable in learning process. Yet, the existing technology tools have been able to make Educators and Learners comfortable in giving and receiving knowledge in MI Ma'arif Pademonegoro.

Thus, based on the interview result can be concluded that there are two supporting factors in applying education technology in learning mathematic; preparation of educator and adequate education technology.

Inhibiting Factors the Application of Educational Technology in Mathematics Class 3 at MI Ma'arif Pademonegoro Sukodono.

The development of the world of technology today, is very demanding educators to not be left behind in the use of electronic media as one of the media or tools used as delivery of materials and as one source of information when doing teaching and learning activities in the classroom.

Conversely, sometimes the learning process does not run well as educators' expectation, either media or strategy for learning. Such discrepancies can be interpreted as obstructing factors in the application of educational technology during teaching and learning activities, especially on learning Mathematics subjects.

In learning process often happens some inhibitions that the educators are not realized whether it is internal or external. It is in line with Maria Ulfa, S.Pd as the mathematics' teacher states the obstacles in the application of education technology in the subjects of Mathematics class III in MI Ma'arif Pademonegoro, among others:

1. Monotonous teaching style.

Based on the result of interview, monotonous teaching style or similar with lecture method is ineffective of teaching style in learning process. It is proven by the teacher who applies this method as obstacles in applying educational technology.

Lecture method is the learning process in delivering the information by explaining the material to the subjects orally (Sudarwan Danim, 2008: 36). In addition, this method cannot help the educators in applying educational technology well.

Lecture method can make the learners feel bored and less attention while learning process happens. It gives the negative effect such as reduce the spirit, concentration and understanding the lesson. Based on this statement, lecture method is less effective in delivering the information and material while the learning process happens. It can be obstacles for educational technology application in mathematic.

2. Passive learners.

Passive student is not or less active learner in learning process. Passive learners are one of the obstacles in implementation of education technology because they will receive all the lessons. It means that they always receive the lesson without critical thinking and often passive and keep calm. As the result, the educator feel confuse and cannot make the conclusion the students understand or not.

Thus, based on the interview result can be conclude that there are two obstacles in the implementation of education technology in mathematics; monotonous teaching style and passive learners.

CONCLUSION

Technology in education is very crucial in learning mathematics in MI Ma'arif Pademonegoro. It is used as important source of study by the teacher and students. Based on the result of interview and observation, the tools of education technology were often used by them such as laptop, slide, LCD/OHP and pictures. Nevertheless, the limitation of LCD/OHP made the teacher to use white board and workbook as their tool in delivering the material.

The implementation of education technology of math in the third grade students of MI Ma'arif Pademonegoro was got some supporting tools, such as the preparation of teacher in learning and technology tools. On the other hand, there were some obstacles in implementation as the monotonous teaching styles and passive learners.

REFERENCES

- Abdulahak, Ishak dan Deni Darmawan. (2013). *Teknologi Pendidikan*, Bandung: PT Remaja Rosdakarya.
- Aqib, Zainal. (2009). *Belajar dan Pembelajaran di Sekolah Dasar*, Bandung: CV. Yrama Widya.
- Bennison, Anne dan Merrilyn Goos. (2010). "Learning to Teach Mathssematic with Technology". A Survey of Proffesional Development Needs Experiences and Impacts;, "dalam *Mathsssematic Education Research Journal*".1. pp. 31-56.

- Bungin, M. Burhan. (2010). *Penelitian Kualitatif*, Jakarta: Kencana.
- Danim, Sudarwan. (2008). *Media Komunikasi Pendidikan*. Jakarta: PT Bumi Aksara.
- Departemen Agama RI. (2004). *Al Qur'an dan Terjemahnya*, Bandung: CV. Jumanatul 'Ali-ART.
- Dian Prametasari, Merinda. (2012). "Efektifitas Penggunaan Model Pembelajaran Berbasis Masalah (*Problem Based Learning-PBL*) Terhadap Hasil Belajar IPA Siswa Kelas V di SD Gugus Hasanudin Salatiga". Skripsi-S1. Fakultas Keguruan dan Ilmu Pendidikan Universitas Kristen Satya Wacana Salatiga.
- Handal dkk, Boris. (2013). "*Technological Pedagogical Content Knowledge of Secondary Mathematics Teacher*". *Contemporary Issue in Technology and Teacher Education*. 1.
- Jalaluddin Al-Mahalli, Imam dan Imam Jalaluddin As-Suyuti. (2014). *Terjemahan Tafsir Jalalain Berikut Asbabun Nuzul Jilid 2*. Bandung: Sinar Baru Algensindo.
- Meleong, J. Lexy. (2010). *Metodelogi Penelitian Kualitatif*. Bandung: PT. Remaja Rosdakarya.
- Miarso, Yusufdi. (2005). *Menyemai Benih Teknologi Pendidikan*, Jakarta: Prenada Media.
- Midun, Hendrikus. (2009). *Pengembangan Paket Pembelajaran Mata Kuliah Sumber dan Media Pembelajaran dengan Model Degeng pada Program Studi PGSD STKIP Santu Paulus Ruteng Flores*.
- Musfiqon, M. (2012). *Metodologi Penelitian Pendidikan*. Jakarta: Prestasi Pustaka.
- Nasution. (2010). *Teknologi Pendidikan*. Jakarta: PT Bumi Aksara.
- Salsabila, Farri. (2013). "Relevansi Kurikulum Jurusan Kurikulum dan Teknologi Pendidikan dengan Dunia Kerja (Studi Kasus Guru TIK, Dinas Pendidikan, dan Lembaga Diklat)", Skripsi-S1. Fakultas Ilmu Pendidikan UNNES.
- Sudjana, Nana. (2009). *Penelitian dan Penilaian Pendidikan*, Bandung: Sinar Baru Algesindo.
- Sugiyono. (2010). *Metode Penelitian Pendidikan Pendekatan Kualitatif, dan R&D*. Bandung: Alfabeta.
- Suardi. (2010). *Manajemen Pembelajaran (Mencipta Guru Kreatif dan Berkompetensi)*, Jawa Tengah: STAIN Salatiga Press.
- Syukur, Fatah. (2010). *Teknologi Pendidikan*, Semarang: RaSAIL Media Group.
- Undang-Undang No.20 tahun 2003 tentang Sistem Pendidikan Nasional. Bandung: Citra Umbara.
- Uno, Hamzah B. (2008). *Model Pembelajaran (Menciptakan Proses Belajar Mengajar yang Kreatif dan Efektif)*, Jakarta: PT Bumi Aksara.

Uno, Hamzah B. (2006). *Perencanaan Pembelajaran*, Jakarta: PT Bumi Aksara.

Warsita, Bambang. (2008). *Teknologi Pembelajaran (Landasan dan Aplikasinya)*, Jakarta: PT. Rineka Cipta.

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