

Exploring students' perceptions of the use of blogs for learning Mathematics at the State Polytechnics Manufacture of Bangka Belitung

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Abstract. The use of blogs in teaching and learning activities has become a new trend in education. Many researchers have reported the advantages of the use of blogs as for supporting student learning. Even though the potential of blog use to increase students' learning has been explored by many educators, research focusing on the use of blogs in vocational education context is still limited. Therefore, this study aims to explore the perceptions of students of the use of blogs as an educational tool in learning mathematics. For this study, survey research design was used and 57 students in the first year students from Electronics Department were involved in this study. The blogging survey instrument which measured the ability to make blog and perceived learning with blog was used to collect data. This data were then analyzed. The results of this study revealed that the students' interests in the mathematics course increase. Furthermore, the students have positive attitudes towards the use of blogs in the mathematics learning.

1. Introduction

The ability to master math skills is a key indicator of students' potential at all levels of education [1]. At polytechnic level, mathematics is one of the most important basic courses. This is in line with the view of Gold and Devitt that engineering professionals require math in their work [2]. In addition mathematics is also indispensable in the community [3]. In mathematics learning, knowledge and math skills are very important. Mathematical knowledge and skills refer to a conceptual understanding of numbers, relationships, combinations, and operations. Mathematics also includes its forms and structure, reasoning, measurement, classification, and patterns. Mastery of knowledge and good math skills, will certainly help students in connecting ideas, develop logical and abstract thinking, as well as analyze, and understand the world around them.

Polytechnic education is a professional program at the university level which equip its graduates with skills, supported by basic knowledge and a strong discipline. It is expected that graduates can become professionals in their fields, particularly in commercial and industry field. Polytechnics in Indonesia generally have the same duties and responsibilities, generally, they produce qualified graduates who are expected to contribute to the development of the country through the mastery and application of science and technology as well as particular applied skills. Mathematics course is one of basic subjects that must be mastered by Polytechnic students. With sufficient mathematical knowledge, it is expected that Polytechnic graduates are able to support other science and apply it. Unfortunately students of Polytechnic of Bangka in electronics department are still experiencing difficulties in learning mathematics, especially first year students. Their understanding of basic mathematics concepts such as functions, vectors and some other concepts is still low.

Some possible causes of students' low mathematical knowledge and skills include: (1) low learning interest; (2) the mathematical material is a material that contains abstract concepts that are hard to

remember and understand; (3) the learning strategy used does not adequately facilitate the acquisition of understanding, (4) the utilization of information and communication technology (ICT) is still low.

Such conditions might have negative impact on the quality of mathematics courses, especially in the electronics engineering department. Thus, it provides a challenge for educators to find solutions to deal with the problem. Educators should try to find ways and be responsible for their learners to create and maintain an environment that motivates learners to continue learning. Therefore, examining the way students learn needs to be done.

One of the solutions which is reviewed in this article is the use of ICT. One way is learning mathematics by using Weblog or blogs. Blog is a means of delivering information online which has basic internet features that can penetrate the boundaries of space and time. The delivery of information quickly, precisely and easily will certainly greatly support the learning activities. In the context of learning, blogs provide a good opportunity to engage students in a student centered cooperative learning environment, allowing opportunities for knowledge creation and sharing, creativity, reflection and debate, in this case referred to as open learning environments [4]. It has a powerful platform in mathematics classrooms allowing students and teachers to engage in rich conversations that support student learning [5]. Blogs offer various benefits in education, including higher education, among others: blogs can create a community of learning outside the classroom, making the learning process student-centered and interactive [6]. Blogs provide a communication space; lecturers or teachers can use it with students when there is a need to share ideas and reflect on the work they are doing [7]. Students develop a better connection with their teacher and other students through blogging, which allows them to feel more comfortable on the blog and in the classroom [8].

Furthermore blogs allow students and teachers to collaborate outside the classroom and give students access to curriculum content and support [9]. University students in the Cuhadar and Kuzu's study noted that they were able to reach course content on the blog for classes that they were unable to attend, therefore making the learning process more effective. Students also felt they interacted more with their teacher on the blog than they would in the regular classroom [8].

Moreover researcher suggests that blogs support student learning. Knowledge is shared on the blog as students post their own thoughts and read the various perspectives of others [9]. Davi et al conducted a blogging study in five college classrooms. Students reported that they enjoyed blogging, because it exposed them to a variety of opinions and perceptions, thereby improving their learning [10]. Blogging can develop critical thinking skills as students must carefully reflect and evaluate their own work and the work of others [11]. Finally, blogs have the potential to benefit all students, even the inactive online learner who just reads the blog posts [12]. Duffy argues that the use of blogs can encourage students to be critical and have analytical thinking skills. Both are very important for the development of student learning [13]. The use of blogs has been proven to engage more students when lesson material is provided [10], as well as providing space for them to play a more active role in the learning process [14]. Furthermore Farmer et al, asserted that one of the most valuable aspects of using blogs is that they can provide an opportunity for students to interact with their peers [15]. Learning by providing opportunities for students to be more creative and innovative is the future direction of education in universities, both in academic education programs and vocational programs such as Polytechnics.

2. Methods

2.1. Purpose of the Study

Research on the use of blogs in polytechnics education and the effect of blogs on mathematics learning and teaching is still limited. The purpose of this study is to examine the ability of students to create blogs and to the participants' perception of mathematics learning through blogs. In this regard, the researcher designed a project to introduce students to blogs and to find ways to use blogs to supplement their learning experience. The overall purpose of this study was to investigate how students perceived mathematics learning through blogs.

2.2. Participants and Context

At the time of this research project, the student participants were taking a compulsory mathematics course. This project was implemented in the ICT laboratory and classroom. The use of ICT laboratory aims to enable students to learn ICT especially in creating blogs. The researcher conducted a survey on the students' ability to create and use blogs prior to the study and found that not all students were familiar with blogs. At the end of semester the researcher investigated the Electronic Department students' perceptions of academic benefits of blogging, ease of use and intention to use blogs. The data in this study were collected 57 polytechnics students.

2.3. Data Collection

At the beginning of the research, the researcher gave a brief introduction about the study, which included the rationale of this research, procedures for conducting the research and participants' rights during the research process. Then, the researcher gave out consent form to invite the students to participate in the research. A total of 25 questions have been constructed by adapting Daud and Zakaria [16] and divided into two main categories: levels of skill of students in creating and using blogs, perceptions and intentions to use blog. The survey use Likert-scale questions; a five-point Likert scale was used where (1) represented "Strongly disagree", (2) "Disagree", (3) "Not sure", (4) "Agree" and (5) "Strongly Agree".

2.4. Pre-survey

A survey was used at the beginning of the research involving 57 participants. This survey was aimed at collecting information regarding participants' current blogging. Specifically, the researcher used the survey to understand the ability of students in creating blogs. Participants were invited to attend the training on how to create blog.

2.5. Post-survey

A post-survey was used at the end of the research. This survey focused on participants' attitudes toward the effectiveness of blogging in their mathematics learning. In this survey they were asked about how blogging influenced their mathematics learning regarding this blog learning program.

3. Results

During the the first-semester the students were instructed to get training session aimed to introduce students to blogs so that learners could create their own blogs and afterwards post and publish mathematics assignments. Before the training session started, the students answered the survey questionnaire about their ability to create blogs and their familiarity with the use of blogs. The ability of students in creating blog can be seen in in the following table 1:

Table 1. The ability to create and use blog

No	Indicator Components	Score					Mean	SD
		1	2	3	4	5		
I	Ability to create and use blogs							
1	I am skilled at searching and using blogs	2	12	29	13	1	2.98	0.84
2	I am skilled in choosing different templates When creating a blog	2	18	25	12	0	2.82	0.86
3	I am skilled in choosing the appropriate and interesting colors for the blog I created	1	19	14	22	1	3.05	0.94

4	I am skilled in organizing lesson materials or assignments in my blog	1	21	21	12	2	2.88	0.73
5	I am skilled at uploading files on the internet like slide share	3	17	15	18	4	3.05	1.12
6	I am skilled in downloading files I save on slide share and I connect with my blog	3	22	16	14	2	2.82	0.91
7	I am skilled in choosing various images and putting them in my blog	2	20	16	16	3	2.96	1.03
8	I am skilled in creating menus in blogs	3	25	14	12	3	2.77	0.91
9	I am skilled in linking other blogs in my blog	4	26	17	8	0	2.44	0.73
10	I am skilled at using widgets in my blog	3	22	22	9	1	2.70	0.95
11	I am skilled in downloading youtube on my blog	2	24	23	8	0	2.65	0.87
12	I am skilled in posting on my blog	2	17	16	20	2	3.05	1.05
13	I am skilled at making polls or other people's comments on my blog	4	30	21	2	0	2.37	0.60
14	I am skilled at creating hyperlinks to other WEB sites that can expand my knowledge	5	33	16	3	0	2.30	0.69

Table 1 shows that students' level of skill at searching and using blog; only 1 student strongly agreed, 13 students agree, 29 students not sure, 12 students agree, and 1 student strongly disagree. The 14 items questioner reveals that the level of students in creating blogs is still low. Therefore training is needed to enhance the students' skill in creating blogs. In the training session, the students recorded their work on their blogs and uploaded relevant pictures, photographs, presentations and videos. Figure 1 below is one of the example of front page section of the blog site that was developed by a student.

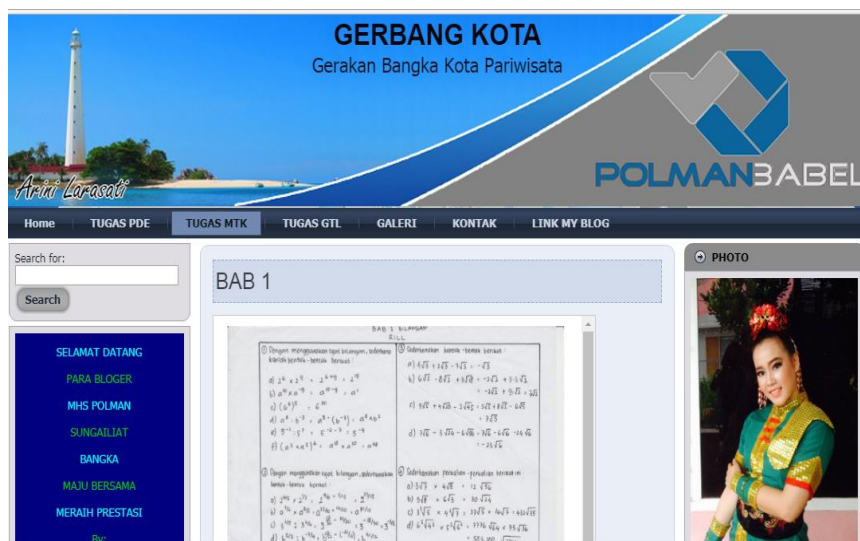


Figure 1. Example of student blog

At the end of the semester, the students were asked to complete the second survey questionnaire concerning their perceptions of the experience in mathematics learning. The survey instrument was used in order to collect data on the students' blogging experience, which is related to their attitudes toward visit the blog, writing on blogs, providing constructive feedback on friends' blogs, and learning mathematics. There were 11 items in total on the survey instrument using a Likert Scale format where 1 stood for "strongly disagree", 2 "agree", 3 "not sure", 4 "agree" and 5 indicated "strongly agree". The results are presented in table 2 below:

Table 2. Students' perception of blogs

No	Indicator Components	Score					Mean	SD
		1	2	3	4	5		
II Perception of the blog								
1	I love to visit the blog	0	2	8	39	8	3.93	0.82
2	I feel blogs are useful medium for teaching and learning	0	0	2	34	21	4.33	0.54
3	I feel blogs are able to promote collaborative learning	0	0	5	33	19	4.25	0.60
4	I feel it is very easy to create blog sites for purposes of learning	1	0	18	31	7	3.75	0.84
5	I am very excited to visit the blogs I created as well as my colleagues blog	0	0	28	25	4	3.58	0.63
6	I feel a lot of ideas in my mind to write in the blogs	0	2	26	22	7	3.60	0.73
7	I feel capable of providing constructive feedback or ideas on friends' blogs	0	3	28	21	5	3.49	0.78
8	I would like to contribute in sharing knowledge with colleagues through blogs	0	0	19	33	5	3.75	0.65
9	I feel confident to deepen the math lessons provided by using blogs	0	2	24	25	6	3.61	0.66
10	I feel that through discussion on blogs can enhance my interest in mathematics lessons	0	1	28	18	10	3.65	0.82
11	I feel that through the application of this blog, will improve my mathematics skills	0	2	25	21	9	3.65	0.83

Table 2 presents some findings found through the survey. 8 students strongly agreed that they love to visit the blog, 39 students agreed, 8 students not sure and 2 students disagreed. This data shows that most of the students perceived their experience and the blogs positively.

4. Conclusion

The survey demonstrates that the students responded positively to the blogging activities. Research data indicate that more than 82 % of the students agreed, stating that they love visiting the blog, more than 96 % of the students agreed, mentioning that blogs are useful for teaching and learning, overall, the average was more than 64 %. The following features of blogging activities seem to make them attractive and powerful media for mathematics learning: 1) blogs deepen students' mathematics lessons, 2) they enhance students' mathematics interest, 3) create students' work, and 4) blogs facilitate interactions and

peer reviews through students tasks. Blogging creates more opportunities to write, as well as encourages self-reflection and critical thinking. Blogs extend the walls of the classroom, creating a learning environment in any place that has access to the internet. By integrating blogs into the classroom and incorporating electronic writing into classroom experience, students can enhance their understanding of mathematics.

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