

Students' Perceptions of the Use Equation Editors in Completing Papers Calculus I Class

Mitra Permata Ayu

STIMIKOM Stella Maris Sumba
Email: ayumitra94@gmail.com

Abstract

Perception is an individual's ability to respond, interpret, and distinguish a view of any information to a stimulus. So the aims of this study was to find out: (1) students' perceptions of the use of an equation editor in writing mathematical notation as assignments for calculus class I papers, (2) students' perceptions of writing calculus I paper assignments using the manual method (handwriting). The research subjects consisted of 16 students majoring in Extension Informatics Engineering (afternoon class) Semester I. The type of research was descriptive qualitative. Data collection techniques are interviews. The analysis stage is to analyze the results of the interviews. The results of the study concluded that: (1) 11 (eleven) students agreed to use the equation editor in writing calculus I paper assignments, the rest were still confused about the use of the equation editor; and (2) all students do not agree if the paper is written using the manual method (handwriting) because the results are not neat and take a long time.

Keywords: student perception, equation editor

INTRODUCTION

The development of science and technology has brought a very strong change to human life, one of which is in the field of education, (Mudani, 2008; Budiman, 2012). Information technology and computer-based learning relates to all situations where activities and learning materials are delivered via a computer as a tool to make it easier to complete assignments, (Suendri; & Novita, 2018). ICT-based learning (Information and Communication Technology) which can be in the form of e-learning, virtual libraries, learning using software such as macromedia flash, microsoft excel, microsoft power point, microsoft word, (Andriani, 2009). In Microsoft Word there is an equation editor feature that can make it easier for students to insert mathematical symbols/notations, (Uminingsih, 2020). So that students are not confused in the use of mathematical symbols that are not available on the keyboard.

According to Webster (1997), perception is an individual's ability to feel, understand, realize something based on concepts, ideas and the ability of the five senses to understand something, in (Harisah & Masiming, 2008). Therefore, perception cannot be separated from the process of the five senses which is the first place the stimulus is received by the individual, so it will create various positive and negative perceptions. The negative perception raised by students towards the use of the equation editor must be minimized by lecturers and campuses in order to

create a positive perception. Lecturers should familiarize students with using the equation editor by frequently giving assignments related to writing mathematical notation/symbols in Ms.Word. Because not infrequently during school they have never been introduced to the use of an equation editor which is very helpful in inserting notations/symbols in making papers or article assignments.

Equation editor plays an important role in facilitating the insertion of mathematical notation correctly and correctly. according to(Primary, 2016; Eldin et al., 2013), the equation editor is one solution in overcoming problems in the insertion of mathematical symbols in Microsoft Office. The field of mathematics cannot be separated from notations, symbols, and symbols; as well as the importance in the representation of all these things, (Sutra, 2009), so that the use of an equation editor in writing scientific notation in student assignments, papers, articles, and even the manufacture of teaching materials is very necessary. Although it is absolutely very important, the reality on the ground shows that the majority of students are still lacking in the equation editor. Students are accustomed to writing/typing mathematical notation by copy-pasting other people's papers, just typing normally without paying attention to the correct use of mathematical notation/symbols.

Based on the results of observations on the calculus I paper assignment, it was found that almost 90% of students in informatics engineering in the extension class (afternoon class did not use the equation editor feature in inserting mathematical notation as well as the results of interviews with several students showed that students were not aware of the equation editor feature and were accustomed to copy-pasting or inserting symbols directly on the keyboard. In line with previous research by(Primary, 2016), show basic concept errors in the use of the equation editor, notation in the multiplication operator, and habits that are difficult to eliminate in using the equation editor features. Conceptual errors made by students are due to a lack of student understanding in maximizing the features contained in Microsoft Word, especially the equation editor, as well as previous habits that are difficult to eliminate in compiling standard papers without paying attention to mathematical notation and symbols, namely using symbols on the keyboard oraccustomed to copy-pasting directly on the reference taken without paying attention to the symbol/notation that has changed or has a wrong value. The errors found from the results of task observations and interviews lie in the writing of mathematical notation and the lack of understanding regarding the use of *equation editor*.

Based on the explanation above, the author feels the need to reveal and identify student perceptions regarding the writing of a calculus I paper assignment by utilizing the feature *equation editor*. So the purpose of this research is to find out:(1) how are students' perceptions of using the equation editor in writing mathematical notation as assignments for calculus class I papers, (2) how are students' perceptions of writing calculus paper assignments I using the manual method (handwriting). The benefits of the results of this study are expected to be considered by lecturers to further improve students' abilities in utilizing the equation editor feature in inserting correct and appropriate mathematical symbols/notations.

RESEARCH METHOD

This study uses a descriptive qualitative approach. Qualitative research is research that produces descriptive data in the form of speech and writing and the behavior of the people observed. (Bogdan & Bilken, 1992). This study was conducted to determine student perceptions of the use of the equation editor in compiling papers in calculus class I. The study was carried out after the 2021 Mid-Semester Examination (UTS) in the Calculus I course. The subjects in this study were 16 students of Informatics Engineering extension class (afternoon class) semester I, because based on the results of interviews and student observations, extension students still lacked understanding in utilizing the equation editor feature compared to the regular class.

Data collection techniques in this study are interviews. Interview is a means of proof of information or information obtained previously, (Rahmat, 2009). The interview guide was prepared to ask and find out things related to students' perceptions of the equation editor in compiling papers in calculus class I. In addition, it is also to make it easier for researchers to conduct direct questions and answers about how students respond so that they can reveal answers freely and in depth. Data analysis includes analysis of the results of interviews with first semester students in calculus class I by researchers, which will then be described descriptively to describe the perception of equation editors in compiling papers in calculus class I.

RESULTS AND DISCUSSION

Research on student perceptions of the use of the equation editor in Calculus I class, which was conducted after the 2021 odd semester UTS was aimed at 16 extension students (afternoon class). The interview test was carried out after the UTS by interviewing 16 extension students with reference to the results of the UTS calculus I paper. Each student was asked about the papers they collected with the interview indicator guide that had been prepared previously. The following are the results of the interviews which are described and described in detail.

1. Student understanding of the equation editor features in Ms.Word

Students' understanding is still very low on Microsoft word where what they understand is only how to operate in general, start typing, layout and paragraph preparation. While the use of existing features on Ms. Word is very lacking, for example the equation editor feature. Of the 16 students interviewed, only 5 students were aware of the equation editor feature in Ms.word, but were still confused about how to use it. Their ignorance of the features in Ms.word and accustomed to using makeshift symbols/notations or those that are only found on the keyboard.

The following is a transcript of an interview with a student (AFM) who does not know:

equation editor.

P : Does (AFM) know the features of Ms.word, one of which is the Equation editor?

AFM : No, mother.

P : Have use the equation editor feature for high school to make a paper?

AFM : Never mother. Handwritten assignments (manual).

P : Then this (shows a calculus I paper with mathematical notation used), AFM type mathematical notation using what?

AFM : Toyes type it with the symbol on the keyboard and I copy and paste it from internet.

P : Good.

The following is a transcript of an interview with a student who knows the equation editor.

P : Does (SJ) know the features Ms. word one of them is Equation editor? Try explained.

SJ : She is mother. the equation editor is for inserting math symbols on assignments paper, if I see on the keyboard there are no symbols that I want to type, I use the equation editor.

P : Good. Yesterday's UTS paper was pretty good at using symbols/notations math, just some math symbols are not quite right.

Based on the results of interviews with students, it can be concluded that not all students know the existence of the equation editor feature, although there are some who know that it is not optimal. Students who are not accustomed to using Microsoft Word will be increasingly confused by the features in it, because those who often use Microsoft Word do not fully understand. There needs to be a habit from students, especially lecturers as class facilitators to give article assignments and papers as training in order to improve students' ability to master the use of Microsoft word by utilizing the equation editor feature. As research conducted by (Uminingsih, 2020) This shows that the training carried out at the Berbah National Vocational School in Sleman was quite successful, as evidenced by almost all participants being able to complete a minimum of 9 questions with the correct answers from 11 questions given using Microsoft Equation. In addition to (Uminingsih, 2020), research conducted by (Kunartinah, 2010), shows that education and training have a positive effect on competence and performance. This shows that training in the use of the equation editor feature is able to provide new knowledge for students who are not aware of the equation editor feature and provide additional knowledge for students who are still not optimal in using the equation editor.

2. Difficulties encountered when using the Equation Editor.

The difficulties faced by extension students are not only not getting used to when high school is in high school in using the equation editor feature to

compile papers or articles, not all college assignments are related to the equation editor feature, but internal obstacles where students come from poor families and school infrastructure that does not have a lab. Computers and electricity are very minimal, so not all students know how to use a computer, let alone operate all kinds of features and other applications.

The following is a transcript of an interview with a student (YLK)

- P* : YLK working on calculus papers using a laptop or PC at home?
YLK : to I don't have a mother yet, this is my UTS assignment, I'm borrowing a friend who has a laptop
P : Means new operating laptop/computer while studying here? Or?
YLK :she, mother. When I was in school, I didn't know my mother's computer. Sam's house isn't there either electricity, and the school didn't have a computer practice.
P : this is my UTS assignment what does he do?
YLK :tobut helped by a friend who borrowed my mother's laptop.
P : Good.

Based on the results of interviews with extension students, it was concluded that facilities and infrastructure were the main factors for effective learning. How can the goals of education be achieved if many schools do not get proper facilities, inadequate electricity, difficult access, so it is not surprising that education, especially in the eastern region, is lagging behind in terms of human resources and the ability to use technology, one of which is computers. according to(Jamila et al., 2021;Dzaljad, 2020;Fitri et al., 2020), schools and students who do not have adequate facilities have difficulty continuing the teaching and learning process. In research by(Handoyo, 2019), revealed several factors that cause the quality of education in Indonesia to be low, one of which is the lack of physical facilities, in the form of school buildings, learning media, inadequate facilities and libraries with minimal references. This is in line with the condition of extension students while studying at school.

3. Students' perceptions of using the equation editor in the Calculus I paper

Showing 11 extension students expressed various perceptions that they conveyed starting from being confused about how to use it, some only knew the function but couldn't operate it, some didn't know about the equation editor feature, some were not used to operating the equation editor until some just use a computer/laptop when studying. While the rest argue that the equation editor helps in writing mathematical notation, so that the desired paper is mathematically appropriate and correct, the paper is neater, although the time spent in inserting paper notation using the equation editor is quite long so it requires more patience.

The following is a transcript of interviews with students (SP and YM).

- P* : What is your perception of the use of equation editors in composing calculus class I paper?
- SP* : Equation editor help me in completing paper assignments in class calculus I, besides that the resulting paper is neater and more beautiful when viewed from an aesthetic point of view, all the notations desired in the calculus I paper assignment are provided by the equation editor, for example limit formulas, absolute prices, etc. However, I admit that it takes longer, especially since I am not used to using an equation editor and will even be confused by the choice of mathematical notation in the equation editor because of the many variations.
- YM* : In using the equation editor I often ignore it and insert it right away of the symbols on the keyboard. This is because I am still confused about the appropriate mathematical notation and I admit that I am not used to compiling papers using the equation editor. The papers I often write are papers that are more theoretical in high school, while for this new lecture I get a paper assignment on the condition that I use an equation editor and must comply with the notation that applies to mathematics.

Based on the results of interviews with extension students, it was concluded that the inability of students to use the equation editor feature was due to a lack of knowledge about mathematical notation in the preparation of mathematical papers or articles. Mathematical notation is a mathematical communication tool both orally and in writing. Mathematical communication is very important in terms of understanding the processes, discussions and decisions taken, (Viseu & Oliveira, 2012). So that mathematical communication in this study in the form of writing in a calculus paper I is one way for students to express the language of mathematics in written form. As research conducted by, (Ayu & Supriadi, 2021) found that mathematical communication skills in writing, especially in the aspect of writing mathematical notation, were categorized as adequate. There is a need for continuous training in terms of introducing mathematical notation by providing training as well as assignments and papers related to mathematical notation by utilizing the equation editor feature.

4. Student perceptions in compiling Calculus I papers manually

Shows that 16 extension students agree that in writing papers they do not use the manual method (handwriting) because in terms of time it will take longer and the writing of mathematical notation is less neat. Even though the lecturers allow the writing of papers manually, because they see the condition of the students, not all of them have laptops/computers. However, all students prefer to use a computer (write in Microsoft Word). This shows that students' thinking is more advanced towards technological developments, in this case the selection of paper writing prefers to use a computer rather than using a manual.

The following is a transcript of interviews with students (SP) and (YM)

- P* : What is your perception of writing a calculus I paper with using manual method?
- SP* : In my opinion, writing a paper using manual (handwriting) is not neat in terms of aesthetics, especially if the writing is bad, the paper produced is bad, while the mathematical symbols are not in accordance with the rules in mathematics and it will take a long time if you use the manual method in compiling the paper.
- YM* : In my opinion, if I write a paper manually, I will be more tired and certain the writing on the paper will be less neat, because there may be 2 or 3 students who write in one paper.

Lecturers and teachers become facilitators for students and students to better take advantage of technological advances, especially related to the college majors they take, because it will be one of the benchmarks when working later, besides that lecturers and teachers can provide assignments or training directly while teaching in class. as an introduction for students. Research conducted by,(Alhaddad, 2015), revealed several technologies used in learning mathematics, namely (1) computers which have advantages as a medium for learning mathematics in writing papers, one of which is the use of the equation editor feature in Ms.word; (2) calculators as calculating tools, scientific calculators, calculators that can be used to create programs or calculators that can be used to create graphs. Based on the types of calculators available, in learning mathematics, the right type of calculator can be selected according to the learning objectives, in line with point (2), research conducted by(Tajudin et al., 2011) showed that the graphical calculator strategy was instructionally more efficient, superior to the conventional instruction strategy.

Keep in mind that the equation editor is one of the learning media that is used as a tool in writing mathematical notations and formulas on calculus I paper assignments. Learning calculus I by giving paper assignments and using the equation editor will train students' abilities in utilizing media that has developed at this time and also practice their mathematical skills. Moreover, for students majoring in IT, it is fitting that understanding related to IT developments that are currently developing can be used and utilized as well as possible. Currently, the task as a teacher is not only to introduce IT developments, far from that, apart from introducing teachers, they must also actively provide tasks related to learning media related to information technology.

CONCLUSION

Based on the description described above, it can be concluded that 11 students agreed to use the equation editor in writing papers because all the desired mathematical notations were already available in the equation editor, besides that the equation editor made it easier to write mathematical formulas such as limits, integrals and some of them. Meanwhile, 5 students thought that they did not understand how to use the equation editor in inserting notations or formulas on their calculus I paper assignments. However, 16 students also admitted that using the

equation editor took a long time because they had to choose and then insert, especially if students did not understand the notation or formulas that are in accordance with mathematical rules will take even longer.

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