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Can Keyboarding Skills Improve Student Performance and Engagement?

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Abstract:

Lecturers must create innovative and engaging learning experiences that encourage students to actively participate in all aspects of the learning process to improve student academic performance. This study tested the effectiveness of the blind system method assisted by 10astfingers learning media in improving students' performance and engagement. This study used a treatment-by-level design (T-LD). The subjects of this study were 73 undergraduate students of business administration at Politeknik Balekambang Jepara. The data were collected through practicum tests and questionnaires. An independent sample test was used for data analysis. This study showed that 10fastfingers learning media can improve students' cognitive and psychomotor performance. Thus, this medium is effective as a keyboard learning medium for improving student performance. The results of this study showed that 10fastfingers media were able to increase student participation in learning activities. Therefore, ten fast-finger media can improve academic performance and student engagement.

Keywords: keyboarding skills, student performance, student engagement.

INTRODUCTION

The primary objective of an educator is to impart positive influence, knowledge, and skills to learners, which can be accomplished by selecting appropriate learning methods. Choosing learning methods suitable to the course content can enhance the effectiveness and success of the teaching and learning process(Gaižiūnienė et al., 2020). Learning methods must significantly impact students' academic performance (Agamber et al., 2019; Waheed et al., 2020). Technology-based learning methods can substantially improve student performance (Adu-Gyamfi, 2014). Furthermore, integrating technology into education can also enhance the overall student learning experience (Chowdhry et al., 2014).

Learning is student-centered and practice-focused in vocational schools. In the 21st century, skills are essential for college and career readiness. (Moeller & Reitzes, 2011). Students will learn more when involved in the teaching and learning process; this happens when lecturers can create more space for students to feel comfortable in class (Hod & Katz, 2020). Lecturers who create an atmosphere for student engagement influence how students involve themselves during teaching and learning(Haward, 2020).

In today's digital era, communication, writing, and computer skills are increasingly essential for success in higher education (Lubbe & Mentz, 2006; Ninghardjanti & Yuwantiningsih, 2018) because professional and nonprofessional people often use these skills, and students find and store information, record thoughts, and ideas communicate and solve problems. For students to achieve success in their field of study, keyboarding skills will significantly help them complete their coursework and be more effective and efficient (Asare et al., 2020) because keyboarding ability is an essential skill used in the basic operation of computers. According to Pebriani and Oktarina (2018), keyboarding is a fundamental job in all fields, whether private organizations, government, or other organizations.

Improving keyboarding skills can help students use computers to deal with tasks more efficiently (Ikhsananto & Sutirman, 2018). Keyboarding is a bimanual action that requires simultaneous coordination between hand and fingers, and the right and left hands never interfere with each other because they are assigned to different keyboard parts (Cerni et al., 2016). Keyboarding skills, as a motor skill, are defined as the ability of learners to key a piece of information into the computer's memory with the minimum effort and energy use (Sulastri, 2014). Keyboarding skills include a range of typing skills that involve self-regulation, leading to improved self-esteem and self-efficacy (Lubbe & Mentz, 2006). Students with these skills can efficiently write better, get work done faster, produce neater documents, and have better

motivation (Asare et al., 2020). In addition, having keyboarding skills affects several things, such as the quality of the writing produced, reduced brain work, and the ability to think quickly. In particular, this skill can reduce the time needed to complete a job. Keyboarding skills are typing skills that combine self-regulation to increase self-esteem and self-efficacy (Lubbe & Mentz, 2006). Students with these skills can efficiently write better, get work done faster, produce neater documents, and have better motivation (Asare et al., 2020). Furthermore, having keyboarding skills affects several things, such as the quality of the writing produced, reduced brain work, and the ability to think quickly. Hence, this skill can reduce the time needed to complete a job.

According to Ratatype survey results, the average typing speed is 41 words per minute, with an average accuracy rate of 92%, and most respondents are under 20 years old. McInerney & Green-Thompson (2019) and Okwuduba and Okigbo (2018) found that Students' typing skills still need to improve because the teaching methods teachers use make them less interested in learning to type, leading to a lack of active participation. Asare et al. (2020) added that teaching typing skills without practice is ineffective for students; therefore, practical techniques are necessary for effective learning. Given students' persistently low proficiency in keyboarding, using keyboarding programs or applications can significantly increase typing skills.

One of the keyboarding programs that can be used is Ten Fast Fingers which offers typing training using blind system techniques. Typing applications like this simplify writing tasks, increase efficiency, and save time when creating reports, emails, and presentations. (Agustiani, 2023). Additionally, the use of keyboarding apps can also improve ergonomic, efficient finger movements and unnecessary looking results and keyboard, as well as reduced fatigue in the fingers, arms, and neck (Mariskha Z. et al., 2016; Marwan & Wira Wardani, 2023). Thus, 10fastfingers can be an alternative for lecturers to train students' speed and accuracy on computers.

Armiati and Rahmidani's study found that using keyboarding applications and programs such as typing masters can improve one's keyboarding skills in typing techniques, speed, and accuracy (Armiati & Rahmidani, 2019). Reinforced by Supriyadi et al. (2019) and Rozi et al. (2018), using media keyboarding applications affects adolescent cadets' understanding and knowledge. In agreement with Arsa Adilla and Windriyani, keyboarding application programs influence students' typing accuracy and speed(Arsa et al., 2022). This study aimed to investigate the potential improvement in student performance resulting from improved typing

speed and accuracy while examining the impact of keyboarding skills on student engagement and academic achievement.

METHODS

Research Design

This study used experimental quantitative research methods with a treatment-by-level (T-LD) design. Before the experiment, a preliminary trial was conducted to ensure the equivalence of non-experimental variables. The dependent variable was students' competence, including cognitive, affective, and psychomotor, while the independent variables included the use of 10fastfinger learning media and self-engagement. The research design is illustrated in the following table.

Table 1. Research Design

Group	Pretest	Treatment	Post-test
Experiment (E)	O_1	X	O_2
Control (C)	O_1		O_2

Data Collection Techniques

This study's subjects were 73 Business Administration students at Politeknik Balekambang Jepara. The sample of 25 people in the experimental group and 24 people in the control group was selected using purposive sampling techniques (Arikunto, 2013). This technique was chosen based on the two lowest pretest average scores, namely E (experimental class) and C (control class).

The study used tests and questionnaires for data collection. The instrument used is the self-engagement scale (SES) (Gunuc & Kuzu, 2015), which consists of 57 statement items using four Likert scales. The competency instrument was carried out by providing a typing practicum test with 10fastfinger media for the experimental class and a manual for the control class. Meanwhile, student engagement was assessed using questionnaires.

Hypothesis

Keyboarding skill or 10-finger typing skills, also known as touch typing, is the ability to type using ten fingers without looking at the keyboard (Ariawan et al., 2019). Mastering keyboarding skills is fundamental to computer proficiency, facilitating effective and efficient work, minimizing typing errors, and prolonging the lifespan of keyboards. Thus, keyboarding

capabilities can improve individual performance.

Due to the importance of keyboarding skills, lecturers must adopt innovative and engaging learning media to motivate student involvement in learning activities. One of the learning media that is often used to hone keyboarding skills is 10fastfinger. Keyboarding applications are proven to improve student learning outcomes and accuracy in typing scripts (Marwan & Wardani, 2023). Supported by previous research, the accuracy of learning media can help educators deliver material thoroughly so that students can understand and obtain maximum learning outcomes (Dufrene & Young, 2014; Musa et al., 2023).

In addition, using learning media such as the 10fastfingers application can also increase student experience and involvement in learning. In line with Isran Rasyid Karo-Karo & Rohani (2018) and Prianto (2023), the benefits of learning media are for the delivery of more engaging, efficient, and attractive material so that it can increase engagement and quality of learning outcomes and foster positive student attitudes towards content. Student engagement connects students to learning (Dixson, 2015). In general, student engagement refers to students who are actively engaged in their tasks and learning activities in keals (Lei et al., 2018). Because student involvement will affect student performance or success (Nguyen et al., 2018). Student engagement and academic performance are two of the most essential things for educational institutions because institutional productivity is primarily assessed by academic achievement (Ogunsakin et al., 2021). Thus, the hypothesis of this study is as follows:

H1: Keyboarding skill affects student academic performance.

H2: Keyboarding skill affects student engagement.

Data Analysis

The validation results for student engagement showed a value of 0.452, where the correlation value was more significant than the critical value, and the reliability value was 0.96, meaning that the self-engagement questionnaire items are valid and reliable. Validation tests on practicum tests are also conducted by considering the content and construct of keyboarding practicum material—data analysis using descriptive analysis techniques and differential analysis with the help of SPSS for Windows release 25.

RESULTS AND DISCUSSIONS

Results

Data were collected before and after the learning process. They were used to categorize

and designate control and experimental classes and evaluate differences in self-engagement and student performance between them.

The normality test results in the pretest and post-test in the experimental and control classes were a = 0.896 more than 0.05. The performance values between the experimental and control classes were normally distributed. The output of the Levene test on the pretest data shows a value of 0.575, more than 0.05, so the performance value in the pretest has homogeneous data. Based on the significance value of 0.682, the post-test data shows homogeneity in student performance between the experimental and control classes. As both classes have the same level of performance, the study continues.

This study used 10fastfingers media in the experimental class, while the control class used learning media as usual. This research experiment was conducted in seven meetings. At the last meeting, the students were given a practice test to see if their learning performance improved. Student performance can be seen in Table 2 in more detail.

Table 2. Descriptive Statistics of Students' Competencies and Engagement

Data		N	Range		$\bar{x}$		SD	
			Before	After	Before	After	Before	After
Cognitive	C	24	36-100	41-100	58.8	80.9	6.83	2.35
	E	25	35-81	52-100	58.5	82.6	2.00	3.85
Affective	C	24	54-85	57-86	59.7	81.2	7.17	5.19
	E	25	48-75	53-99	46.2	78.6	6.24	5.35
Psychomotor	C	24	62-84	70-100	76.0	90.5	3.37	9.43
	E	25	38-88	75-100	45.0	97.6	3.78	5.19
Self-engagement	C	24	34-100	60-100	49.7	54.7	5.27	7.86
	E	25	40-100	51-100	42.8	58.5	6.62	9.16

Table 2 shows that the level of self-engagement tends to be low, and student performance during the keyboarding practicum pretest is also low. In Table 3, the control class and the experiment significantly differed in student engagement and performance variables. Thus, previous findings suggest that both classes share similar characteristics. The next stage is to plan learning activities for the experimental class. The activity starts before the learning process with details: prepare learning design using 10fastfingers media; prepare the needs of tools during the learning process; develop assessment and collection of instrument data; and group students and conduct simulations with students selected by lecturers.

Throughout the classroom learning process, researchers engaged in various activities, including explaining the learning objectives, describing the applied model and learning media, organizing students into groups according to a predetermined plan, guiding students to practice typing using the blind system techniques with 10fastfingers media, and concluding the lectures

followed by evaluation. The entire lecture process is held for seven meetings, with an allocation of 100 minutes for each meeting.

Table 2 shows learning engagement and student performance after lecture activities. Student involvement in both classes is different. The mean result on variable student involvement in the experimental class was lower than that in the control class. The mean values in the experimental and control classes were 42.8 and 49.7. However, the final score of student involvement in the experimental class increased compared to the control class.

Effectiveness Test and Hypothesis Test

A T-test was used to test the effectiveness of the study and the hypothesis. Table 2 shows that the students' performance scores in the control class were better than those in the experimental class. For this reason, this test needs to be done to prove the difference between student performance scores in experimental and control classes through t-tests. The results of the t-test can be seen in Table 3.

Table 3. T-test Results on Pretest and Posttest

Data		F	Sig.	t	α (2-tailed)
Students' performance	Pretest	0.167	0.557	1.705	0.000
	Posttest	0.887	0.953	2.282	0.000
Students' engagement	Initial	6.878	0.013	5.813	0.000
	Final	2.291	0.011	5.620	0.000

Table 3 shows that the significance value (2-tailed) is 0.000 less than 0.05, so there is a significant difference from using 10fastfingers media on student engagement. In the table, the post-test results also show that the experimental class scores are higher than the control class. These results mean that there is an increase in experimental and control classes. From the post-test results, the study continued to test independent samples to prove differences in student performance in the cognitive, affective, and psychomotor fields in control classes and experiments. Research findings showed that the control class obtained lower grades than the experimental class. This study used a paired samples t-test and an independent sample t-test to test the hypothesis. The results of the hypothesis test can be seen in Table 4.

Table 4. The score of paired samples t-test

Data	Pretest-Posttest
Mean	18.90883
SD	11.01863
SE	1.46889
t	-10.127
α (2-tailed)	0.000

Table 4 shows that the t-test score was 0.000, more diminutive than 0.05, meaning that the first hypothesis is accepted because there is an increase in student performance in the cognitive field when using 10fastfinger learning media. The average cognitive score on the pretest in the experimental class was 58.5 and increased at the time of the post-test to 82.6. Meanwhile, in the control class, the average score increased from 58.8 to 80.9, meaning that the experimental class increased by 24.1 and the control class by 22.1.

The second hypothesis tests the differences in student performance in the psychomotor field between experimental and control classes using 10fastfingers learning media. The independent sample t-test results in Table 5 show that the value of "a" is 0.001, less than 0.05, meaning that the second hypothesis is accepted.

Table 5. Independent samples t-test

Data	Psychomotor	
	C	E
t	5.83	5.82
MD	16.27	16.27
SE	3.72	3.20
α (2-tailed)	0.001	0.001

Table 5 shows that the score of 0.000 is smaller than 0.05, meaning that the first hypothesis is accepted because there is an increase in student performance in the cognitive field when using 10fastfinger learning media. The average cognitive score on the pretest in the experimental class was 58.5, and it increased to 82.6 at the time of the post-test. Meanwhile, in the control class, the average score increased from 58.8 to 80.9. It means the experimental class increased by 24.1, and the control class by 22.1.

The second hypothesis testing is that there are differences between using 10fastfingers learning media and student performance in the psychomotor field in experimental and control classes. The second hypothesis was tested using the independent sample t-test shown in Table 5. Table 5 shows a value of 0.001 < 0.05, so the second hypothesis is accepted.

Table 6. Coefficient Test Score

Information	Mean
R	0.773
R square	0.851
Adjusted R square	0.015
SE of the estimate	5.572

Next, the determination of the significance or linearity value in regression is addressed in Table 7. In the significance test, the criteria used as a benchmark is that if the significance value is lower than 0.05, then the regression equation model is significant. Table 7 shows that the significance value is 0.001, which meets the criteria limit, so the regression equation model

in this study is significant.

Table 7. Output significance value

Data	Mean
Mean square	20.822
F count	0.661
Sig.	0.001

Discussion

Learning media can have several positive effects on students, such as engaging new desires and interests, fostering motivation, stimulating active learning participation, and even influencing students psychologically, all of which enhance student competence. For this reason, the role of the media is very important in the learning process because the activity presents the media as an intermediary that can improve student performance, including in introductory computer and typing courses. This course material must be studied by first-semester students because it contains basic practices such as keyboarding skills, which are useful in operating computers. These skills will be helpful in supporting the work of lecture assignments to be more effective and efficient.

This study uses 10fastfingers media to train students' skills in keyboarding. This study found that the use of 10fastfingers learning media was able to improve student performance in cognitive, affective, and psychomotor. This finding aligns with Lusiana and Maryanti's (2020) results, which showed the significance of using learning media in schools to support teaching and learning. As supported by Daniels (2020), the results of obtaining student typing speed tests have increased when using typing applications. In line with the research results by Rozi et al. (2018), typing applications can improve student performance by 13.16% compared to not using typing applications. Thus, the use of the 10fastfingers application in typing lectures provides a significant improvement in student performance. In addition, using software and internet networks as learning media can encourage students to be involved in the learning process because learning media can facilitate students' involvement in learning.

Student engagement is critical to connecting students to learning (Dixson, 2015; Lin & Huang, 2018). Student engagement generally refers to students actively engaged in their tasks and learning activities in class (Ali & Hassan, 2018; Lei et al., 2018) because student involvement will affect student performance or success (Dinh & Nguyen, 2022). Student engagement and academic performance are two of the most essential things for educational institutions because institutional productivity is primarily assessed by academic achievement

(Dixson, 2015; Lin & Huang, 2018). Student engagement generally refers to students actively engaged in their tasks and learning activities in class (Ali & Hassan, 2018; Lei et al., 2018) because student involvement will affect student performance or success (Dinh & Nguyen, 2022). Student engagement and academic performance are among the most essential things for educational institutions because institutional productivity is primarily assessed by academic achievement (Ogunsakin et al., 2021).

Previous research found that student engagement significantly affects student academic achievement, where when student engagement is high, the student's academic achievement will also be high (Lei et al., 2018). One of the efforts that can be made to increase student engagement is to utilize technology as a learning medium. Thus, this study uses 10fastfingers media to increase student involvement in lecture activities. This finding shows that using 10fastfingers media can affect student involvement in lecture activities. In agreement with (Senior et al., 2020), there is a positive and significant influence of student involvement on student performance in the form of typing speed. The use of technology-based media makes the class more exciting and fun ((Blasco-Arcas et al., 2013; Chang et al., 2010; Hodgson et al., 2013; Stevens et al., 2017; Weigelt et al., 2015).

CONCLUSION

The results and discussion of this study found that (1) 10fastfingers learning media can improve students' cognitive performance, aimed at pretest and post-test scores in control classes and experiments where the significant value on the paired samples t-test is 0.000. (2) There is a significant difference in psychomotor performance with 10fastfingers learning media. The difference can be seen from the results of the practice value of the control class and experiments tested with independent samples t-test, where the significance value is 0.001. (3) 10 fast fingers learning media is proven effective in typing courses, as seen from the passing average score of 75.33%. (4) Using ten fast fingers learning media with blind systems techniques can increase student involvement in learning. Therefore, this learning media aims to improve student performance and increase student engagement in the importance of keyboarding skills in introductory computer and typing courses. In future research, researchers can conduct more profound studies on what affects the effectiveness of learning media.

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