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# The Effect of Google Classroom-Assisted Learning on Self-Efficacy among Form Six Economics Students

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**Abstract**

Malaysia is committed to intensifying digital services to satisfy the demands and needs of today's society. The Jalinan Digital Negara (JENDELA) (2020-2022) was launched to concentrate on home learning needs by expanding broadband access with more reliable internet coverage as one of the national agendas. Google Classroom is one of the learning management system applications that are the top choice employed in Malaysia. The application enables communication and discussion facilities to facilitate students to perform collaborative learning. Earlier collaborative learning researchers have often examined its influence on academic achievement. Nevertheless, it leaves the question of to which extent Google Classroom's collaborative learning approach impacts economics students' self-efficacy. This research intended to test the effect of Google Classroom-assisted learning on the self-efficacy of economics students. This quasi-experimental study employed pre-questionnaires and post-questionnaires instruments to collect data on 207 Form Six economics students through random cluster sampling. Descriptive analysis (frequency, percentage, and mean) and ANOVA inference were performed after data were collected and coded. The results validated that the experimental group of students exposed to the collaborative approach (GCDK) presented better self-efficacy on economic learning than those not exposed to the collaborative approach (GCTK and KPK). It is recommended that future researchers attend further studies to recognise the relationship between the variables of self-efficacy and student achievement in the Google Classroom-assisted learning environment. In addition, the researchers performed Differential Item Functioning (DIF) analysis to acknowledge possible bias items based on demographic factors. This study motivates teachers to consider the implementation of this learning approach in enhancing student effectiveness. Besides, policymakers should concentrate on the readiness of teachers and students to regard the digital learning environment as a new norm in today's life.

**Keywords:** Google Classroom, Self-Efficacy, Collaborative Learning, Economics Education.

## Introduction

Following the spread of the COVID-19 epidemic that hit the whole country, almost all educational institutions shut down their operations physically. This condition influences nearly 1.725 billion children in over 95% of countries worldwide (Smith, 2021). Hence, the online learning medium is the best alternative to replace face-to-face teaching and learning. This situation also transpires in Malaysia, where the statistical report of the Department of Statistics Malaysia (2021) discovered that there was an exponential increase in internet usage (6.0%), computers (3.5%) and mobile phones (0.5%) in 2020 compared to 2017 due to the need for e-learning. Some online learning mediums that are users' preferences in Malaysia are Classroom, Zoom, Telegram, WhatsApp, and Facebook (Butola, 2021; Gunawan et al., 2020; Mulyono et al., 2021; Zarzycka et al., 2021). Scholars also agreed that this trend would continue in the post-COVID-19 phase, given the safety needs of students (Sim et al., 2020; Weinhandl et al., 2021). This circumstance demonstrates the essence of a judicious online learning approach in the continuity and guaranteed educational rights of students.

Therefore, among the goals of the Jalinan Digital Negara plan (JENDELA) (2020-2022) launched is to concentrate on learning at home (Malaysian Communications and Multimedia Commission (MCMC), 2020). Students will enjoy a hybrid learning approach with a high-quality internet broadband network and a precautionary measure to face the educational rehabilitation plan moving into an endemic phase. Google Classroom is one of the learning management system applications that are the fundamental choice adopted in Malaysia. Figure 1 shows the distribution of Google Classroom users in Malaysia, ranked second highest among the 57 countries that use the application (Google Trends, 2021). The Google Classroom app allows multiple benefits compared to other apps, such as being easy to use, time-saving, flexible, free and mobile-friendly (Iftakhar, 2018; Muttaqin & Hasan, 2020). Feedback from initial users proved their satisfaction and suggested that this app be continued in the future (Khalil, 2018; Quigley & Herro, 2016). In addition, the application also affords communication and discussion facilities such as online discussions, forums, comments, short messages and e-mail to facilitate students to perform collaborative learning.

21st-century learning emphasises collaborative skills (Laal, 2013a; Ching Sing et al., 2019). Collaborative learning suggests a group task consisting of two and more people having the same goal of performing a particular task (Barkley et al., 2005; Laal & Laal, 2012). The component of collaborative learning emphasises positive dependence and interaction skills (Laal, 2013b). Daniel and Jordan (2017) asserted that the effectiveness of a collaborative learning approach is highly dependent on the quality of interaction between group members. The statement is also supported by the findings of Ansari and Khan (2020), in which social factors such as interactions with teachers and peers and the use of social media have a positive impact on active engagement and collaborative learning activities. At the same time, the experimental study by Micari & Pazos (2020); Zheng et al (2020) reported that students who followed collaborative learning had self-confidence over the courses they took. This is in line with the view of constructivist learning theory by Vygotsky (1978). Students exposed to social interactions tend to have better cognitive development than other students (Darling-Hammond et al., 2019). Accordingly, teachers should encourage students to constitute new knowledge in an active learning environment.


Figure 1 Distribution of Google Classroom Application Users
Sumber: Google Trends (2021)
Source: Google Trends (2021)

Positive dependence in collaborative activities has been identified to stimulate individual self-efficacy (Van Blankenstein et al., 2018). Self-efficacy is defined as an individual's belief in one's ability to perform a task to achieve a particular goal (Bandura, 1997, 2010). Self-efficacy factors have also been identified as contributing to the advancement of the academic achievement of economics students (Maher & PrabjitKaur, 2020). This is because students with high self-efficacy are willing to monitor and attend self-control actions and survive in the face of difficulties (Komarraju & Nadler, 2013). Individuals with high self-efficacy tend to be resilient in challenging conditions because they consider adversity a call that needs to be faced. Diversity of skills and categories of students exist in a group. Low achieving students highly depend on the contribution of better achieving friends because it is beyond their ability. Students come from a mixture of backgrounds and skills. The diversity of students in a group adds to student achievement (Sánchez et al., 2021). Thus, group members need to hold self-efficacy to engage in collaborative learning activities.

Self-efficacy factors were identified among the factors determining the academic attainment of economics students (Happ et al., 2018; Maher & PrabjitKaur, 2020). Students with low self-efficacy feel insecure and anxious throughout Economic subjects examinations (Kader, 2016) principally involving high-level questions (Tang, 2019). Due to the low self-belief ability to complete tasks, students exhibit negative behaviours such as copying peer answers, inconsistently performing tasks and not trying to address their weaknesses (Innocenti & Cowan, 2019). In addition to concepts and theories, students' mastery of statistical skills is also required as most problem-solving questions involve mathematical calculations. Economics is one of the most challenging subjects for students because it demands skills in interpreting graphs, symbols and problem-solving (Arsaythamby & Julinamary, 2015; Arsaythamby & Ruzlan, 2015). Corresponding findings by Nursaila et al (2018) discovered that economics students had difficulty describing methods for drawing, converting and interpreting graphs to data and text and vice versa. At the same time, Rahim et al. (2021) reported that students often have difficulty understanding abstract concepts. The Malaysian Higher School Certificate results report indicated that the percentage of passes and grades of

excellent economic achievement at the national level is also not encouraging compared to business studies (Malaysian Examinations Council, 2015, 2016, 2017, 2018). Form Six Economics students are in the transition from secondary school to tertiary education. The conclusions signified that students need to give extra effort and concentration to obtain better achievement results, especially to Form Six Economics students in Semester 1 who do not have basic knowledge of economics.

Therefore, students' self-efficacy should be nurtured and developed among Economics students in Form Six to encourage them to advance their potential. However, it leaves the question of to which extent Google Classroom's collaborative learning approach impacts economics students' self-efficacy. Past collaborative learning research has often explored its impact on academic achievement (Shimuzu et al., 2021). This proved that there are still gaps in the study of non-cognitive factors that need to be addressed by researchers. Therefore, this study was conducted to test the effect of the Google Classroom-assisted collaborative learning approach on self-efficacy among Form Six Economics students.

**Methodology**

This quasi-experimental study was conducted in three schools in Malacca, Malaysia. The participating respondents consisted of 207 Form Six Economics students (Semester 1) who were randomly selected from the cluster. Each group of students was exposed to different learning approaches, namely (a) Google Classroom-assisted learning approach with collaborative (GCDK) (63 people); (b) Google Classroom-assisted learning approach without GCTK collaborative (63 people); and (c) conventional learning approach (KPK) (83 people). In this research, the size measurements between groups were equivalent (largest number / smallest number = 81/63 = 1.29 <1.5) (Pallant, 2010; Pituch & Stevens, 2016). The researchers employed a self-efficacy questionnaire measurement tool (six items). The reliability of this study instrument based on Cronbach's alpha value was 0.92. According to Hopkins (1998), a reliability value of 0.90 is good and acceptable. Therefore, the reliability of this research instrument was high and suitable for use in actual studies. The researchers applied for permission from the Department of Education Policy Planning and Research, Malacca Education Department, school principals and student participation consent.

Figure 1 shows the flow chart of the quasi-experimental study conducted. The pre-questionnaire tests were administered before the intervention was conducted for an estimated time of 10 minutes. Participating study participants received initial briefings and training for a week before the intervention was conducted. Each student was given and used the same Economics learning materials for 12 weeks. GCDK group students were divided into several small groups consisting of 4 to 6 people and used Google Classroom learning medium with collaborative. GCTK group students followed Economic learning with the help of Goggle Classroom without collaborative, and the KPK group followed learning by existing teachers. At the end of the 12th week, post-tests were administered to gather information after students were exposed to treatment. Pre-test and post-test data were analysed using descriptive analysis (frequency, percentage and mean) and inferential analysis (ANOVA) to measure differences in self-efficacy based on the learning approach conducted on each group.

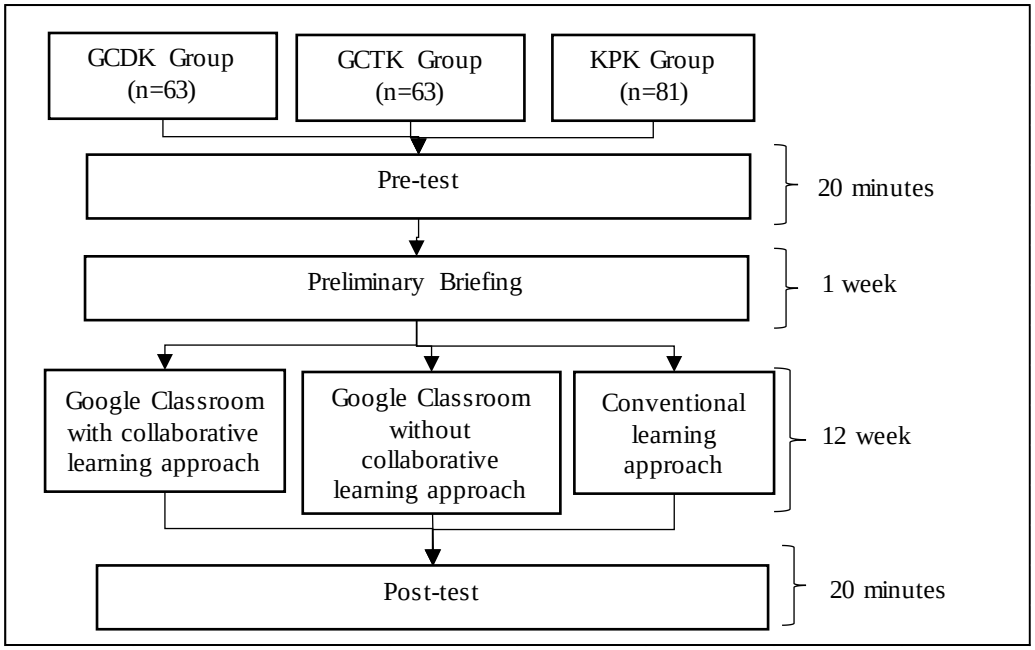


Figure 1 *Quasi-experimental study flow chart*

**Findings**

The total number of respondents involved in this study was 207 people consisting of 70.5% female and 29.5% male. Demographics by race reflects Malay students (51.7%), Chinese (37.2%), Indians (9.7%) and others (1.4%). The majority of students had at least 1 to 2 units of devices (67.6%), 18.4% owned 3 to 4 units, and 14% owned more than 4 units. Table 1 is a summary of the profile distribution of the study respondents.

Table 1
*Respondent Profile Distribution (n = 207)*

| Details | Features | Frequency | Percentage |
|---|---|---|---|
| Gender | | | |
| | Female | 146 | 70.5 |
| | Male | 61 | 29.5 |
| Race | | | |
| | Malay | 107 | 51.7 |
| | Chinese | 77 | 37.2 |
| | Indian | 20 | 9.7 |
| | Others | 3 | 1.4 |
| Number of Devices | | | |
| | None | 0 | 0 |
| | 1 to 2 units | 140 | 67.6 |
| | 3 to 4 units | 38 | 18.4 |
| | More than 4 units | 29 | 14.0 |

Overall, the mean value of self-efficacy recorded an increase over the GCDK group (3.9101-3.5344 = 0.3757) and GCTK (3.7989-3.6931 = 0.1058), while there was a decrease in the mean value of self-efficacy of the KPK group (3.5329-3.7140 = -0.1811). Mean score interpretations: 1.00 to 2.33 *(low level),* 2.34 to 3.66 *(moderate level)* and 3.67 to 5.00 (*high level)* (Jamil, 2008). All three groups registered the lowest mean values on item E1 (I confidently answered the question during the Economic test). Students need more teacher support in preparation for exams. Therefore, teachers need to recognise students'

weaknesses, and students need to be exposed to a format and level of questions equivalent to the actual exam. While the item (I did not give up despite getting unsatisfactory marks). The findings of the analysis of the level of self-efficacy of the GCDK (3.9101) and GSTK (3.7989) groups were high, while the KPK group revealed that the level of self-efficacy was moderate at the post-test stage compared to the pre-test. It confirmed that the collaborative Google Classroom-assisted learning approach could improve students' self-efficacy compared to the conventional approach. Table 2 reports the responses of the study participants of the treatment group (GCDK and GCDK) and the control group on the self-efficacy variables.

Table 2
*Response of the Study Participants of the Treatment Group (GCDK and GCDK) and the Control Group on Self -Efficacy Variables*

| Learning Approach | GCDK (N=63) | | GCTK(N=63) | | KPK(N=81) | |
|---|---|---|---|---|---|---|
| Statement | Pre Mean | Post Mean | Pre Mean | Post Mean | Pre Mean | Post Mean |
| E1 I confidently answered the question during the Economic test | 3.1587 | 3.4762 | 3.1429 | 3.5079 | 3.3827 | 3.1358 |
| E2 I am confident of getting better Economic marks | 3.4444 | 3.7302 | 3.3175 | 3.7778 | 3.6049 | 3.4198 |
| E3 I revised certain topics of Economic on my own without being directed by a teacher | 3.3968 | 3.7302 | 3.5714 | 3.6349 | 3.4938 | 3.4074 |
| E4 I did not give up despite getting unsatisfactory marks. | 3.8571 | 4.3333 | 4.1587 | 4.1746 | 4.1481 | 3.9136 |
| E5 I considered difficult tasks as a challenge | 3.6667 | 4.1270 | 3.9524 | 3.9048 | 3.8519 | 3.6914 |
| E6 I kept trying to solve difficult questions with a variety of sources | 3.6825 | 4.0635 | 4.0159 | 3.7937 | 3.8025 | 3.6296 |
| Mean | 3.5344 | 3.9101 | 3.6931 | 3.7989 | 3.7140 | 3.5329 |
| Level | Moderate | High | Moderate | High | High | Moderate |

Next, ANOVA test analysis was performed to identify significant differences in pre- and post-experimental students' self-efficacy based on the learning approach. The table is a report of ANOVA test results. The data of ANOVA test on students' self-efficacy variables in Table 3 observed that the significant value at the pre-experimental stage was $F(2, 204) = 1.810$, $p = .166$ ($p > 0.05$). While the significant value at the post-experimental stage was $F(2, 204) = 8.521$, $p = 0.000$ ($p < 0.05$). These findings established a significant effect of GCDK and GCTK learning approaches compared to KPK on students' self-efficacy.

Table 3
*Results of Student Self-Efficacy ANOVA Test (Pre-Test and Post-Test) Experiment Based on Learning Approach*

| Variable | | DK | Mean | F | *Sig*. |
|---|---|---|---|---|---|
| Student self-efficacy (pre-experiment) | Between groups | 2 | 0.645 | 1.810 | .166 |
| | In Group | 204 | 0.356 | | |
| Student self-efficacy (post-experimental) | Between groups | 2 | 2.744 | 8.521 | .000 |
| | In Group | 204 | 0.322 | | |

Sig. at the .05 level

The Tukey HSD Post Hoc advanced test was conducted to identify differences in self-efficacy based on the learning approach in more detail. The results of Tukey HSD Post Hoc analysis are shown in Table 4. Based on the Post Hoc test report as a whole, there was no significant difference on the self-efficacy variable (p> 0.05), based on the learning approach conducted at the pre-experimental stage. Meantime, after the experiment, there was a significant difference in self-efficacy (p <0.05) based on the treatment group (GCDK and GCTK) compared to the KPK control group. This information concluded that there were significant differences in self-efficacy variables based on GCDK and GCTK learning approaches compared to KPK before and after the intervention was conducted.

Table 4
*The Tukey HSD Post Hoc Analysis on Student Self-Efficacy Differences Based on Learning Approaches*

| The dependent variable | (I) Group | (J) Group | Mean difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Self-efficacy (Pre) | GCDK | GCTK | -.15873 | .10632 | .296 | -.4098 | .0923 |
| | | KPK | -.17960 | .10024 | .175 | -.4163 | .0571 |
| | GCTK | GCDK | .15873 | .10632 | .296 | -.0923 | .4098 |
| | | KPK | -.02087 | .10024 | .976 | -.2575 | .2158 |
| | KPK | GCDK | .17960 | .10024 | .175 | -.0571 | .4163 |
| | | GCTK | .02087 | .10024 | .976 | -.2158 | .2575 |
| Self-Efficacy (Post) | GCDK | GCTK | .11111 | .10111 | .516 | -.1276 | .3498 |
| | | KPK | .37713* | .09532 | .000 | .1521 | .6022 |
| | GCTK | GCDK | -.11111 | .10111 | .516 | -.3498 | .1276 |
| | | KPK | .26602* | .09532 | .016 | .0410 | .4911 |
| | KPK | GCDK | -.37713* | .09532 | .000 | -.6022 | -.1521 |
| | | GCTK | -.26602* | .09532 | .016 | -.4911 | -.0410 |

Sig. at the .05 level

**Discussion**

The descriptive analysis reported an increase in the mean value of self-efficacy of the treatment group (GCDK and GCTK), while the control group's mean showed a decrease. The results of ANOVA inferential analysis found significant differences in the self-efficacy variables based on GCDK and GCTK learning approaches compared to KPK before and after the intervention was conducted. The findings established that students exposed to Google Classroom-assisted learning help improve self-efficacy compared to conventional learning approaches.

The conclusions of this research are comparable to past research reports such as Ghabeli et al. (2021), Alexiou and Paraskeva (2020), Almoeather (2020), Warren et al. (2020), Alkhasawnh and Alqahtani (2019), Indreswari et al. (2019), Anders (2018), Du et al. (2018), Lin (2018), Özyurt and Özyurt (2018), Wang and Hwang (2017) and Ortoleva and Bétrancourt (2015). They examined the effectiveness of online collaborative learning on self-efficacy variables. Nonetheless, there are discrepancies in past research findings that observed that online collaborative learning has no interaction with self-efficacy factors (Mehar & PrabhjitKaur, 2020). The discrepancy of findings may be due to differences in student readiness, implementation guidelines and training received by teachers and students. A discussion of factors that stimulate self-efficacy in online collaborative learning will be addressed from four regards: mastery experience, vicarious experience, moral support, and learning environment.

The influence of teammates with high self-efficacy indirectly influences students with low self-efficacy during the interaction process. Individuals with high self-efficacy often report better progress than individuals with low self-efficacy (Anders, 2018; Wilson & Narayan, 2014). The competency gap between high and low self-efficacy students while collaborating can be overcome through online resource support on incompetent students tend to choose teammates who can better complement their lack of self and known peers and are more comfortable with social interaction (Chou & Chen, 2008; Chyr et al., 2017). After engaging in joint discussion activities, weaker students acknowledge that differences and opinions exchange present differing perceptions and ideas that cannot be developed individually (Ma et al., 2020). This awareness, in turn, leads to individual actions to seek help, change and improve ways of thinking, learning strategies and practices to achieve end goals (Lin, 2018; Milikić et al., 2020; Zheng, 2016). This statement concurs with the view of Bandura (1997, 2010). Bandura mentioned that individual self-efficacy could be developed through vicarious experience, in which the individual believes in self-efficacy when seeing the success of others and wants to emulate it. In this research, GCDK students had the opportunity to emulate the work efficiency of high self-efficacy throughout the learning process. The students took the actions then chose effective learning strategies to perform Economic tasks to increase the self-confidence given to GCTK and KPK students.

Additionally, the personal encouragement students receive is a determinant that promotes self-efficacy (Daly & Thompson, 2017; Jung, 2013; Jung et al., 2012; Kahu et al., 2017; Sivarethinamohan & Sujatha, 2019). Feedback from teachers and teammates is the emotional support of students (Hornstra et al., 2021; Xu et al., 2014). In the context of computer-assisted collaborative learning, teachers hold the opportunity to designate more time to render feedback (appreciation) on student progress (King et al., 2019). In comparison, an assertive peer evaluation accepts and recognises other members for contributions made to the group (Dooley & Bamford, 2018; Sansone et al., 2016; Yang et al., 2006). The instrument development study of Tezer et al (2017) also significantly proved that social bonding in a

collaborative learning environment contributes to self-efficacy. In this study, each group member (GCDK group) gave each other emotional encouragement because they shared the same goals, built team trust, positive dependence and built social bonds to perform group tasks. Nevertheless, there are times when social bonding becomes an obstacle to the effectiveness of group work as members become less self-disciplined and less critical in discussions (Chang, 2018; Chang & Kang, 2016).

Online collaborative learning affords a favourable education environment that can enhance self-efficacy for each group of students. Throughout the collaborative learning process, students go through information sharing, differences of opinion, meaning negotiation, testing and collective understanding (Lam, 2017). According to Jung (2013), social interaction in online collaborative learning can overcome stress. Digital platforms grant an advantage to students who are uncomfortable face to face and need communication intermediaries to increase self-confidence (Shukor et al., 2015). Interaction facilities such as discussion rooms, comments, e-mail and chat rooms can be used in real-time (synchronous) or vice versa (asynchronous). Students feel free to engage in learning pursuits in a comfortable, safe and non-threatening setting (Adefila et al., 2020; Seethamraju, 2014; Yılmaz, 2017; Zainuddin & Attaran, 2015). As a result, students' interpersonal skills and self-efficacy increased throughout the learning process. Through this method of intervention, every student (GCDK and GCDK groups), including weak, reserved and shy students, had equal opportunities and freedom to engage in learning activities, exchanging views and ideas.

**Conclusions**

Ergo, the verdicts of this research significantly authenticated that the group of students exposed to the collaborative approach (GCDK) presented better self-efficacy of Economic learning than the group of GCTK and KPK students. Difficulties in executing group tasks positively reshape students' self-efficacy at the individual and group levels (Du et al., 2018). Alqurashi (2018) found that online learning self efficacy factors can predict satisfaction in online learning environment. The finding contribution of this empirical study confirmed that the online collaborative learning effectiveness on students' self-efficacy. Students receive satisfaction because every student has an equal opportunity to engage in learning activities outside the classroom especially to the introvert and shy category students (Smidt et al., 2014). The satisfaction aspect in turn leads to the motivation of students to continue to strive in the online learning environment (Jin, 2017). The findings of this study also contribute to teachers in choosing alternative learning platforms and diversify economic learning approaches in accordance with current needs. The limitation of this study was that it only included a small number of samples of three schools but were homogeneous. The sample only included Economics students of Form Six Semester 1. Based on the study's limitations, the researchers proposed that the next study conduct a relationship study on the variables of self-efficacy and student achievement in the Google Classroom-assisted learning environment. In addition, the researchers performed differential item functioning (DIF) analysis to recognise items that are likely to have biased characteristics based on demographic factors such as gender, race, family status, and location of residence. The conclusions of this study motivate teachers to reconsider implementing this learning approach in augmenting the effectiveness of students in the post-COVID-19 period later. In addition, policymakers should concentrate on the readiness of teachers and students to exercise the digital learning environment as a new norm in today's life. Individuals with high self-efficacy will accept difficult tasks as a challenge, work diligently and possess resilience

over a long period, contrasted to individuals with low self-efficacy (Wood & Bandura, 1989). Landrum (2020) continued that aspects of self-efficacy should be strengthened, particularly in new learning. Therefore, students should have a high value of self-efficacy to prepare themselves to face a more challenging learning environment in higher education institutions later.

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