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THE EFFECT OF ONLINE COLLABORATIVE LEARNING ON COGNITIVE AND AFFECTIVE ASPECTS OF PRE-UNIVERSITY ECONOMIC STUDENTS

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ABSTRACT

Today's rapid development of technology demands that educators adapt to the current situation by integrating technology. The National Digital Plan was launched to help students cope with the new learning norms. A balanced student is not only measured by academic achievement but also includes affective aspects such as interest, self-efficacy, and attitude. Official reports found the achievements of economics students to be unsatisfactory. The problem is indirectly related to the student's affective aspects. Collaborative learning approaches have been identified to help develop the cognitive and socio-emotional aspects of students. Therefore, the purpose of this study was to test the effect of online collaborative learning on the cognitive and affective aspects of students based on the learning approaches tested. The quantitative research approach used a quasi-experimental design, which involved 207 respondents from Form Six students selected through cluster random sampling. The research instruments used were achievement tests and questionnaires. ANCOVA and ANOVA analyses showed online collaborative learning had an effect on students' non-cognitive aspects compared to the cognitive aspects. Stakeholders should strengthen the use of technology to transform digital education in the country. This study implied that teachers and students should be prepared to face the increasingly challenging digital learning environment post-pandemic.

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INTRODUCTION

The Malaysia Education Development Plan 2013–2025 is currently in its third phase, as reported by the Ministry of Education Malaysia (Ministry of Education Malaysia, 2013). The Malaysia Education Development Plan 2013–2025 is a comprehensive strategy that aims to enhance the quality and accessibility of education, while fortifying the overall education system of Malaysia. The Education Development Plan in Malaysia strives to offer top-notch education that aligns with global standards and addresses the country's developmental requirements in the age of globalisation and technology. The ministry has initiated a National Digital Education Policy (Ministry of Education Malaysia, 2023). Statistics in Malaysia estimated that the percentage of Internet users will increase to 92.7%, up by 4.0% from 88.7% in 2020 (Malaysian Communications and Multimedia Commission, 2020). Malaysia should align with this trend to guarantee that the country's education system remains at the forefront of the challenges and opportunities presented by digital transformation.

However, the availability of computer equipment, digital devices, software, and school internet services in Malaysia is moderate and below the Organisation for Economic Co-operation and Development average (Malaysian Communications and Multimedia Commission, 2020). The National Digital Education Policy is a strategic initiative aimed at enhancing education through the use of digital technologies. The National Digital Education Policy was executed to enhance students' access to top-tier internet services and infrastructure. This effort aims to assist students from elementary to high school and higher education institutions in transitioning to the digital learning environment following the COVID-19 pandemic (Conrads et al., 2017). It involves utilising digital devices, software, and other digital resources to provide, enhance, and assess learning. It aligns with the lifestyle of the current age, sometimes referred to as the "digital generation. The National Digital Education Policy is anticipated to enhance and maintain the current education system in Malaysia. Furthermore, the initiative aims to offer more comprehensive, creative, and high-quality educational options for students. The Malaysian Ministry of Education shows its dedication to improving learning in the digital era through the regulations it has put in place. Benefits of using technology in education include enhanced access to learning, increased interactivity and student involvement, and better tracking of student advancement (Haleem et al., 2022). It also creates options for remote education and continuous learning (Selvaraj et al., 2021). It is crucial to address obstacles like digital divides and promote efficient and ethical technology usage. Malaysia must execute the National Digital Education Policy for various crucial reasons: a) Enhancing the standard of education: The National Digital Education Policy facilitates the utilisation of diverse digital technologies and resources to improve teaching and learning through the provision of dynamic and interactive learning materials. Digital technology facilitates the transmission of learning materials in various formats according to students' learning styles and enhances interaction between students and teachers.

In addition to matriculations and diplomas, the pre-university Form Six is one of the branches of education at the secondary level. According to the Education Act 1996 (Act 550), "extra-secondary education" is education that does not include the level of higher education and is given to individuals who have completed secondary school. The Form Six education stream offers the areas of Social Sciences and Science. Various approaches have been implemented by the government to upgrade the administration system and the role. Among the aspects being focused are consisting of several components such as management and administration, infrastructure facilities, teaching and learning, scientific research and writing, and responsibilities of the State Department of Education and the District Office of Education. This is so that the virtues and needs of students are met, in addition to ensuring students acquire a complete and attractive learning environment. In this connection, the ministry has also implemented improvements to the existing system to the new measurement system of the Malaysian Higher School Certificate began in 2012. Through the new system, students must complete the period of study over three semesters. Students who meet minimum qualifications such as graduating from secondary school and taking the Malaysian Certificate of Education exam are eligible to be offered to Form Six based on general requirements specific to a particular field. In addition to improving the image, the ministry has strengthened the education system and quality to ensure that graduation from secondary education at the Form Six level is equivalent to matriculation and basic graduation. It is hoped that this move will also change the social stereotypes of Form Six graduates who consist only of weak students.

LITERATURE REVIEW

A collaborative learning approach is generally defined as group learning involving social interaction (Laal & Ghodsi, 2012). Collaborative learning has proven to be beneficial in improving student achievement, communication skills, self-awareness, self-efficacy, and engagement (Ghavifekr, 2020; Laal & Ghodsi, 2012). This is because students can reduce their cognitive load (Kirschner et al., 2018). Coll and Coll (2017) contend that digital learning platforms promote collaborative learning activities. Collaborative learning can now be conducted online, extending beyond traditional classroom settings. According to Gaad (2022), online collaborative learning has several important advantages: a) Global Accessibility: Online learning allows students from a variety of locations and backgrounds to interact and learn together regardless of geographical distances. It opens up opportunities for cultural exchange and broader understanding; b) Time flexibility: With online learning, students can access learning materials at any time that matches their own schedules. This allows individuals who are busy with other commitments, such as work or family responsibilities, to remain involved in learning; c) Improved Social Interaction: Although online learning usually happens through digital platforms, it still enables social interaction between students through discussion forums, webinars, or collaborative projects. It fosters communication, collaboration, and interpersonal skills; d) Student-centric learning: Online learning often gives each student the space to take control of their learning process. They can access learning materials according to their own needs and interact with them in the way that is most meaningful to them; e) Technology Advancement: Online learning encourages students to become more skilled in using technology. They will be exposed to a variety of digital tools and platforms that they can use for learning, improving their overall digital literacy; f) Lower costs: Online learning often has lower costs than traditional learning. This includes reduced travel and accommodation costs, as well as lower requirements for physical infrastructure such as classrooms. Overall, online collaborative learning provides a significant advantage in providing a more flexible, inclusive, and student-centred education. It helps meet the increasingly diverse needs of learners in the modern digital age.

Learning management applications such as Google Classroom, Moodle, and Edmodo offer the convenience of virtual collaborative learning. Students can use platforms such as forums, emails, and chat rooms to interact. The apps allow students to access learning materials at any time via mobile devices. The Google Classroom learning platform is a user-friendly application that is easy to access anytime via mobile devices (Dash, 2019; Heggart & Yoo, 2018; Santos, 2021). Fauzan and Fatkhul (2019) and Ramadhani et al. (2019) found Google Classroom-assisted learning to be effective in improving student academic achievement. Past researchers have found that collaborative learning improves achievement (Goldstein & Katz, 2005; Estacio & Raga, 2017; Michinov et al., 2011; Wang, 2017), interest (Akma et al., 2018; Garcia-Martin & Garcia-Sanchez, 2018; Hui et al., 2019), self-efficacy (Ghazal et al., 2018), attitude (Ma'azi & Janfesha, 2018), communication skills, self-awareness, self-efficacy (Noornadiah & Khoo, 2021), and engagement. During the collaborative process, students not only exchange information but also develop other non-cognitive aspects such as interests, attitudes, and self-efficacy. This is because during the collaborative process, students not only exchange information but also develop other non-cognitive aspects. Social constructivism theory suggests that learning takes place when individuals engage in active interaction. Vygotsky (1978) refers to the gap between the actual and potential levels of development as the Zone of Proximal Development (ZPD). The concept of scaffolding, which refers to external cues or support to assist pupils in crossing the ZPD, evolved from the ZPD discussion (Wood et al., 1976). This learning medium encourages students who are demure and passive to be involved in giving opinions during discussions (Nur Zahira & Hanafi, 2019; Rahmad et al., 2019). Students can use Google Classroom tools such as forums, emails, and chat rooms to interact in virtual collaborative learning. Meanwhile, the student acceptance levels of Google Classroom were moderately high (Anbalagan & Siti Mistima, 2022). This finding is in line with Chung (2022) finding that the level of usability and user attitudes is lower than the usefulness level of Google Classroom among students. There are some implementation limitations identified, such as internet coverage, stakeholder support, expert consultation, and feedback period (Sulisworo et al., 2016; Maheran et al., 2020). Student achievement results are useful for teachers to reflect on and modify follow-up actions accordingly.

PROBLEM STATEMENT

Cognitive aspects are often tested on a learning topic at the end to measure the extent of students' understanding and mastery. Ayers (2018) identified weaknesses in high-level skills, specifically reasoning skills, among Economics students. Students’ achievements in the Malaysian Higher School Certificate for Economics are

lower than in Business Studies from 2015 to 2019 (MPM, 2020). The MPM (2020) achievement statistics show that the passing mean score for Economics is only 76.86%, which is significantly lower than the 82.58% for Business Studies. Based on the previous research, poor economic achievement is associated with poor interest (Schnell & Loerwald, 2018; Wunder, 2013), self-efficacy (Happ & Forster, 2018; Mehar & PrabhjitKaur, 2020), and attitudes (Ananthan, 2016; Anusia, 2015; Karstensson & Vedder, 1974; Lawson, 1994; Norshahida, 2015; Walstad, 1987) towards economic learning. Apart from the development of academic achievement, the learning approach also contributes to the development of social, psychological, and assessment aspects (Laal & Ghodsi, 2012). For economics students, Ramlee et al. (2021) suggested implementing an active learning approach. However, Aljamal et al. (2015) found that this approach does not differ from the conventional learning approach. This inconsistency raises questions about the effectiveness of the new learning approach in improving cognitive and non-cognitive aspects. The student's development in cognitive and non-cognitive aspects should be given attention. Therefore, we conducted the present study to identify the differences between cognitive and non-cognitive aspects based on the testing of learning using collaborative (GCDK), learning without collaborative (GCTK), and conventional (KPK) approaches.

This study attempted to address the following research objectives:

1. To study the effects of using Google Classroom-assisted learning with a collaborative approach (GCDK), Google Classroom-assisted learning without a collaborative approach (GCDK), and conventional learning methods (KPK) on the achievement of Form Six Economics students.
2. To measure the interest before and after the use of Google Classroom-assisted learning with a collaborative approach (GCDK), Google Classroom-assisted learning without a collaborative approach (GCDK), and conventional learning methods (KPK) on the achievement of Form Six Economics students.
3. To evaluate self-efficacy before and after the use of Google Classroom-assisted learning with a collaborative approach (GCDK), Google Classroom-assisted learning without a collaborative approach (GCDK), and conventional learning methods (KPK) on the achievement of Form Six Economics students.
4. To study the attitudes before and after the use of Google Classroom-assisted learning with a collaborative approach (GCDK), Google Classroom-assisted learning without a collaborative approach (GCDK), and conventional learning methods (KPK) towards the achievement of Form Six Economics students.

This study attempted to address the following research hypothesis:

Ho1. There is no difference in the effect of using Google Classroom-assisted learning with collaborative (GCDK), Google Classroom-assisted learning without collaborative approach (GCDK), and conventional learning methods (KPK) on the achievement of Form Six Economics students.
Ho2. There is no difference in interest before and after the use of Google Classroom-assisted learning with a collaborative approach (GCDK), Google Classroom-assisted learning without a collaborative approach (GCDK), and conventional learning methods (KPK) on the achievement of Form Six Economics students.
Ho3. There is no difference in self-efficacy before and after the use of Google Classroom-assisted learning with a collaborative approach (GCDK), Google Classroom-assisted learning without a collaborative approach (GCDK), and conventional learning methods (KPK) on the achievement of Form Six Economics students.
Ho4. There is no difference in attitudes before and after the use of Google Classroom-assisted learning with a collaborative approach (GCDK), Google Classroom-assisted learning without a collaborative approach (GCDK), and conventional learning methods (KPK) towards the achievement of Form Six Economics students.

METHODOLOGY

This study is a pre-post experimental study that aims to test or determine the cause of an effect or to form a consequential relationship and involve group comparisons (Fraenkel & Wallen, 2018). The researcher systematically introduced treatment to the selected treatment group by random division and then assessed the string of changes that occurred in the group. The strength of experimental studies has been identified as the most effective and best method of explaining the cause-effect relationship between variables (Fraenkel & Wallen, 2018). Based on a random cluster sampling of Form Six Economics students in the state of Melaka, the respondents were chosen. Three groups of 207 first-semester Economics students from three different schools were formed: GCDK (using a collaborative approach); GCTK (not using a collaborative approach); and KPK

(traditional approach). An Economics test instrument was utilized in this study to determine the degree of students' Economics topic mastery. There are a range of difficulty levels of economic problems in the created instruments. Questionnaires and tests were used as study instruments. Both instruments yielded highly reliable results. Values higher than 0.8 can be used in real research, according to Fraenkel and Wallen (2018). 30 objective questions make up the Economics achievement test. In the meanwhile, sections A, B, C, and D (demographic, self-efficacy, interests, and attitudes) make up the 28-item questionnaire.

The study was conducted for 12 weeks. The post-test was administered at the conclusion of the twelfth week after the pre-test had taken place in the first week. For an estimated duration of ten minutes, the pre-questionnaire exams were given out before the intervention. The study participants received preliminary briefings and training one week prior to the intervention's implementation. Every student received and used the same economics course materials for a period of twelve weeks. Google Classroom as a collaborative learning environment, dividing students from the GCDK group into multiple small groups of four to six members each. While the KPK group followed lessons taught by current teachers, the GCTK group studied economics with the assistance of Google Classroom alone. After student underwent intervention at the conclusion of the twelfth week, we administered post-tests to collect data. To find variations in student accomplishment following the intervention, an ANCOVA analysis was carried out. Students in semester 1 come from a variety of streams in high school. There are some who from the economic streams while some do not. Meanwhile, an ANOVA analysis was carried out to find variations in the attitudes, self-efficacy, and interests of the students before and after the intervention depending on how the learning approaches were implemented. Figure 1 displays the flow chart for the quasi-experimental study.

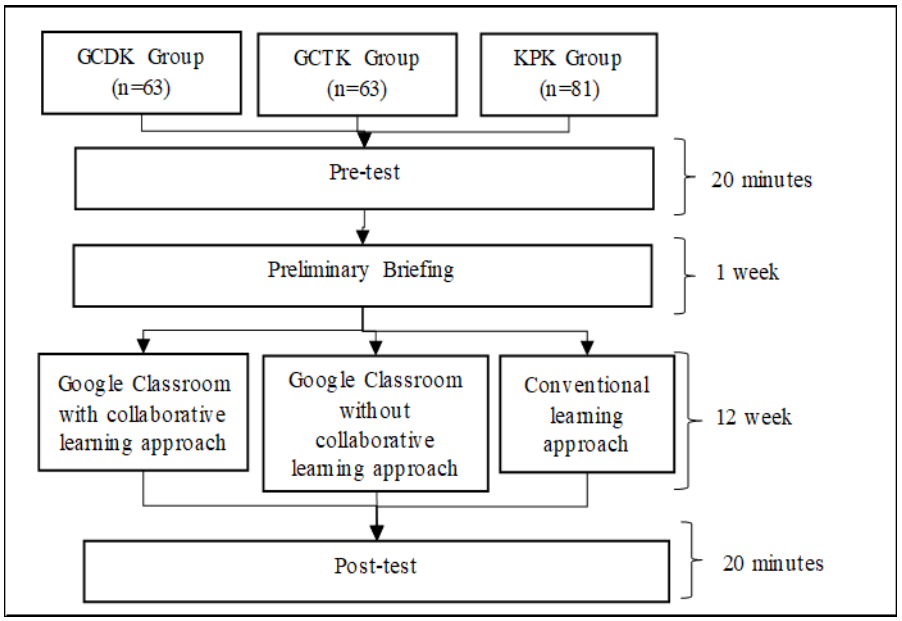

Figure 1: Quasi-Experimental Study Flow Chart

RESULTS

Female students outnumbered male students (29.5%) in the responder distribution, with 70.5 percent of the students being female. Yet, when it comes to race, the majority are Malay people (51.7%), followed by Chinese people (31.2%) and Indian people (17.1%). Based on where they lived, most students (58.4%) were from urban areas, followed by rural areas (23.2%) and suburban areas (18.4%). In contrast, the B40 group, which makes less than RM 4,849, made up 51.7% of the family income groups. This group is followed by the M40 family, which makes between RM 4 849 and RM 10 959, and the T20 group, which makes more than RM 8 000. The ANCOVA analysis of student accomplishment is presented in Table 1. With a score of $F = 1.455$, $p = .236$ ($p > .05$), the results demonstrated that there was no discernible difference in academic accomplishment based on the learning approaches. Based on the learning approaches of GCDK, GCTK, and KPK, no variations are seen in the economic achievement of the students between the learning groups following the intervention.

Table 1: ANCOVA Results on Student Achievement

Variables		**df**	**F**	**Sig.**
Student achievement	Student's Pre-Achievement	1	92.018	.000
	Learning Approach	2	1.455	.236

The ANOVA analysis results for the variables of student interest, self-efficacy, and attitude are presented in Table 2. The results of the ANOVA analysis showed significant differences in all three variables: attitude, F (2, 204) = 12.169, p =.000, self-efficacy, F (2,204) = 8.521, p =.006, and curiosity. Based on the learning techniques of GCDK, GCTK, and KPK, the results demonstrated that there were differences in the interests, attitudes, and self-efficacy of the students before and after the intervention.

Table 2: ANOVA Results

Variables		DF	Mean	F	Sig.
Interest	Between Groups	2	1.630	5.327	.006
	Within Group	204	0.306		
Self-Efficacy	Between Groups	2	2.744	8.521	.000
	Within Group	204	0.322		
Attitude	Between Groups	2	4.268	12.169	.000
	Within Group	204	0.351		

Sig. at the level of .05

DISCUSSION

Based on the learning methodologies used, the impact of collaborative learning on economic achievement in this study did not demonstrate any discernible changes. This study demonstrates a significant difference in the effects of non-cognitive factors (interest, self-efficacy, and attitude) compared to cognitive factors on the examined learning methodologies. Concurrently, studies by Jarvenoja et al. (2020) and Isohatala et al. (2019) demonstrated how collaborative learning might enhance students' non-cognitive abilities. This is due to the fact that in the setting of collaborative learning, the socio-emotional components develop more quickly than the cognitive aspects (Isohatala et al., 2019; Mänty et al., 2020; Naykki et al., 2017). Developing emotive elements is a more significant educational goal than cognitive factors, according to Gungor et al. (2007).

Collaborative learning can occasionally impede effective learning, as noted by Cannonier & Smith (2018). Likewise, based on the findings of (Adams & Dove, 2017; Al-Qahtani & Higgins, 2012; Bulut Ozek, 2018; Cantabella et al., 2019; Davis & Frederick, 2020; Jazayeri & Li, 2020; Vercellotti, 2017; Yorganci, 2020). Peer conflict, time constraints, and noncontributing participants are among the difficulties encountered in collaborative learning. When a group of people is involved, there will always be "passenger" students or noncontributing members who don't contribute to the creation of new concepts and information (Le et al., 2017; Paterson & Prideaux, 2020; Razali et al., 2013). Social bonding frequently poses a barrier to the success of group work because it results in members who are less critical of one another and less self-disciplined in conversations (Chang, 2018; Chang & Kang, 2016). Fewer students may engage in the conversation as a result of this. Furthermore, disputes amongst group members might occasionally result from differences of opinion. Dontre (2020) and Attia et al. (2017) have recognised one of the contributing aspects as the use of mobile devices by students as learning aids. Students' poor concentration affects how well they do academically (Shakoor et al., 2021). Adopting home-based education is also essential due to the COVID-19 pandemic's effects on the modern learning environment. Fear of the current learning environment and screen weariness (Rizvi & Nabi, 2021) are barriers to achievement (Roman & Plopeanu, 2021). As a result, depending on their skill levels, children require

teacher assistance more frequently. Thus, this claim validates the results showing that the learning methodologies of GCDK, GCTK, and KPK do not differ in terms of economic achievement.

Owing to the Google Classroom learning support, students have a fresh view of economics teaching methodologies, including an engaging learning environment, active involvement, and a responsive learning strategy. Moreover, using mobile devices and the internet is a given in today's generational lifestyle. According to Jamiludin et al. (2021) and Sari et al. (2020), students endeavour to investigate educational tasks and provide novel insights by relating them to their individual encounters in daily life. Students can conveniently access the learning information and materials, and they have enough time to do so (Graham et al., 2017). Students are free to look for outside assistance from a variety of sources if they are experiencing issues. In contrast to the traditional method (KPK), students enrolled in GCDK and GCTK are not dependent on the actual classroom and are free to choose their own schedules and private study times. Consequently, students in the intervention groups (GCDK and GCTK) had more autonomy in their study of economics and were able to regulate the pace of education outside of the classroom. As a result, self-paced learning satisfies students' basic psychological demands (Wong, 2019), piques their curiosity about studying economics in greater detail, and stimulates their emotions.

Students with low self-efficacy are influenced indirectly by high-self-efficacious teammates during group activities (Anders, 2018; Wilson & Narayan, 2014). Online resource support for less skilled students can help close the competency gap that exists between high-self-efficacy students and low-self-efficacy students when they collaborate (Hsieh, 2016; Hur et al., 2020). The reason for this is that students typically select friends and teammates with whom they feel at ease and who can compensate for their inadequacies (Chou & Chen, 2008; Chyr et al., 2017). Group discussion activities taught the weaker students that differing opinions can lead to distinct perspectives and ideas that are impossible to form independently (Ma et al., 2020). Individual action to seek assistance, modify, and enhance thought patterns, as well as acquire techniques and practices to reach the end result, emerges from this understanding (Lin, 2018; Milikić et al., 2020; Zheng, 2016). According to Bandura (1977), vicarious experience—the process by which people trust in their own abilities when they witness the achievement of others and then aspire to imitate it—is one way that people can grow closer to being competent. Through the course of this study, students in GCDK have the chance to imitate the productivity of learners who possess a high degree of self-efficacy. Students' activities assist them in selecting efficient learning strategies for completing Economics tasks, which boosts their confidence in comparison to students in GCTK and KPK.

There is a correlation between student attitudes and group awareness in the online collaborative learning context (Chatterjee & Correia, 2019). Collaborative learning and group learning can improve friendships (Adams et al., 2020; Ädel, 2011), foster trust within the group (Tseng et al., 2019), and help students get to know one another better (Yilmaz, 2017). Collaboration is essential for a team to succeed; each member must cooperate and carry out their assigned tasks. For this reason, it is each member's duty to contribute to the group's work. Students who are conscious of their personal accountability to the group act more cautiously to avoid having a negative effect on their teammates. Establishing a good work culture can encourage students to adopt a positive attitude, thereby increasing work quality and contributing to the group's success.

This study offers a novel teaching strategy that bolsters constructivist learning's effect on students' socioemotional development. As a result, when contrasted to traditional ways, educators in general and teachers and students in particular have a choice among the finest alternative learning approaches. This is due to the fact that, in contrast to earlier generations, Generation Z is currently growing up in a technologically advanced world. This is due to the fact that Generation Z, unlike its predecessors, grew up in a technologically advanced environment. Moreover, the potential growth of students nowadays includes not just their cognitive abilities but also their social and emotional development. Students who are well-rounded provide human capital that is ready to meet the demands of future higher education settings. Thus, students who are exposed to this novel method of instruction are better able to actively investigate their economics learning. Students can get more effective economics instruction and finish tasks more quickly. Additionally, it gets simpler and more efficient to communicate with friends and teachers.

CONCLUSION AND RECOMMENDATION

One of the prerequisites for 21st-century learning elements is collaborative skills. As a result, in order to address present demands, Form Six pupils are taught a collaborative learning strategy that is backed by Google Classroom and addresses both their cognitive and non-cognitive needs. By taking into account the existing learning environment, this study adds a new dimension, even if the study's findings did not reveal any significant differences in the learning methodologies used. Understanding how students construct their knowledge in a digital learning environment is crucial, especially considering how quickly online learning has developed over the past ten years. The data from the research indicates that, in contrast to cognitive skills, the online collaborative learning strategy can help students improve their non-cognitive abilities. The results of this study broaden the applicability of Vygotsky's constructivist learning theory, which holds that learning happens when people engage in virtual social interactions with one another. Technology advancements have liberated education from physical spaces. The results of this study give educators suggestions on how to enhance the current methods. These findings show that one of the best virtual learning environments currently on the market is the Google Classroom learning platform. This is so that all students, even the shy and quiet ones, have an equal chance to engage in educational activities. According to Gordonier et al. (2019) and Lopes et al. (2015), it is hoped that students studying economics will be able to think critically and creatively, solve problems, and have resilience, positive thinking, and positive self-confidence in order to meet the changing demands of the twenty-first century.

During the literature assessment, the researchers discovered that the creation of mobile applications, augmented reality, and active learning modules for economics education—particularly for Form Six—received less attention. Therefore, we recommend that future studies focus specifically on digital active learning strategies that integrate auditory, visual, and animated elements. Because of this, there is still a knowledge gap that has to be closed in order to enhance instructors' and students' teaching and learning of digital economics education through the development of active learning applications. It is recommended that stakeholders increase their use of technology in the future in order to achieve the nation's transformation in digital education. Therefore, the ministry should upgrade the current infrastructure, support, and equipment in order to achieve its aim of competing with developed nations. This is to prevent dropout rates, particularly among students attending remote schools. However, we restricted this study to quantitative data derived from surveys and achievement. Only first-semester economics students in a state are eligible to participate. Thus, it is advised that the next researcher employ a qualitative strategy, such as instances, to gather more thorough data.

REFERENCES

Adams, C., & Dove, A. (2017). Calculus students flipped out: The impact of flipped learning on calculus students' achievement and perceptions of learning. *PRIMUS*, 28(6), 600–615. https://doi.org/10.1080/10511970.2017.1332701

Adams, D., Tan, M. H. J., & Sumintono, B. (2020). Students' readiness for blended learning in a leading Malaysian private higher education institution. *Interactive Technology and Smart Education.* https://doi.org/10.1108/ITSE-03-2020-0032

Ädel, A. (2011). Rapport building in student group work. *Journal of Pragmatics*, 43(12), 2932–2947. https://doi.org/10.1016/j.pragma.2011.05.007

Akma, S., Kasuma, A., Saifudin, M., Saleh, M., Akhiar, A., Marliana, Y., & Ismail, B. (2018). Malaysian university students ' preferences of social media and LMS in academia. *International Journal of Virtual and Personal Learning Environments,* 8(1), 51–67. https://doi.org/10.4018/IJVPLE.2018010104

Aljamal, A., Cader, H., Chiemeke, C., & Speece, M. (2015). Empirical assessment of e-learning on performance in principles of economics. *International Review of Economics Education*, 18, 37–48. https://doi.org/10.1016/j.iree.2015.02.002

Al-Qahtani, A. A. Y., & Higgins, S. E. (2012). Effects of traditional, blended and e-learning on students' achievement in higher education. *Journal of Computer Assisted Learning*, 29(3), 220–234. https://doi.org/10.1111/j.1365-2729.2012.00490.x

Ananthan, A. C. A. (2016). *Hubungan antara minat, sikap, motivasi dan media pengajaran terhadap pencapaian mata pelajaran ekonomi dalam kalangan pelajar-pelajar tingkatan enam di daerah Kluang [The*

relationship between interest, attitude, motivation and teaching media on the achievement of economics subjects among form six students in Kluang district] [Unpublished master's thesis]. Sultan Idris University of Education.

Anbalagan, D., & Siti Mistima, M. (2022). Kesediaan murid mengaplikasikan pengendalian Google Classroom sebagai alat media interaktif dalam pembelajaran matematik [Readiness of students to apply the operation of Google Classroom as an interactive media tool in mathematics learning]. *Malaysian Journal of Social Sciences and Humanities*, 7(1), 367-372. https://doi.org/10.47405/mjssh.v7i1.1230

Anders, A. D. (2018). Networked learning with professionals boosts students' self-efficacy for social networking and professional development. *Computers & Education*, 127, 13–29. https://doi.org/10.1016/j.compedu.2018.08.009

Anusia, M. (2015). *Penentu kelemahan pelajar dalam subjek ekonomi asas di daerah Bentong, Pahang [Determinants of student weakness in basic economics subjects in Bentong district, Pahang]* [Unpublished master's thesis]. Sultan Idris University of Education.

Attia, N., Baig, L., Marzouk, Y. I., & Khan, A. (2017). The potential effect of technology and distractions on undergraduate students' concentration. *Pakistan Journal of Medical Sciences*, 33(4). https://doi.org/10.12669/pjms.334.12560

Ayers, C. A. (2018). A first step toward a practice-based theory of pedagogical content knowledge in secondary economics. *The Journal of Social Studies Research*, 42(1), 61–79. https://doi.org/10.1016/j.jssr.2017.01.003

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191–215. https://doi.org/10.1037/0033-295X.84.2.191

Bulut-Özek, M. (2018). The effects of merging student emotion recognition with learning management systems on learners' motivation and academic achievements. *Computer Applications in Engineering Education*, 26, 1862–1872. https://doi.org/10.1002/cae.22000

Cannonier, C., & Smith, K. (2018). Do crib sheets improve student performance on tests? Evidence from principles of economics. *International Review of Economics Education*. https://doi.org/10.1016/j.iree.2018.08.003

Cantabella, M., Guillén, M. Á., López, B., Muñoz, A., & Cecilia, J. M. (2019). Evaluation of parallel programming teaching methodologies: On-campus versus online methodologies. *Computer Applications in Engineering Education.* https://doi.org/10.1002/cae.22187

Chang, B. (2018). Active knowledge sharing in online group work. *New Horizons in Adult Education and Human Resource Development*, 30(3), 41–59. https://doi.org/10.1002/nha3.20222

Chang, B., & Kang, H. (2016). Challenges facing group work online. *Distance Education*, 37(1), 73–88. https://doi.org/10.1080/01587919.2016.1154781

Chatterjee, R., & Correia, A.-P. (2019). Online students' attitudes toward collaborative learning and sense of community. *American Journal of Distance Education*, 1–16. https://doi.org/10.1080/08923647.2020.1703479

Chou, P. N., & Chen, H. H. (2008). Engagement in online collaborative learning: A case study using a web 2.0 tool. *Journal of Online Learning and Teaching*, 4(4), 574-582.

Chung, M. H. C. (2022). Google Classroom sebagai salah satu platform dalam penyampaian pengajaran dan pembelajaran: Satu kajian tinjauan [Google Classroom as one of the platforms in teaching and learning delivery: A survey study]. *Jurnal Kurikulum & Pengajaran Asia Pasifik*, 10(1). https://juku.um.edu.my/index.php/JUKU/article/view/35298

Chyr, W., Shen, P., Chiang, Y., Lin, J., & Tsai, C. (2017). Exploring the effects of online academic help-seeking and flipped learning on improving students' learning. *International Forum of Educational Technology & Society*, 20(3), 11–23. http://www.jstor.org/stable/26196116

Coll, S. D., & Coll, R. K. (2017). Using blended learning and out-of-school visits: Pedagogies for effective science teaching in the twenty-first century. *Research in Science & Technological Education*, 36(2), 185–204. https://doi.org/10.1080/02635143.2017.1393658

Conrads, J., Rasmussen, M., Winters, N., Geniet, A., Langer, L., (2017*). Digital Education Policies in Europe and Beyond: Key Design Principles for More Effective Policies.* Redecker, C., P. Kampylis, M. Bacigalupo, Y. Punie (ed.), EUR 29000 EN, Publications Office of the European Union, Luxembourg, 2017, ISBN 978-92-79-77246-7, doi:10.2760/462941, JRC109311.

Dash. (2019). Google Classroom as a learning management system to teach biochemistry in a medical school. *Biochemistry and Molecular Biology Education*. https://doi.org/10.1002/bmb.21246.

Davis, T. & Frederick, T. V. (2020). The impact of multimedia in course design on students' performance and online learning experience: A pilot study of an introductory educational computing course. *Online Learning*, 24(3), 147-162. https://doi.org/10.24059/olj.v24i3.2069

Dontre, A. J. (2020). The influence of technology on academic distraction: A review. *Human Behavior and Emerging Technologies*, 3(3), 379–390. https://doi.org/10.1002/hbe2.229

Estacio, R., & Raga, J. R. (2017). Analyzing students online learning behavior in blended courses using Moodle. *Asian Association of Open Universities Journal*, 12 (1), 52-68. https://doi.org/10.1108/AAOUJ-01-2017-0016

Fauzan, & Fatkhul, A. (2019). The effectiveness of Google Classroom media on the students' learning outcomes of Madrasah Ibtidaiyah teacher education department. *Jurnal Pendidikan Guru MI*, 6(2), 271-285. https://doi.org/10.24235/al.ibtida.snj.v6i2.5149

Fraenkel, J.R., & Wallen, N.E. (2018). *How to design and evaluate research*. USA: Mc. Fraw-Hill Inc

Gaad, A.L.V. (2022). The effects of online collaborative learning (OCL) on student achievement and engagement. *IAFOR Journal of Education: Studies in Education*, 10(2).

García-martín, J., & García-Sánchez, J. N. (2018). The instructional effectiveness of two virtual approaches: *Processes and product. Revista de Psicodidáctica*. https://doi.org/10.1016/j.psicoe.2018.02.003

Ghazal, S., Aldowah, H., Umar, I., & Bervell, B. (2018). Acceptance and satisfaction of learning management system enabled blended learning based on a modified DeLone- McLean Information System Success model. *International Journal of Information Technology Project Management*, 9(3), 52–71. https://doi.org/10.4018/IJITPM.2018070104

Goldstein, P. J., & Katz, R. N. (2005), Academic analytics: The uses of management information and technology in higher education. *EDUCAUSE Center for Analysis and Research (ECAR).* https://www.educause.edu/ir/library/pdf/ers0508/rs/ers0508w.pdf

Gordanier, J., Hauk, W., & Sankaran, C. (2019). Early intervention in college classes and improved student outcomes. *Economics of Education Review*, 72, 23–29. https://doi.org/10.1016/j.econedurev.2019.05.003

Graham, M., McLean, J., Read, A., Suchet-Pearson, S., & Viner, V. (2017). Flipping and still learning: Experiences of a flipped classroom approach for a third-year undergraduate human geography course. *Journal of Geography in Higher Education*, 41(3), 403–417. https://doi.org/10.1080/03098265.2017.1331423

Gungor, A. (Abak), Eryılmaz, A., & Fakıoglu, T. (2007). The relationship of freshmen's physics achievement and their related affective characteristics. *Journal of Research in Science Teaching*, 44(8), 1036–1056. https://doi.org/10.1002/tea.20200

Happ, R., & Förster, M. (2018). The correlation between vocational school students' test motivation and the performance in a standardized test of economic knowledge: Using direct and indirect indicators of test motivation. *Empirical Research in Vocational Education and Training*, 10(1). https://doi.org/10.1186/s40461-018-0071-x

Heggart, K. R., & Yoo, J. (2018). Getting the most from Google Classroom: A pedagogical framework for tertiary educators. *Australian Journal of Teacher Education*, 43(3). http://ro.ecu.edu.au/ajte/vol43/iss3/9

Hsieh, Y. C. (2016). A case study of the dynamics of scaffolding among ESL learners and online resources in collaborative learning. *Computer Assisted Language Learning*, 30(1-2), 115–132. https://doi.org/10.1080/09588221.2016.1273245

Hui, Y. K., Li, C., Qian, S., & Kwok, L. F. (2019). Learning engagement via promoting situational interest in a blended learning environment. *Journal of Computing in Higher Education*, 31, 408–425. https://doi.org/10.1007/s12528-019-09216-z

Hur, J. W., Shen, Y. W., & Cho, M. H. (2020). Impact of intercultural online collaboration project for pre-service teachers. *Technology, Pedagogy and Education*, 29(1), 1–17. https://doi.org/10.1080/1475939X.2020.1716841

Isohätälä, J., Näykki, P., & Järvelä, S. (2019). Cognitive and socio-emotional interaction in collaborative learning: Exploring fluctuations in students' participation. *Scandinavian Journal of Educational Research*, 1–21. https://doi.org/10.1080/00313831.2019.1623310

Jamiludin, Darnawati, Uke, W. A. S., & Salim. (2021). The use of Google Classroom application in a blended learning environment. *Journal of Physics: Conference Series*, 1752(1). https://doi.org/10.1088/1742-6596/1752/1/012066

Järvenoja, H., Malmberg, J., Törmänen, T., Mänty, K., Haataja, E., Ahola, S., & Järvelä, S. (2020). A collaborative learning design for promoting and analyzing adaptive motivation and emotion regulation in

the science classroom. *Frontiers in Education*, 5. https://doi.org/10.3389/feduc.2020.00111

Jazayeri, M., & Li, X. (2020). Examining the effect of blended instructional method on students' grades in an introductory statistics course. *International Journal of Mathematical Education in Science and Technology*, 1–10. https://doi.org/10.1080/0020739X.2020.1775319

Karstensson, L., & Vedder, R. K. (1974). A note on attitude as a factor in learning economics. *The Journal of Economic Education*, 5(2), 109–111. https://doi.org/10.1080/00220485.1974.10845393

Kirschner, P. A., Sweller, J., Kirschner, F., & Zambrano R., J. (2018). From Cognitive Load Theory to Collaborative Cognitive Load Theory. *International Journal of Computer-Supported Collaborative Learning*, 13(2), 213–233. https://doi.org/10.1007/s11412-018-9277-y

Laal, M., & Ghodsi, S. M. (2012). Benefits of collaborative learning. *Procedia-Social and Behavioral Sciences,* 31, 486–490. https://doi.org/10.1016/j.sbspro.2011.12.091

Lawson, L. D. (1994). The role of attitude in learning economics: Race and gender differences. *Journal of Economics and Finance*, 18(2), 139–151. https://doi.org/10.1007/BF02920518

Le, H., Janssen, J., & Wubbels, T. (2017). Collaborative learning practices: Teacher and student perceived obstacles to effective student collaboration. *Cambridge Journal of Education*. https://doi.org/10.1080/0305764X.2016.1259389

Lin, J. W. (2018). Effects of an online team project-based learning environment with group awareness and peer evaluation on socially shared regulation of learning and self-regulated learning. *Behaviour & Information Technology*, 37(5), 445–461. https://doi.org/10.1080/0144929X.2018.1451558

Lopes, J. C., Graça, J. C., & Correia, R. G. (2015). Effects of economic education on social and political values, beliefs and attitudes: Results from a survey in Portugal. *Procedia Economics and Finance*, 30, 468–475. https://doi.org/10.1016/S2212-5671(15)01314-3

Ma, X., Liu, J., Liang, J., & Fan, C. (2020). An empirical study on the effect of group awareness in CSCL environments. *Interactive Learning Environments*, 1–16. https://doi.org/10.1080/10494820.2020.1758730

Ma'azi, H., & Janfeshan, K. (2018). The effect of Edmodo social learning network on Iranian EFL learners writing skill. *Cogent Education*, 5(1), 1–17. https://doi.org/10.1080/2331186X.2018.1536312

Majlis Peperiksaan Malaysia [MPM]. (2020). *Keputusan peperiksaan Ekonomi dan Pengajian Perniagaan STPM Peringkat Kebangsaan (2015-2019)* [Results of the STPM National Level Economics and Business Studies examination (2015-2019)]. Majlis Peperiksaan Malaysia.

Malaysian Communications and Multimedia Commission. (2020). Internet users survey 2020. https://www.mcmc.gov.my/skmmgovmy/media/General/pdf/IUS-2020-Infographic.pdf

Maheran, Z., Khamisah, A. M., Hasnum, A. B., & Rahayu, A. R. (2020). Exploring benefits and challenges of adopting Google Classroom in the perspective of higher institution's learners. *Test Engineering and Management*, 83 (11), 9739-9749.

Mänty, K., Järvenoja, H., & Törmänen, T. (2020). Socio-emotional interaction in collaborative learning: Combining individual emotional experiences and group-level emotion regulation. *International Journal of Educational Research*. https://doi.org/10.1016/j.ijer.2020.101589

Mehar, R., & PrabhjitKaur. (2020). Effect of online collaborative learning strategy on achievement in economics in relation to self-efficacy. *International Journal of Scientific & Technology Research,* 9(2). http://www.ijstr.org/paper-references.php?ref=IJSTR-1219-25806

Michinov, N., Brunot, S., Bohec, O. L., Juhel, J., & Delaval, M. (2011). Procrastination, participation, and performance in online learning environments. *Computers & Education*. 56, 243-252. https://doi.org/10.1016/j.compedu.2010.07.025

Milikic, N., Gasevic, D., & Jovanovic, J. (2020). Measuring effects of technology-enabled mirroring scaffolds on self-regulated learning. *IEEE Transactions on Learning Technologies*, 13(1). https://doi.org/10.1109/TLT.2018.2885743

Ministry of Education Malaysia. (2013). *Malaysia education blueprint 2013-2025*. https://www.moe.gov.my/muat-turun/penerbitan-dan-jurnal/1818-pelan-pembangunan-pendidikan-2013-2025/file

Ministry of Education Malaysia. (2023). *Majlis peluncuran dasar pendidikan digital (DPD)*. https://www.moe.gov.my/index.php/majlis-peluncuran-dasar-pendidikan-digital-dpd

Näykki, P., Isohätälä, J., Järvelä, S., Pöysä-Tarhonen, J., & Häkkinen, P. (2017). Facilitating socio-cognitive and socio-emotional monitoring in collaborative learning with a regulation macro script–an exploratory study. *International Journal of Computer-Supported Collaborative Learning*, 12(3), 251–279. https://doi.org/10.1007/s11412-017-9259-5

Noornadiah, M. S., & Khoo, Y. Y. (2021). The effect of google classroom-assisted learning on self- efficacy among form six economics students. *International Journal of Academic Research in Business and Social Sciences,* 11(11), 1922–1938. https://doi.org/10.6007/IJARBSS/v11-i11/11527

Norshahida, M. S. (2015). *Hubungan sikap pelajar terhadap pencapaian mata pelajaran ekonomi asas* [The relationship of students' attitudes to the achievement of basic economics subjects] [Unpublished master's thesis]. Sultan Idris University of Education.

Nur Zahira, M., & Hanafi, F. H. (2019). Google Classroom: Student's acceptance using UTAUT model. Journal of Applied Arts, 1(1), 64-72.

Paterson, T., & Prideaux, M. (2020). Exploring collaboration in online group based assessment contexts: Undergraduate business program. *Journal of University Teaching and Learning Practice*, 17(3). https://doi.org/10.53761/1.17.3.3

Rahmad, R., Adria Wirda, M., Berutu, N., Lumbantoruan, W., & Sintong, M. (2019). Google Classroom implementation in Indonesian higher education. *Journal of Physics: Conference Series.* https://doi.org/10.1088/1742-6596/1175/1/012153.

Ramadhani, R., Umam, R., Abdurrahman, A., & Syazali. M. (2019).The effect of flipped-problem based learning model integrated with LMS-Google Classroom for senior high school students. *Journal for the Education of Gifted Young Scientists,* 7(2), 137-158. http://dx.doi.org/10.17478/jegys.548350

Ramlee, I., Marinah,A., Seow, Y. P., & Muhammad Ridhuan, B. A. (2020). Active learning in economic subject: A case study at secondary school. *International Journal of Learning, Teaching and Educational Research,* 19(10), 19-31. https://doi.org/10.26803/ijlter.19.10.2

Razali, S. N., Shahbodin, F., Bakar, N., Hussin, H., Ahmad, M. H., & Sulaiman, N. (2013). Incorporating learning management system with social network sites to support online collaborative learning: Preliminary analysis. *Lecture Notes in Computer Science*, 549–557. https://doi.org/10.1007/978-3-319-02958-0_50

Rizvi, Y. S., & Nabi, A. (2021). Transformation of learning from real to virtual: An exploratory descriptive analysis of issues and challenges. *Journal of Research in Innovative Teaching & Learning,* 14(1), 5-17. https://doi.org/10.1108/JRIT-10-2020-0052

Roman, M., & Plopeanu, A. P. (2021). The effectiveness of the emergency eLearning during COVID-19 pandemic. The case of higher education in economics in Romania. *International Review of Economics Education*. https://doi.org/10.1016/j.iree.2021.100218

Santos, J. M. (2021). Google Classroom: Beyond the traditional setting. *Problems of Education in the 21st Century*, 79(4), 626-639. https://doi.org/10.33225/pec/21.79.626

Sari, L.,Sulisworo, D., Toifur, M., & Abd Rahman, N. N. (2020). Effects of Schoology online cooperative learning to learning achievement. *International Journal of Scientific & Technology Research,* 9(2). http://www.ijstr.org/final-print/feb2020/Effects-Of-Schoology-Online-Cooperative-Learning-To-Learning-Achievement.pdf

Schnell, C., & Loerwald, D. (2018). Interest as an influencing factor on student achievement in economics evidence from a study in secondary schools in Germany. *International Review of Economics Education.* https://doi.org/10.1016/j.iree.2018.03.005

Selvaraj, A., Radhin, V., KA, N., Benson, N., & Mathew, A. J. (2021). Effect of pandemic based online education on teaching and learning system. *International Journal of Educational Development*, 85, 102444. https://doi.org/10.1016/j.ijedudev.2021.102444

Shakoor, F., Fakhar, A., & Abbas, J. (2021). Impact of smartphones usage on the learning behaviour and academic performance of students: Empirical evidence from Pakistan. *International Journal of Academic Research in Business and Social Sciences,* 11(2), 862–881. http://dx.doi.org/10.6007/IJARBSS/v11-i2/8902

Sulisworo, D., Agustin, S. P., & Sudarmiyati, E. (2016). Cooperative-blended learning using Moodle as an open source learning platform. *International Journal of Technology Enhanced Learning*, 8(2), 187. https://doi.org/10.1504/IJTEL.2016.078089

Tseng, H., Yeh, H., & Tang, Y. (2019). A close look at trust among team members in online learning communities. *International Journal of Distance Education Technologies*, 17(1). https://doi.org/10.4018/IJDET.2019010104

Vercellotti, M. L. (2017). Do interactive learning spaces increase student achievement? A comparison of classroom context. *Active Learning in Higher Education*. https://doi.org/10.1177/1469787417735606

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press

Walstad, W. B. (1987). Attitudes, opinions, and economic understanding. *Theory Into Practice*, 26(3), 223- 23. https://www.jstor.org/stable/1476459

Wang, F. H. (2017). An exploration of online behaviour engagement and achievement in flipped classroom supported by learning management system. *Computers & Education*, 114, 79–91. https://doi.org/10.1016/j.compedu.2017.06.012

Wilson, K., & Narayan, A. (2014). Relationships among individual task self-efficacy, self-regulated learning strategy use and academic performance in a computer-supported collaborative learning environment. *Educational Psychology*, 36(2), 236–253. https://doi.org/10.1080/01443410.2014.926312

Wong, R. (2019). Basis psychological needs of students in blended learning. *Interactive Learning Environments*, 1–15. https://doi.org/10.1080/10494820.2019.1703010

Wood, D., Bruner, J. S., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Child Psychology and Psychiatry*. 17(2), 89–100. https://doi.org/10.1111/j.1469-7610.1976.tb00381.x

Wunder, T. (2013). But that is unfair professor: Using a grade structure to help students understand income quintiles. *Forum for Social Economics*, 42(1), 70–87. https://doi.org/10.1080/07360932.2012.684100

Yılmaz, A. B. (2017). Student opinions towards blended learning environment created according to individual and collaborative study preferences. *Journal of Learning and Teaching in Digital Age*, 2(2), 36-45. https://dergipark.org.tr/en/download/article-file/1175610

Yorganci, S. (2020). Implementing flipped learning approach based on "first principles of instruction" in mathematics courses. *Journal of Computer Assisted Learning*. https://doi.org/10.1111/jcal.12448

Zheng, L. (2016). Facilitating collaborative learning through peer assessment APP: A case study. *Perspectives on Rethinking and Reforming Education*, 129–144. https://doi.org/10.1007/978-981-10-1972-2_9