DIGITAL LITERACY : DISCOVERING BANTENESE'S STUDENTS' PERCEPTION ABOUT INTEGRATING DIGITAL TECHNOLOGIES IN COLLABORATIVE LEARNING

Azra Nur Izzati Aziz[*1], Kheryadi[*2]
azranurizzatiaziz@gmail.com[*1], kheryadi@uinbanten.ac.id[2]
English Education Department, Faculty of Education and Teacher Training
Universitas Islam Negeri Sultan Maulana Hasanuddin Banten[1,2]

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ABSTRACT

This research aims to investigates Bantenese students' perceptions of integrating digital technologies in collaborative learning. A descriptive qualitative approach was engaged, employing questionnaires as the primary means of data collection. Subsequently, the data underwent a comprehensive analysis involving data reduction, presentation, and the formulation of conclusions. The research revealed that the integration of technology in collaborative learning, from the viewpoint of Bantenese' students, offers substantial support and benefits to both educators and learners. It provides convenient access to comprehensive information from various reputable sources, thereby reducing the time needed for assignments. Nonetheless, a drawback associated with the incorporation of technology in education is the risk of fostering passivity in students, as they may opt for immediate solutions through artificial intelligence or turn to assignment service websites, raising concerns about their authenticity and data security. This research also underscores the necessity for additional exploration into the difficulties encountered by students in Banten when engaging in collaborative learning approaches that incorporate technology.

Keywords: *Bantenese Student, Collaborative Learning, Digital Literacy, Perspective.*
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INTRODUCTION

In present modern society, technology plays a significant role in various aspects of human life, including education. Many educational institutions at different levels have incorporated technology to facilitate the learning process, including collaborative learning. To assess the effectiveness of technology integration in collaborative learning, it is crucial to take into account the student's perspective and gauge its impact on their learning experience.

The International Literacy Association (ILA), an authoritative world literacy organization. Literacy is the ability to identify, understand, interpret, create, compute, and communicate using visual, audible, and digital materials across disciplines and in any context. CL (Collaborative Learning) is an educational approach to teaching and learning that involves groups of learners working together to solve a problem, complete a task, or create a product.

Collaborative learning through effective technology integration greatly enhances the learning process Chen & Yu, 2019; Crook, 2018; Martínez (2016)

Educators frequently employ technology to facilitate collaborative learning both in-person and online. Similarly, learners can independently leverage technology to complete tasks assigned by educators with greater efficiency and effectiveness.

Several studies suggest a link between collaborative learning and improved learning outcomes and student achievement Kpolovie et al. (2014). Collaborative learning in research has been found to enhance students' comprehension and understanding of text and concepts Kuo et al. (2015) due to its ability to pique students' curiosity Hasanudin (2019).

In Indonesia have implemented collaborative learning, including the integration of technology in the Science Technology and Society Learning implementation Rahimi & Fathi (2021) and the use of the "Kahoot!" platform to cultivate competitive and collaborative spirit. Integration of Information and Communication Technology in Learning Dorner & Kumar (2016) and Embracing Technology: This educational platform aims to enhance collaborative and competitive aptitudes of young students.

As outlined in Rosa (2020) investigation into Technology Integration in Learning, Implementation of Learning in Technology and Society, technology significantly alleviates the human workload, particularly in the field of education, by offering vast information through the internet and available applications. This abundance of information serves as a wellspring for captivating learning concepts and materials.

From research conducted by (Shopova, 2014) on the topic of Digital Literacy of Students and Its Improvement at the University, it was concluded that numerous students entering college lack the necessary skills to use technology efficiently in solving scientific problems or working on assignments individually or in groups. This especially important for students who have a better understanding of technology than their teachers. By increasing their knowledge of technology and promoting ethical use, students can benefit from its numerous advantages Kirkwood (2014).

Therefore, in this specific investigation, the researchers opted for a distinctive research focus within the region of Banten, concentrating on the viewpoints of students in that area regarding the utilization and assimilation of technology in collaborative learning. By creating a platform for these individuals to articulate their viewpoints without constraints, the researcher aimed to compile their thoughts into a comprehensive paper, allowing for the exploration of both advantages and disadvantages and the subsequent formulation of optimal solutions.

LITERATURE REVIEW

Definitions of Perceptions

Educational perspective entails a cognitive framework that influences individuals' perception of the world and their learning process. Paul (2022) underscores the importance of a student-centred learning approach, emphasizing the significance of the learner's experience. In contrast, Vygotsky's social perspective in education centres on learning as a product of social interaction, positing that individuals enhance their understanding through collaboration and communication with others. Paul (2022). Piaget's cognitive development theory introduces the concept of perspective, delineating stages of cognitive growth that shape a child's worldview. Mcleod (2023) Gardner introduces the concept of

multiple intelligences, emphasizing diverse forms of individual intelligence Gardner (2008). Gardner advocates for education that fosters development across various intelligence domains.

Based on the experts' understanding, it can be inferred that perspective is one's individual viewpoint formed through experiences and developed by interaction, cooperation, and communication. Furthermore, comprehending reality facilitates the construction of social awareness and the fight against inequality.

Definitions of Digital Technology Integration

Digital technology integration in education as the utilization of technology to transform teaching and learning methods. Falloon (2020) highlighted that technology integration should not solely focus on the use of technological tools, but also embrace changes in teaching and learning approaches. West (2012) defines technology integration in education as the use of technology to improve learning and teaching by enhancing students' knowledge and skills and teachers' understanding. Albers (2018) added that technology integration in education as using technology to enhance learning, promote active and problem-based learning, and foster student collaboration.

Dorner & Kumar (2016) believes that in the twenty-first century, education is about social learning - collaborating on goals, ideas, or projects with a diverse group of learners. We utilize a unique approach to managing time, instruction, and language in the classroom, utilizing a culture centered on project-based learning. Our learners understand the importance of collaboration, task management, goal attainment, and contributing to the community. Technology plays a crucial role in enabling our community of learners to achieve these goals collaboratively.

Digital integration is considered an innovative approach to learning that offers many benefits, such as altering the content, delivery methods, timing, and location of instruction. By collaborating and working together, teachers and students can increase their understanding, skills, and knowledge, resulting in a more effective and comprehensive learning experience.

Definitions of Collaborative Learning

Collaborative learning as a situation where two or more students learn or attempt to solve a problem together Hayashi et al., (2015). Collaborative learning is a process in which students learn by interacting socially with other, more experienced individuals who provide support and guidance Ghanbari (2015). (Anggraini et al., 2020) argued that collaborative learning defines as a method wherein students engage in discussion, debate, and mutual support to understand and solve problems as a group. Gilly Salmon, a researcher in e-learning, characterizes collaborative learning as the utilization of technology to connect students for guided, goal-oriented cooperation in achieving shared learning outcomes. Collaborative learning is a learning strategy in which two or more individuals collaborate to study or attempt to learn something Zarrinabadi (2019). Shen (2018) add that Collaborative learning differs from individual learning in that participants use each other's resources and talents to assess each other's ideas, supervise each other's work, and so on. Collaborative learning can take place peer-to-peer or in larger groups and can include activities such as collaborative writing, group projects, joint problem solving, debates, and study groups. Collaborative

learning may help you improve higher-level thinking, oral communication, self-management, and leadership abilities, as well as boost student retention, self-esteem, and responsibility.

Tools like these are valuable for collaborative learning for several reasons. First, they help groups of learners master collaborative project tasks and achieve course objectives as part of their blended learning experiences. Second, they assist students in leveraging the power of collaborative learning scenarios and further developing key competencies with the help of their peers. Finally, they engage students in searching for and gaining more knowledge. As the Twitter comment suggests, educators have the opportunity to incorporate technology into the learning process. Going forward, we will work towards providing our students with a more collaborative and integrated learning experience, as well as new options to prepare for future employment. As demonstrated by our pilots with Google Sites and mobile apps, technology can enhance our impact on students and provide opportunities for greater personalization and collaboration. This can assist instructors in becoming more effective teachers and help create students who are capable of embracing new challenges in their future careers. In order to enhance the effectiveness of collaborative learning, it is necessary to increase collaboration among educators, in addition to our own efforts. This requires a clear and logical structure, precise word choice, and a balanced approach that avoids biased language. Often, individuals focus solely on their own courses and neglect to consider the curriculum requirements as a whole, especially in light of the constantly changing and unpredictable environment we find ourselves in. The use of technology, project-based learning, and collaborative teaching can better equip our students to face future challenges in both the corporate and societal spheres. Whether a capstone course or not, all courses that focus on collaborative learning must adapt to changes in the economic and societal context. In this era of rapidly changing technology, university leaders interested in leveraging interactive digital media and a strong brand must ensure that there are sufficient resources to purchase an adequate number of devices and enable both students and teachers to fully utilize them. In order to effectively use these technologies and equitably monitor and assess students' collaborative learning outcomes, educators will need to receive appropriate training and retraining. (Gan et al., 2015)

Although students were proficient in using computers as productivity tools, such as searching the internet, creating PowerPoint presentations, and using a word editor, their technical proficiency and access to ICT at school and home did not necessarily result in proficient and innovative use of technology for learning purposes. Professional development for teachers focused on using ICT as a cognitive or knowledge-building tool can encourage them to use ICT for self-directed learning and collaborative learning in a more diverse manner. Students who reported engaging in self-directed learning (SDL) and collaborative learning (CL) in face-to-face classroom settings were also more likely to engage in SDL and CL using information and communication technology (ICT). This suggests that non-ICT-supported SDL and CL are critical to students' productive use of ICT for learning. To empower students through ICT-based learning, it is important to first ensure that they are well-prepared in face-to-face environments. Therefore, teachers should assist students in developing SDL and CL skills before introducing them to ICT-supported learning environments, such as computer laboratories. This

approach can better serve the goals of providing students with access to a vast amount of information and the freedom to connect for their learning. (Lee et al., 2014).

RESEARCH METHOD

The Research Design

This research utilized a descriptive qualitative approach, this approach is well-suited for studying complex social phenomena, allowing researchers to delve into the subjective meanings' individuals attribute to their experiences. The flexibility inherent in descriptive qualitative research enables the exploration of multiple perspectives and the discovery of unexpected findings. The data gathered from students at the Sultan Maulana Hasanuddin State Islamic University of Banten and Sultan Ageng Titayasa University hailing from various departments and semesters.

Research Participants

Sixteen students from different majors and semesters in Banten participated in this research conducted at Sultan Maulana Hasanuddin State Islamic University of Banten and Sultan Ageng Titayasa University.

Data Collection

The researchers designed a questionnaire using Google Forms, comprising a series of inquiries pertinent to the research topic. The data obtained through Google Forms falls under the semi-structured data classification. Semi-structured data entails a combination of organized elements (like survey questions) and looser components (such as free-form responses from participants).

In Google Forms, researchers have the ability to generate targeted questions with answer options to facilitate free-text responses from participants.

Such semi-structured data necessitates subsequent analysis and identification of the information contained, particularly given the varying nature of free-text responses. Accordingly, the author consolidated participants' answers via quotes and summaries, which constitute responses to specific aspects of the statements provided. The following is a list of questions:

Table 1. List of Questionnaire Questions

No.	Questionnaire Questions
1.	What do you know about digital literacy?
2.	How deep is your digital literacy knowledge?
3.	What do you know about collaborative learning?
4.	In the digital age, how do you use digital technology for collaborative learning?
5.	What tools/apps/webs are you familiar with to use in collaborative learning?
6.	Do you think technology makes collaborative learning easier or harder?
7.	What do you think is the transformation of the learning methods used in the past and now? What is the difference between the application of collaborative learning that exists today and the traditional methods of the past?

8.	Have you implemented technology integration with collaborative learning methods?
9.	Which do you think is easier to understand and which is more practical? Collaborative or traditional?
10.	What do you hope for the future development of technology integration using collaborative learning? using collaborative learning? More effective use of technology for collaborative learning.

Data Collection Procedures

To ensure participant comprehension, researchers utilized questions in Bahasa Indonesia that pertained to the research topic during data collection. Firstly, the researcher formulated inquiry points focused on the topic, progressing from simple to complex questions. Each question necessitated sufficient time for the participants to reflect and articulate their opinions, enabling researchers to obtain detailed information for analysis. The researcher inputted questions into a Google form and included additional queries regarding the participant's name, major, semester, and institution of origin. Afterward, the questionnaire link was distributed to multiple students located in Banten. Subsequently, the process of analyzing and reviewing the collected data was carried out to match it with the research topic conducted by the researchers. Finally, the preparation of the results of the analysis in the paper conducted by the researchers.

Data Analysis Procedures

Data analysis techniques encompass systematic approaches to gather information, aiding researchers in reaching conclusions. The data analysis process involves the methodical collection and examination of data derived from questionnaire and various sources presented in a clear and understandable manner, facilitating the communication of well-informed findings to others. This analysis comprises three concurrent activities: data reduction, data presentation, and drawing conclusions/verification. Data reduction involves the ongoing process of selecting, simplifying, abstracting, and transforming raw data from field notes. Following data reduction, the subsequent step is presentation, which can be done through tables, graphs, and other visual aids to organize and convey information comprehensibly.

FINDING AND DISCUSSION

Finding

From the research that has been done, several answers were found from 16 participants who have filled out the questionnaire. The following are the results of the answers to the questionnaires that have been distributed and answered by participants.

1. *What do you know about digital literacy?*

Students in Banten, on the whole, exhibit a solid grasp of digital literacy, as reflected in their well-structured responses. One participant articulated that digital literacy encompasses the proficiency to utilize digital technologies for information retrieval, assessment, creation, and communication. This comprehension of digital

literacy extends beyond technical skills, encompassing cognitive abilities like critical and creative thinking. Consequently, it can be deduced that students in Banten possess a commendable understanding of digital literacy.

2. *How deep is your digital literacy knowledge?*

Table 2. The answers from question "How deep is your digital literacy knowledge?"

Number of answers	Code number	Code meaning	Percentage
9	3	Quite mastery	56,3%
4	2	Mastering	25%
3	4	Less mastering	18,8%

Out of a range of 1-5 which means very good - bad, 9 people give response at number 3, which means mediocre in mastering digital literacy. 3 people give response at number 4 which means less mastering and 4 other people give response at number 2 which means quite mastering. Although they did not answer at number 1 which means very mastering, but they did not give response at number 5 which means very not mastering. So, at least from these 16 existing participants, they feel they can adapt to this digital literacy.

3. *What do you know about collaborative learning?*

Collaborative learning is described as an educational approach wherein students, possessing diverse backgrounds and abilities, collaborate in small groups to attain a shared academic objective. Based on the given definitions, the responses provided by each participant closely align with accuracy. Some even perceive collaborative learning as encompassing the teacher's involvement in reciprocal learning, where feedback is considered a form of collaboration. Participants understand collaborative learning sufficiently to articulate distinct aspects, demonstrating a nuanced comprehension. Nearly all respondents correctly align their understanding with Gokhale's (1995) definition, indicating a well-established awareness of the concept among the participants.

4. *In the digital age, how do you use digital technology for collaborative learning?*

The majority of participants responded to the inquiry by identifying applications they believe can facilitate collaborative learning, even in an online setting, such as Google, PowerPoint, Word, Zoom, and Google Meet. Particularly noteworthy is a response from a PGMI major, which stands out as an exemplary representation. The student articulated that, in the digital era, the utilization of digital technology proves instrumental in supporting collaborative learning. This is achieved through various online platforms, tools, and resources that enable virtual collaboration, sharing of learning materials, interaction with educators and peers, and the cultivation of both social skills and knowledge. The transformative impact of digital technology has reshaped the collaborative learning landscape, providing enhanced accessibility and flexibility in the learning process.

5. *What tools/apps/webs are you familiar with to use in collaborative learning?*

They mentioned various applications, some even mentioned the use of the applications they mentioned, a 7th-semester student majoring in hadith science answered this: *Kahoot, Google Classroom, Microsoft Teams, LMS Canvas, Quora, Open Study, and Lectora* to make an online classroom. The other participants mentioned many other applications such as *Google*, *PowerPoint*, *Word*, *Zoom*, *Google Meet*, *Mendeley*, *Publish or Perish, windows, WhatsApp, Instagram, Google Classroom, Quizizz, Google Document, Google Sheet, Google Slides, Google Scholar, Artificial intelligence, YouTube, Kahoot! slido.com and others.* Many of them are familiar with the various apps and websites used to integrate technology into collaborative learning.

6. *Do you think technology makes collaborative learning easier or harder?*

Many participants acknowledged that the presence of technology significantly aids them in various aspects within the realm of collaborative learning. A PGMI student in the fifth semester provided a thoughtful response, highlighting the dual impact of technology in collaborative learning. The positive aspects include facilitating global access, communication, resource sharing, task management, and time flexibility. However, challenges such as limited internet access, diverse technology skills, reduced social interaction, potential for academic dishonesty, unequal access, and disruptions in social dynamics may complicate collaborative learning. The effectiveness of collaborative learning with technology hinges on how technology is utilized and managed. Through strategic planning, thoughtful educational approaches, and a student-centered orientation, technology emerges as a potent tool for fostering collaboration and expanding learning opportunities. In conclusion, it can be inferred that technology streamlines collaborative learning when used judiciously and wisely, avoiding issues like cheating or excessive reliance on technology to ensure sustained direct interaction in daily life.

7. *What do you think is the transformation of the learning methods used in the past and now? What is the difference between the application of collaborative learning that exists today and the traditional methods of the past?*

Participants highlighted a shift in the nature of learning, where the once creative and effort-intensive process of seeking information has transformed into an instant, copy-and-paste culture facilitated by various artificial intelligence tools. The traditional teacher-centric model, relying on lectures and limited information from the teacher, has evolved into a student-centred approach characterized by discussions, questions, and extensive internet exploration. One insightful observation from a 5th-semester PGMI student accentuates significant disparities between traditional and contemporary learning methods. Traditional approaches are teacher-centred, passive, employ printed materials, transpire in physical classrooms, and stress evaluation through written exams. In contrast, collaborative learning is student-centred, fosters collaboration and social interaction, utilizes digital and diverse learning resources, offers flexibility in time and space, and emphasizes varied evaluation methods. This shift aims to cultivate social, critical, and creative skills vital in an interconnected world. While traditional methods maintain their relevance, this transformation signifies a shift in educational understanding, acknowledging the need to best equip students for the ever-evolving challenges of the future.

8. *Have you implemented technology integration with collaborative learning methods?*

Among the participants, only one respondent chose "maybe," while the remainder indicated "already," suggesting that, on the whole, students perceive themselves as having incorporated collaborative learning through technology integration. It is possible that even those expressing uncertainty might have unintentionally implemented it without recognizing it, as collaborative learning has been ingrained in educational practices since elementary school. Considering the prevalence of group discussions taught by teachers at early educational levels, the line between collaborative and traditional methods might blur. What do you find more comprehensible and practical: collaborative or traditional approaches?. Almost all participants answered that collaborative learning is more practical and easier to understand than traditional learning. However, there were 3 answers that stated that if collaborative learning is combined with traditional learning, it will be more effective. Or in other words, the delivery from the educator is still carried out like the traditional method along with collaborative learning that forms groups for discussion and exchanges ideas and opinions after they have a previous explanation given by the educator or obtained independently.

9. *What do you hope for the future development of technology integration using collaborative learning? using collaborative learning? More effective use of technology for collaborative learning.*

Most of the participants answered that they hoped that there would be more tools such as applications or websites that could facilitate them in learning and in doing assignments. 1 person answered that they hoped there was an IELTS test simulation that could be accessed for free. 3 participants said they hoped the technology would be used sparingly and as necessary so that learners have the opportunity to develop their minds, increase their creativity, and want to read and learn the material carefully and not just rely on technology to find instant answers.

2 people answered that they hoped for increased privacy security and ease of using technology. 1 person hoped for technological innovation and better data analysis and 9 people other hope that student can increase their knowledge and their ability to maximalize the use of technology in collaborative learning.

Discussion

Collaborative learning aims to foster an interactive educational environment, allowing for both small and large group settings. While incorporating technology in collaborative learning can offer various benefits, it can also present challenges. Therefore, each student in Banten must adopt a unique viewpoint on the integration of technology in collaborative learning.

Among the sixteen surveyed participants from Banten, all demonstrated a proficient understanding of integrating technology into collaborative learning. They reported successful implementation and mastery of technology integration, utilizing various apps and websites, including Zoom, Google Meet, Kahoot! Quizizz, Google Classroom, Microsoft, and others. The majority (15 out of 16) found integrating technology in collaborative learning to be relatively easy for both students and educators.

While participants generally expressed that the effectiveness of technology in the learning process depends on its utilization, one out of the 15 participants who favoured technology highlighted some drawbacks. These included concerns about student cheating and a potential reliance on artificial intelligence to duplicate answers without critical analysis.

All participants confirmed the implementation of collaborative learning through the internet. They emphasized the distinction between traditional and internet-based collaborative learning, citing the ability to access diverse online learning resources. However, participants acknowledged the importance of traditional teaching methods, where teachers play a crucial role in knowledge dissemination and fostering classroom interactions to prevent misunderstandings.

Looking forward, participants expressed hope for advancements in technology implementation in collaborative learning, including improved data analysis, enhanced accessibility, and stronger user privacy security. It was underscored that careful consideration should be given to avoid fostering student laziness or academic dishonesty, particularly in copying answers from artificial intelligence.

Upon examining participants' responses regarding the utilization of technology in collaborative learning for students, it is evident that nearly unanimous agreement exists on its significant facilitative role. Examples include remote learning opportunities, the establishment of virtual classrooms, and access to a diverse range of information sources. Nevertheless, students encounter challenges when incorporating technology into their academic pursuits, such as the imperative to combat lethargy and apply critical thinking in the completion of assignments. The widespread presence of artificial intelligence, which offers convenient access to assignment resources and answers, underscores the necessity for students to cultivate self-discipline and analytical skills to fully capitalize on the benefits afforded by technology.

From previous studies on enhancing students' learning processes through interactive digital media, researchers have concluded that the use of such media has

become a major driver of change in education. In recent years, education has undergone a significant transformation by utilizing digital technology to enhance the learning process. The use of interactive digital media is a dominant aspect of this change, providing new opportunities for collaborative learning.

Interactive digital media plays a crucial role in enhancing the learning process. With various applications and platforms that enable students to engage directly in learning, the learning experience becomes more interesting and effective. Students are active participants in the learning process, building a deeper understanding of the subject matter.

One advantage of collaborative learning through interactive digital media is its ability to help students adapt to the demands of their future work and social lives. In today's world, collaboration and problem-solving skills are crucial to success. Interactive digital media creates an environment where students can learn to work together, share ideas, and solve problems.

Participants and respondents in various studies have recognized that collaborative learning applications offer significant benefits. They see it as an opportunity for students to develop social skills, such as effective communication, leadership, and teamwork. This is highly relevant to the demands of the modern workplace, where the ability to work in teams is valued by employers.

However, it is important to note that the use of interactive digital media in collaborative learning should remain under proper supervision. Educators and parents need to ensure that students are not only productively engaged but also safe online. Digital security and privacy protection are important aspects that must be considered to ensure that the benefits of using digital media are not accompanied by unwanted risks.

The use of interactive digital media in collaborative learning not only opens up new opportunities for academic development but also provides a foundation for the development of social and professional skills required in a changing world. Education through interactive digital media can be the key to equipping students with relevant skills and supporting their future success with a thoughtful approach and careful supervision.

Previous studies have shown a strong correlation between students' engagement in self-directed learning (SDL) and collaborative learning (CL) within traditional face-to-face classroom settings and their subsequent propensity to replicate these behaviors using information and communication technology (ICT). The importance of developing non-ICT-supported SDL and CL skills as a foundation for the effective integration of ICT into the learning process is emphasized.

The findings suggest that while ICT can provide access to a wealth of information and facilitate connections for learning, its effectiveness relies heavily on students' proficiency in traditional face-to-face environments. Teachers play a crucial role in assisting students to develop self-directed learning (SDL) and collaborative learning (CL) skills before immersing them in ICT-supported learning environments, such as computer laboratories.

The study strongly advocates for a strategic and phased approach to education, emphasizing the sequential development of fundamental skills in face-to-face settings before transitioning to technology-supported learning. By prioritizing the cultivation of skills in self-directed learning (SDL) and

collaborative learning (CL), educators can ensure that students not only benefit from information and communication technology (ICT) but also use these tools productively. This approach maximizes the potential for students to acquire knowledge and establish meaningful connections in the learning process.

The research suggests that educators should consider the integration of ICT as a gradual and complementary enhancement to traditional learning methods. It is important to prioritize the development of strong foundations in SDL and CL before introducing technology to ensure that students have the necessary skills to effectively utilize digital tools. This educational approach aims to prepare students for the demands of the digital age by integrating technology into their learning experiences in a balanced and effective way.

CONCLUSION AND SUGGESTION

As a critical foundation for future investigations into the challenges confronting students in Banten as they navigate the integration of technology within collaborative learning environments, the exploration of these challenges sets the stage for a deeper understanding of the complexities involved. Subsequent research endeavors can delve into the nuanced aspects of student experiences, examining the intricacies of technological integration and its impact on collaborative learning outcomes. Furthermore, a focus on identifying viable solutions becomes paramount in ensuring that the integration of technology is not only seamless but also yields optimal effectiveness and efficiency in the collaborative learning process. The research can pave the way for the development of targeted interventions and strategies that align with the unique needs and circumstances of students in Banten. By adhering to appropriate measures and educational standards, these solutions can be tailored to maximize the positive impact of technology on collaborative learning experiences, ultimately contributing to the enhancement of educational practices in the region.

This research can be a basis for further research on the challenges faced by students in Banten in integrating technology in collaborative learning and what the solution is to achieve effectiveness and efficiency in using technology in collaborative learning according to the appropriate measures.

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