THE EFFECT OF PROBLEM-BASED LEARNING THROUGH BLENDED LEARNING ON DIGITAL LITERACY OF ELEVENTH-GRADE STUDENTS ON EXCRETORY SYSTEM MATERIAL

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ABSTRACT

This study aims to analyze students' digital literacy through problem-based Learning (PBL) through Blended Learning (BL). The research was carried out in the eleventh grade of SMA Negeri Plus Riau in the even semester of the 2021/2022 academic year. This research is quasi-experimental, using a closed questionnaire with 4 Linkert scales. The research parameter is students' digital literacy with eight indicators: Functional Skills and Beyond, Creativity, Collaboration, Communication, The Ability to Find and Select Information, Critical Thinking and Evaluation, Cultural and Social Understanding, and E-Safety. Data were obtained using the Linkert scale and converted into Value (N). Value every aspect is the score obtained from the answer indicators that are checked (considered the most appropriate) and divided by the maximum score multiplied by 100. The average value of each aspect is obtained from the total value of each indicator divided by the number of indicators, then analyzed descriptively and qualitatively. Digital literacy students in the control class got an average score of 77.5 (good category) and 85.25 in the experimental class (very good category). Of the eight indicators, the highest digital literacy indicator in the control and experimental classes is creativity, with scores of 85 and 88, respectively. The E-Safety indicator scores 85 and 90. The lowest score was the Critical Thinking and Evaluation indicator, in the control and experimental classes, with a 75, categorized as good. Problem-based learning model through blended learning positively affects the digital literacy of eleventh-grade students of SMA Negeri Plus Riau on the excretory system material.

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Keywords: blended learning; digital literacy; problem-based learning

INTRODUCTION

Science and technology are currently developing rapidly, especially information and communication technology. To create a generation with a thinking spirit and make good use of technological developments, the world of education must complete an educational process order that directs humans to have the abilities of global citizens in the 21st century (Karimah et al., 2019; Abdullah et al., 2021). In line with the continuo-us development of technology in the 21st century, it requires individuals with the ability and problem-solving skills in a digital environment. This ability is called digital literacy. For developing countries like Indonesia, it is still very important to develop research that emphasizes digital literacy skills. Digital literacy is a person's ability to access, understand, manage, and integrate information and create innovations through digital tools (Khlaisang & Yoshida, 2022). Good digital literacy skills will make it easier, faster, and more diverse for students to access information from the internet and have a stronger correlation to

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improve learning planning, increase student knowledge insights and improve learning outcomes (Raygan & Moradkhani, 2020).

During the 2019 coronavirus disease (COVID-19) outbreak, the education system took place through e-learning. E-learning has advantages and disadvantages. Yustina and Mahadi (2021) and Supriyanto et al. (2022) explain the advantages of E-Learning, namely: easier to monitor and cheaper costs, the flexibility of time and place as well as distance barriers. On the other hand, the shortcomings of learning through E-learning include the lack of social interaction between students and students, students and teachers. Furthermore, according to Yustina et al. (2022), E-Learning learning does not foster complex and factual understanding because it cannot practice and is less able to develop effective verbal communication through face-to-face discussions and presentations in class.

Education in Indonesia today generally uses information and communication technology. This is the effect of the Covid condition, so many schools use Google Classroom, Google Meet, WAG, Zoom, and digital literacy such as e-Books, e-LKPD, and e-booklets. Government policy allows schools to use blended learning so that every learning process in schools is now getting used to the use of computers, mobile phones, tablets, and other technologies, as a means to support ease and accuracy in accelerating every online and offline communication for students (Ririen & Daryanes, 2022). Learning outside the network (offline) has advantages. Students are more monitored and focused, and standardization is clear. Students who need help understanding the material can directly ask questions without being limited by space and time. This learning also builds interactive knowledge between teachers and students, making it easier to understand and accept learning (Shofiyah & Wulandari, 2018; Pei & Wu, 2019). Bahua et al. (2022) stated that offline or limited face-to-face learning had a positive effect on increasing students' learning motivation

The advantages of e-learning include that students must be skilled in using information and communication technology (ICT) which is one of the lessons learned from the COVID-19 case (Yustina, 2021). For students' ICT skills to continue to develop, the weaknesses of online learning can be overcome with the advantages of offline learning, where learning is more interactive, and students are more closely monitored to foster confidence in discussions and presentations in class (Yustina et al., 2022). Considering the description above, each advantage of e-learning and offline

learning is expected to emerge if the two methods are combined. Mixing learning with E-learning with offline learning is called Blended Learning (BL). The BL method can improve students' creative thinking, flexible thinking, and various answer choices (Yustina et al., 2020). Furthermore, in BL learning, there is a combination of technology and pedagogy, which is the best choice in the learning process. This opinion is also supported by Wijayanti et al. (2017), who state that BL-based learning can increase students' interest in the learning process and train students' abilities in using ICT (Information and Communication Technology), and make maximum use of the internet. This is in line with the demands of the 21st century that graduates produced from the learning process must have technology information and communication skills. Therefore, in the application of learning models, we need to innovate by integrating learning models with information technology so that students' literacy skills increase.

The PBL model can trigger students' thinking skills. This model has the advantage that students will have an open, reflective, critical, and active learning mindset and facilitate problem-solving, communication, group work, and better interpersonal skills (Haryanti, 2017). PBL stimulates higher-order thinking in problem-oriented situations, including critical thinking skills (Wulandari et al., 2018). PBL trains students to solve problems in daily activities. The PBL model improves critical thinking skills and student learning outcomes. This can be seen from the four indicators used, namely: 1) The intensity of the application and use of digital literacy in learning activities; 2) Students' level of understanding in using digital media and the internet; 3) The level of parental concern and institutional involvement in the development of digital literacy, and 4) Number of presentations (Hafiza et al., 2022).

Djajanto et al. (2021) stated that The integration of BL with PBL can increase creativity, motivation, and learning outcomes. According to Resmiaty et al. (2021), implementing BL can be applied in schools that focus on practical learning. Zuraida et al. (2019) also stated that the PBL model was applied through BL in excretory system materials. Rahman et al. (2020) stated that there are significant differences in learning motivation and learning achievement between classes that use the face-to-face learning model in classes that use BL causing students' learning motivation to increase. BL is an effective way to improve student performance compared to traditional face-to-face learning (F2F) (Li & Wang, 2022).

The advantages that can be utilized in BL are: (a) students and teachers are not dependent on study or class schedules; (b) students can study independently by using learning materials that can be downloaded by themselves; (c) students who do not understand the lesson can conduct online or offline discussions outside of study hours (Bahtiar & Ibrahim, 2022). Therefore, PBL and BL are urgently needed to browse information in the digital era that requires digital literacy. Several studies by Lukitasari et al. (2019) conducted a study on the effect of implementing BL-PBL on critical thinking skills. His research revealed that the application of BL-PBL can improve students' critical thinking skills in terms of answering the questions given. The e-learning atmosphere will "force" students to take active learning roles (Sawitri et al., 2019). This is in line with the characteristics of the problem-based PBL model and requires students to play an active role in solving problems. Problem-based learning with e-learning encourages students to find problems and describe them by proposing conjectures and formulating solutions very close to aspects of creative thinking, namely fluent thinking, flexible thinking, original thinking, and clear thinking (Amidi & Zahid, 2017; Dewi & Fatkhiyani, 2021).

The learning process requires broad information and insight. Digital literacy skills are needed to access various sources of relevant information via the internet, meaning the learning process requires digital literacy skills. Digital literacy includes the skills needed to use technology safely, effectively, and responsibly. Along with the development of technology in everyday life, the importance of learning digital literacy skills is becoming increasingly clear (Khlaisang & Yoshida, 2022). Digital literacy requires various skills in carrying out tasks in a digital environment, such as information processing, cognitive, and social-emotional skills, so that students can use the digital environment effectively (Kaeophanuek et al., 2022).

Yuniastari & da SIlva (2022) stated that offline teaching tends to be preferred by teachers because of the simple and direct teacher-student interaction, while online teaching (ER) is preferred because of its time efficiency and flexibility. While the high number of students in offline classes can be a challenge in classroom management, the complexity of incorporating technology is a major obstacle for teachers to teach online.

Biology is a science whose scope is closely related to humans and their environment. We often encounter biology learning materials in real life. One of the biology learning materials from everyday life is the human excretory system. This material is difficult to understand because it is abstract and complex. It also contains various processes involving the work of organs such as the kidneys, liver, lungs, and skin. It requires students' critical and creative thinking skills to answer problems and provide solutions to everyday life. Students consider the human excretory system difficult to understand. The excretory system is one of the biological contents with a complex scope (Djamahar et al., 2020). The contents of the excretory system require a good understanding of students.

Based on the results of interviews with Biology subject teachers, it was found that E-learning learning information during the COVID-19 period did not help increase students' creativity in answering questions and assignments, especially on excretory system material. From observations through closed questionnaires to students through Google Forms, 53% of students' answers state that the excretory system material is difficult to understand because it is abstract and complex and contains various processes that involve the work of the kidneys, liver, lungs, and skin. 60% of students state that there are limited literature sources related to learning at the high school (SMA) level. 55% state that they have not been trained to refer to the relevant literature, 56% do not understand the security of exploring digital technology, 50% lack communication in digital interactions, 60% are less careful in choosing information from the internet, and 70% are less critical in evaluating information from the internet. The ability of students to think critically and creatively in answering problems and solutions related to everyday life requires learning strategies to search for information in the current digital era that requires digital literacy skills. Based on the description above, until now, researchers have not found any research on the excretory system material using the PBL Model through BL related to students' digital literacy skills. What is the influence of the PBL model through BL on students' digital literacy skills in the Excretion system material? This study aims to analyze students' digital literacy skills using PBL through BL.

METHODS

This research was conducted at SMA Negeri Plus Riau eleventh grade students, in January 2022-June 2022. The population is eleventh-grade students, as many as 12 0 people from 4 classes. At the beginning of the study, a pretest was

given, then the homogeneity test was carried out from the pretest value. The sample was determined using a random sampling technique (lottery). Each control and experiment class consists of 30 people. This study uses a posttest control group design (Figure 1).
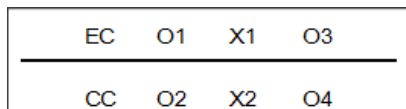
EC	O1	X1	O3
CC	O2	X2	O4

Figure 1. Posttest Control Group Design

The research design consisted of an experimental class (EC) and a control class (CC). At the beginning of the study, using a questionnaire, data were collected on early digital literacy in the experimental class (O1) and early digital literacy in the control class (O2). The treatment (X1) in the Experimental Class uses problem-based learning with the PBL model. The teacher used the learning model STAD (X2) in the Control Class. Final digital literacy data were collected in the experimental class (O3) and the control class (O4). The procedure of this research can be seen in Figure 2.
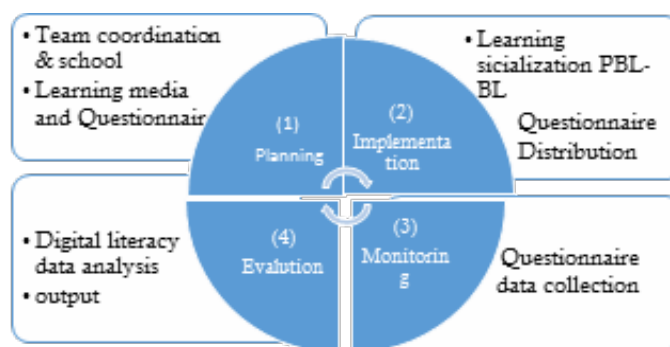

Figure 2. Research Procedure

The research procedure consisted of 4 stages: 1) Preparation, including coordinating the research team with the school, preparing learning tools using PBL, the learning process in the control class using the E-Learning method, and in the experimental class using the BL method. Research instruments (digital literacy questionnaires for students) and interviews with teachers; 2) Socialization of PBL learning through BL, implementation of the learning process in the control and experimental classes, and questionnaires were distributed to students at the end of the lesson, questionnaires were distributed to students; 3) Monitoring by collecting questionnaires completed by students at the end of the learning activities; 4) Evaluation, tabulation, and analysis of digital literacy questionnaire data, as well as making final research reports and outputs in the form of articles.

Data were collected using a closed questionnaire instrument with a 4 Likert scale. The research parameter is students' digital literacy with eight indicators: functional skills and beyond, creativity, collaboration, communication, the ability to find and select information, critical thinking and evaluation, cultural and social understanding, and e-safety. Indicators, scores, and assessment descriptions are presented in Table 1.

Table 1. Indicators, Scores, and Assessment Descriptions on Questionnaire

No	Indicator	Score	Assessment Descriptions
1.	Functional Skills and Beyond	4	Students can turn on, turn off, recognize computer devices, and use and recognize learning applications on the computer.
		3	Students can turn on, turn off, recognize computer devices, and use computers.
		2	Students can turn on, turn off, and recognize computer devices.
		1	Students can turn on and turn off computers.
2.	Creativity	4	Students can do assignments in Microsoft word, create tables in Microsoft Excel, create slides in PowerPoint, and design assignment covers in Photoshop.
		3	Students can do assignments in Microsoft word, create tables in Microsoft Excel, and create slides in PowerPoint.
		2	Students can do assignments in Microsoft word and create tables in Microsoft Excel.
		1	Students can do assignments in Microsoft word.

3.	Collabora-tion	4	Students can join online study groups, create online study groups, share learning information, and play an active role in question and answer sessions.
		3	Students can join online study groups, create online study groups, and share learning information.
		2	Students can join online study groups and create online study groups.
		1	Students can join online study groups.
4.	Communi-cation	4	Students can follow lessons by showing video and audio on Google Meet, asking questions during lessons, and leading discussions on Google Meet.
		3	Students can follow lessons by showing video and audio on Google Meet and asking questions during lessons.
		2	Students can follow lessons by showing video and audio on Google Meet when asking questions.
		1	Students can follow lessons on Google Meet.
5.	The Ability to Find and Select Information	4	Students can search for references on Wikipedia, blogs, journal articles, and YouTube.
		3	Students can search for references on Wikipedia, blogs, and journal articles.
		2	Students can search for references on Wikipedia and blogs.
		1	Students can search for references on Wikipedia.
6.	Critical Thinking and Evaluation	4	Students can share information from the internet and YouTube videos, conclude search results, and solve learning problems.
		3	Students can share information from the internet and YouTube videos and conclude search results.
		2	Students can share information from the internet and YouTube videos.
		1	Students can share information from the internet.
7.	Cultural and Social Under-standing	4	Students know, use, share information, and have opinions through social media.
		3	Students know, use, and share information through social media.
		2	Students know and use social media.
		1	Students know social media.
8.	E-Safety	4	Students use personal email when registering in the online application and use real profile photos, full names, and class and school IDs.
		3	Students use personal email when registering in the online application and use real profile photos and full names.
		2	Students use personal email and real profile photos when registering in the online application.
		1	Students use personal email when registering in the online application.

Source: Abdullah et al. (2021)

Respondents who observed students' digital literacy indicators gave the most appropriate answer choices in the column (1, 2, 3, or 4) if the observed components appeared. A mark (√) is given at point 4 if they can do all statement components, point 3 if they can do three statement components, point 2 if they only can do two statement components, and point 1 if they only can do one statement component. The instruments used have been validated through expert judgment.

Value every aspect is the score obtained from the answer indicators that are checked (considered the most appropriate) and divided by the maximum score multiplied by 100. The average value of each aspect is obtained from the total value of each indicator divided by the number of indicators (Suwono et al., 2017). Table 2 presents the value categories : Very Good (VG), Good (G), Enough (E), and Not Enough (NE).

Table 2. Score Category on the Questionnaire

Score Range	Category
76 - 100	Very Good
56 - 75	Good
41 - 55	Enough
0-40	Not Enough

RESULTS AND DISCUSSION

An overview of digital literacy levels in terms of the use of ICT as a biology learning from eight indicators using 25 questionnaire questions is presented in Table 3. Overall, students' digital literacy in the control class was in the good category with an average of 77.5, and the experimental class in the good category with an average of 85.25. Of the eight digital literacy indicators, the highest score was in creativity in the control and experimental classes, with scores of 85 and 88, respectively. The E-Safety indicator scored 85 and 90.

Table 3. Students' Digital Literacy Scores and Categories

No	Indicator	Students' Average Digital Literacy Scores			
		Control	Category	Experimental	Category
1	Functional Skills and Beyond	75	Good	86	Very Good
2	Creativity	85	Very good	88	Very Good
3	Collaboration	75	Good	85	Very Good
4	Communication	75	Good	86	Very Good
5	The Ability to Find and Select Information	75	Good	87	Very Good
6	Critical Thinking and Evaluation	75	Good	75	Good
7	Cultural and Social Understanding	75	Good	85	Very Good
8	E-Safety	85	Very good	90	Very Good
	Average Score	77,5	Good	85,25	Very good

On the other hand, the lowest digital literacy indicator score was obtained on the Critical Thinking and Evaluation indicator. The indicator scored 75 in the good category in both the control and experimental classes. The problem-based learning model through blended learning positively affects the digital literacy skills of eleventh graders at SMA Negeri Plus Riau on excretory material.

In detail, the Functional Skills and Beyond indicator obtained an average score of 75, categorized as good in the control class, and the experimental class got an average of 86 in the very good category. The control class has not achieved very good digital literacy because students are not accustomed to using computers in the learning process. Teachers are not perfect at stimulating students to use the PBL model. Araniri (2021) dan Jamaludin et al. (2021) state that digital literacy is always related to computers and internet networks, which are current technological tools with various benefits and functions that can support human activities, including teaching and learning.

The experimental class has achieved very good digital literacy. These results are per the students' abilities to turn on, turn off, and recognize computer devices and use and recognize learning applications on computers. The experimental class has a higher score because they use computers in the learning process, so students are trained to use computers. This is supported by teacher-facilitated learning using PBL syntax by stimulating students in problem orientation. The teacher carries out this process by sending learning materials online using the Classroom application so that students can use computers and the internet and know various learning applications on the computer. This is also supported by the results of research by Magalhães et al. (2020) and Ririen and Daryanes (2022), that students prefer to carry out online learning because they can practice their ability to use technology-based devices such as using computers and laptops. This is supported by teacher-facilitated learning using PBL syntax by stimulating students in problem orientation. The teacher carries out this process by sending learning materials online using the Classroom application so that students can use computers and the internet and know various learning applications on the computer. Implementing blended learning will also increase teachers' ability as facilitators of the implementation of blended learning, as stated by Reisoğlu and Çebi (2020), that digital-based learning will increase teacher involvement using technology.

The creativity indicator got the highest score out of the eight indicators. This indicator

scored 85 and 88 in the control and experimental classes and is categorized as very good. Using project-based learning through blended learning, control class students were assigned to collect information using a computer. It can be interpreted that blended learning plays an important role in increasing creativity related to digital literacy by utilizing computers. According to Oktavia & and Hardinata (2021) and Tang and Chaw (2016), the application of digital literacy outside of school has not been developed or appropriately implemented by students to support the learning process. Therefore, information about digital literacy in learning is needed to make it easier for students to access learning.

The experimental class has achieved very good digital literacy. These results are per the students' abilities to do assignments in Microsoft word, create tables in Microsoft Excel, create slides in PowerPoint, and design cover assignments in Photoshop. This ability is achieved in the experimental class because the learning is facilitated by the teacher using PBL syntax, which organizes students in learning. The teacher carries out the process by directing students to work on the Student Assignment Sheet (LTPD) questions whose answers direct children to create pictures or diagrams in the Classroom application that are collected with Microsoft Word so that students in the experimental and control classes think creatively in doing assignments in Microsoft word and creating tables in Microsoft Excel. In this case, students' creative thinking skills can answer questions with many ideas and make combinations in tables so that student answers will vary.

The Collaboration indicator obtained an average score of 75 in the control class, categorized as good. The experimental class obtained the highest score, with an average score of 85, categorized as very good. The control class has not reached the very good category because students have not worked productively to complete the assignment. They emphasize compromise in collaboration and are less responsible for collaboration to provide solutions in groups.

The experimental class has reached the very good category. These results are consistent with students' ability to join online study groups, create online study groups, share learning information, and play an active role in question-and-answer sessions. Students apply this ability in participating in teacher-facilitated learning using PBL syntax in guiding individual and group investigations in group and class discussion activities. This follows what was stated by Dindar et al. (2020), that group discussion activities will facilitate productive team investigations and, through productive collaboration, will harmonize the representation of tasks together, increasing team collaboration. The teacher, in synchronous, carries out the process. The teacher uses the Zoom Meeting camera so that students can discuss questions and answers when the teacher directs assignments online and share various information online using the Whatsapp group to discuss with their respective groups.

The Communication indicator in the control class obtained an average score of 75, categorized as good, and the experimental class's highest score was 86, categorized as very good. The control class has not reached the very good category because the learning process has not directed students to think in discussions, so there is a lack of communication skills. Students are also not disciplined in participating in the learning process. Many students still do not turn on the Zoom Meeting video. Students are less creative in learning and lack cooperation in discussions, so they lack communication.

The experimental class was categorized as very good. This result is due to students' abilities to display video and audio during Google Meet learning, ask questions during learning, and lead discussions in Google Meet. Students apply this ability in participating in teacher-facilitated learning using PBL syntax in guiding individual and group investigations in group and class discussion activities. The teacher, in synchronous, carries out the process. The teacher uses the Zoom Meeting camera. During Zoom Meeting learning, students display video and audio and ask questions because learning begins by stimulating students on cases that must be discussed to find solutions.

The ability to find and select information indicator obtained an average score of 75 in the control class, categorized as good. In the experimental class, the average score of students was 87, which is categorized as very good. The control class has not reached the very good category because students only look for one material reference, so students do not think creatively to look for various sources. Raes et al. (2020) state that student involvement in the learning process will be greater during hybrid virtual learning because students actively seek various information from various sources and information explorer media. The control class learning process has not directed students to look for other sources of information. According to Nur (2019), literacy culture in the digital era needs to be improved and maintained to improve skills and efforts to equalize education, eradicate illiteracy, increase intellectual un-

derstanding and readiness to face the challenges of globalization, and change people's mindset and reasoning in facing world developments.

Meanwhile, the results in the experimental class are categorized as very good, according to students' abilities to find material references through Wikipedia, blogs, journal articles, and Youtube. Students apply this ability in participating in teacher-facilitated learning using PBL syntax in guiding individual and group investigations in group and class discussion activities. The teacher, in synchronous, carries out the process. The teacher uses the Zoom Meeting camera to supervise student discussions so that students look for references from various sources correctly and reliably.

The Critical Thinking and Evaluation indicator has the lowest average score of the eight digital literacy indicators. The control and experimental classes obtained an average score of 75 in the good category. The control class has not reached the very good category. Students' critical thinking skills in evaluating learning are still lacking, so they cannot conclude and solve problems. In the learning process, the control class has not directed students in problem orientation. According to Busabong (2018), digital literacy also includes information literacy, technological literacy, media awareness, and the application and evaluation of knowledge in supporting the learning process. Polizzi (2020) states that an ability to evaluate online content involves reflection on the nature and origin of information, contextual knowledge, use of multiple sources, and functional and critical digital skills and knowledge about the internet and the digital environment.

In the experimental class, the results are per the students' abilities to share information from internet sources and Youtube videos, conclude the search results, and solve learning problems. Students can share information in class discussion lessons facilitated by teachers using PBL syntax by presenting their work. The process is carried out by teachers and students in classroom discussions so that students can share the information they get from the internet in group discussions, conclude the search results, and solve learning problems with internet sources. Both classes have not reached the very good category due to the lack of students' critical thinking skills in evaluating learning, so they cannot conclude and solve problems.

The control class's indicators of Cultural and Social Understanding obtained an average score of 75, categorized as good. The average of the experimental class was 85, categorized as very good. The control class has not been categorized as very good due to the lack of confidence in students' opinions during synchronous learning using the Zoom Meeting camera. Group discussions in WhatsApp groups and the learning process have not emphasized students to express their opinions and be confident. According to Hardiansyah et al. (2021), digital literacy can be a suitable learning medium in the industrial revolution 4.0, but its use must be monitored and limited.

The experimental class was very good according to the students' abilities to know, use, share information, and express opinions through social media. Students carry out this ability by participating in teacher-facilitated learning using PBL syntax in guiding individual and group investigations. This process is carried out by the teacher synchronously using the Zoom Meeting camera. Students conduct group discussions in Whatsapp Groups. During group discussions, students use social media as a learning resource and comment on media sources that are unclear or unsupportive in their search (Yustina et al, 2021). The E-Safety indicator is one of the eight digital literacy indicators with the highest score. The control class scored 85, and the experimental class scored 90. Both classes were in the very good category. The control class is very good because, in online learning, it emphasizes students using computers that must use specific email and identity.

The experimental class is very good because the students can use personal emails, profile photos, full names, and class and school identities when joining online applications. Students apply the ability to use a computer in participating in teacher-facilitated learning using PBL syntax in concluding and evaluating. The teacher carries out this process by giving students a posttest via Google Form so that students can include identity profiles in online learning applications and make it easier for teachers to check student answers according to identity. Pratama et al. (2019) and Greene et al. (2014) state that the development of the era of globalization and science and technology demands quality Human Resources (HR), one of which is through an educational process. The students' digital literacy results after applying the PBL model through BL explain an increase in digital literacy in the experimental class. This statement is in line with Abdullah et al. (2021) and Olszewski and Crompton (2020). Teachers need mastery of digital literacy to facilitate learning in the digital era.

The results show that educators still have not implemented multimedia, information, and communication technology in schools. In addition, the application of digital literacy outside of school has not been developed or appropriately implemented by students in the learning process. From the results of research conducted on 60 students of SMA Negeri Plus Riau, it is found that the level of digital literacy of students in the control class was good in terms of overall abilities, such as internet searching, hypertextual navigation, content evaluation, and knowledge assembly (Sari, 2019).

The results of previous studies also show significant differences in digital literacy between the experimental and control classes. Applying problem-based learning models through blended learning can improve students' digital literacy in the learning process (Aji, 2016; Adi et al., 2017). The digital media used by students of SMA Negeri Plus Riau are Whatsapp Group, Zoom Meeting, Google Classroom, and Edmodo.

CONCLUSION

Based on the research results, the problem-based learning model through blended learning positively affects the digital literacy of eleventh-grade students of SMA Negeri Plus Riau on the excretory system material.

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