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21st Century Skills and Information Literacy in Indonesian Language and Literature Education Study Program

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ABSTRAK

Keterampilan Abad 21 dan Literasi Informasi sangat penting diketahui perkembanganya dalam proses perkualiahan di perguruan tinggi. Kenyataanya belum dilakukan profiling untuk memetakan hal tersebut di Prodi Pendidikan Bahasa Dan Sastra Indonesia. Oleh sebab itu, tujuan penelitian ini adalah melakukan profiling Keterampilan Abad 21 dan Literasi Informasi di Pendidikan Bahasa Dan Sastra Indonesia.Jenis penelitian ini yaitu penelitian metode campuran dengan menggunakan Concurrent Embedded Design. Responden adalah 30 mahasiswa S1 Pendidikan Bahasa dan Sastra Indonesia. Metode pengumpulan data menggunakan observasi, wawancara, dan kuesioner. Instrumen penelitian yang digunakan adalah kuesioner, pedoman wawancara, dan lembar observasi. Data dianalisis menggunakan Mann-Whitney U Test. Hasil penelitian yaitu keterampilan berpikir kritis dan problem solving, communication and collaboration, creativity and innovation, dan information literacy skills masih rendah pada sebagian besar mahasiswa. Hanya keterampilan Creativity and Innovation Skills yang menunjukkan perbedaan yang signifikan antara semester atas dan bawah. Temuan studi dibahas, diikuti dengan tinjauan implikasi temuan bagi lembaga pendidikan, pembuat kebijakan, dan penelitian masa depan.

ABSTRACT

21st Century Skills and Information Literacy are very important to know about their development in the lecture process in tertiary institutions. Profiling has yet to be carried out to map this in the Indonesian Language and Literature Education Study Program. Therefore, this research aims to profile 21st Century Skills and Information Literacy in Indonesian Language and Literature Education. This type of research is mixed methods research using a Concurrent Embedded Design. The respondents were 30 undergraduate students of Indonesian Language and Literature Education. Methods of data collection using observation, interviews, and questionnaires. The research instruments used were questionnaires, interview guides, and observation sheets. Data were analyzed using the Mann-Whitney U Test. The study's results, namely critical thinking skills and problem-solving, communication and collaboration, creativity and innovation, and information literacy skills, still needed to be higher for most students. Only the Creativity and Innovation Skills skills differed significantly between the upper and lower semesters. The study findings are discussed, followed by a review of the implications for educational institutions, policymakers, and future research.

1. INTRODUCTION

In the fast-paced era of the 21st Century, individuals are required to possess a set of skills that enable them to adapt and succeed in various aspects of life (Koenig, 2011). These skills are generally known as 21st century skills, which include abilities such as critical thinking, communication, collaboration, and creativity (Woldeab & Brothen, 2019). Additionally, the emergence of the digital era has highlighted the importance of information literacy, which involves the ability to find, evaluate, and effectively use information from various sources. The integration of 21st century skills and information literacy are becoming increasingly important for individuals to thrive in the modern world (Siddiq et al., 2016).

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Students face various challenges in facing the 21st Century (Breivik, 2005). First, students must be able to develop 21st-century skills in their learning process. 21st-century skills consist of critical thinking and problem-solving skills, communication and collaboration skills, as well as creativity and innovation skills (Trilling & Fadel, 2009). Second, changes in the learning environment that incorporate big data as a learning source require special skills in accessing, evaluating, and using it (Trilling & Fadel, 2009). The students' skills in accessing, evaluating, and using this information are called information literacy (Breivik, 2005; Trilling & Fadel, 2009). The need for students to develop 21st-century skills and information literacy must be facilitated by universities through the learning process. The results of this learning process must be assessed and understood for their impact on students.

The learning process in higher education should be able to improve 21st-century skills (Chai & Kong, 2017) and information literacy (Ishimura & Fitzgibbons, 2023). 21st-century skills are skills that are prepared so that students are ready to enter the workforce (González-Pérez & Ramírez-Montoya, 2022). 21st-century skills can be developed through challenge-based learning, problem-based learning, experiential learning, and gamification-based learning (Almazroui, 2022; González-Pérez & Ramírez-Montoya, 2022). Meanwhile, information literacy skills are developed through exercises in accessing, evaluating, and using the information in the learning process (Purnell et al., 2020). However, observations show that the learning process carried out in the Indonesian Language Education S1 Study Program at IKIP Saraswati Tabanan still lacks the empowerment of 21st-century skills and information literacy. The results of the study of learning materials, subject matter, and assignments also indicate that they have not yet touched on 21st-century skills and information literacy. This problem is the basis of the researcher's interest in conducting an analysis of the assessment of 21st-century skills and information literacy. This study also includes a qualitative study related to the learning process and obstacles in developing 21st-century skills and information literacy.

Despite the numerous studies conducted on profiling 21st-century skills or information literacy, few profiling studies have been conducted concurrently. Therefore, this study aims to bridge the gap by adopting a mixed-method approach to profile university students' 21st-century skills and information literacy. This research aims to explore the extent to which students possess these skills, as well as their experiences and perceptions of integrating these skills in academic and personal contexts. The findings of the study are discussed, followed by a review of the implications of the findings for educational institutions, policymakers, and future research.

2. METHOD

This study is mixed-method research using a Concurrent Embedded Design. Concurrent Embedded Design is a mixed-method research design that combines the collection and analysis of qualitative and quantitative data simultaneously and in an integrated manner (Creswell & Clark, 2018). In this design, both types of data are collected and analysed together and integrated with the interpretation and reporting stages. The respondents were 30 undergraduate students majoring in Indonesian Language and Literature Education at IKIP Saraswati Tabanan who voluntarily filled out a questionnaire and participated in interviews out of a total of 60 active students.

The research instruments used were a questionnaire, interview guide, and observation sheet related to 21st Century Skills and Information Literacy (Chai & Kong, 2017; Koenig, 2011; Nakano & Wechsler, 2018; Trilling & Fadel, 2009). The quantitative data obtained were tabulated in frequency distributions and analysed using the Mann-Whitney U Test to understand the profiling of the students' 21st Century Skills and Information Literacy in the upper (>5) and lower (<5) semesters.

3. RESULT AND DISCUSSION

Result

The profile of Critical Thinking and Problem-Solving Skills

Table 1. Frequency Distribution of Critical Thinking and Problem-Solving Skills

Interval Value	Qualification	f	Percentage
95-100	*Teladan* (Exemplary)	0	0%
85-94	*Mahir* (Proficient)	4	13%
75-84	*Menengah* (Intermediate)	10	33%
65-74	*Dasar* (Basic)	6	20%
<65	*Pemula* (Beginners)	10	33%
	Total	**30**	**100%**

Adapted Scale (Miller et al., 2009)

Table 1 indicate that 33% are categorised as beginners, and 20% are categorised as basic. This shows that the level of Critical Thinking and Problem-Solving Skills is still low and needs to be improved.

The profile of Communication and Collaboration Skills

Table 2. Frequency Distribution of Communication and Collaboration Skills

Interval Value	Qualification	f	Percentage
95-100	*Teladan* (Exemplary)	0	0%
85-94	*Mahir* (Proficient)	6	20%
75-84	*Menengah* (Intermediate)	9	30%
65-74	*Dasar* (Basic)	11	37%
<65	*Pemula* (Beginners)	4	13%
Total		**30**	**100%**

Adapted Scale (Miller et al., 2009)

Table 2 indicate that 50% of the respondents demonstrate a low level of Communication and Collaboration Skills, with 13% categorised as beginners and 37% categorised as basic. This highlights the need to enhance these skills among the students.

The profile of Creativity and Innovation Skills.

Table 3. Frequency Distribution of Creativity and Innovation Skills

Interval Value	Qualification	f	Percentage
95-100	*Teladan* (Exemplary)	1	3%
85-94	*Mahir* (Proficient)	5	17%
75-84	*Menengah* (Intermediate)	7	23%
65-74	*Dasar* (Basic)	8	27%
<65	*Pemula* (Beginners)	9	30%
	Total	**30**	**100%**

Adapted Scale (Miller et al., 2009)

Table 3 shows that 30% are categorised as beginners, and 27% are categorised as basic. These findings indicate that 57% of the respondents have a low score on Creativity and Innovation Skills.

The profile of Information Literacy Skills

Table 4. Frequency Distribution of Information Literacy Skills

Interval Value	Qualification	f	Percentage
95-100	*Teladan* (Exemplary)	1	3%
85-94	*Mahir* (Proficient)	4	13%
75-84	*Menengah* (Intermediate)	16	53%
65-74	*Dasar* (Basic)	4	13%
<65	*Pemula* (Beginners)	5	17%
	Total	30	100%

Adapted Scale (Miller et al., 2009)

Table 4 indicates that 17% are categorised as beginners, and 13% are categorised as basic. About 53% of the students fall in the intermediate category. Although the score on Information Literacy Skills is only 30% low, there are still a few students who are categorised as proficient and exemplary. This is one of the reasons why many students still struggle with selecting reliable sources of information and evaluating the information they obtain. Other research findings also suggest that Information Literacy Skills are still low among students.

Differences in 21st-century skills and Information Literacy skills based on academic semesters

Table 5 showed that only Creativity and Innovation Skills had an Asymptotic Sig. Value or significantly less than 0.05 (0.021), indicating a significant difference in the mean score of Creativity and Innovation Skills between the Upper Semester and Lower Semester. On the other hand, Critical Thinking and Problem-Solving Skills, Communication and Collaboration Skills, and Information Literacy Skills did not show a significant difference in the mean score between Upper Semester and Lower Semester, as the obtained Asymptotic Sig. Values (0.659, 0.216, and 0.561) were greater than the significance level of 0.05.

Table 5. Mann-Whitney U Test Results

Variables	Semester Level	Mean	SD	Mann-Whitney U Test	Asymptotic Sig.
Critical thinking and problem-solving skills	Upper semester	72.51	10.91	121.00	0.659
	Lower semester	69.23	14.40		
Communication and collaboration skills	Upper semester	77.35	7.95	140.00	0.216
	Lower semester	70.38	15.38		
Creativity and innovation skills	Upper semester	76.03	12.38	165.00	0.021
	Lower semester	64.81	15.76		
Information literacy skills	Upper semester	80.47	7.47	160.00	0.561
	Lower semester	64.00	25.03		

The obstacles and weaknesses experienced by students in developing 21st-century skills and information literacy is presented in Table 6.

Table 6. Obstacles and Weaknesses

Skill Type	Interview and Questionnaire Result	Observation Result
Critical thinking and problem-solving skills	- Inadequate understanding of the material to analyze, interpret, and evaluate further. - Students feel rarely trained with stimulating critical thinking questions or problems. - Lack of experience in the field related to the given problems, only learning theoretically. - Lack of guidance and support in the learning process to develop critical thinking skills.	- Basic concepts have not been mastered by students. - Lack of practical experience that stimulates students to develop critical thinking skills. - Lack of motivation and interest of students in critical thinking. - Students have difficulty answering critical thinking questions. - Students' metacognitive skills are still low.
Communication and collaboration skills	- Some students feel they lack confidence in communicating in public, such as during presentations and discussions. - Fear of using terminology incorrectly in communication. - The ego of team members causes obstacles in collaboration. - Difficulties in expressing opinions in both oral and written communication.	- Lack of effective communication skills - Some students have difficulty working in a team - Lack of ability to understand other people's perspectives - Inability to use technology effectively
Creativity and innovation skills	- When given a problem, it is difficult to find a product solution that can overcome the problem. - Difficult to integrate ideas with group members. - Many things have already been discovered, making it difficult to find new and original things.	- Lack of creative thinking skills among students. - Low problem-solving skills among students. - Students struggle to adapt to changes and new ways of facing different situations.
Information literacy skills	- Students have not understood where to find accurate sources of information. - Students only look for easily accessible sources of information, such as searching the internet. - Students use the information without further evaluation.	- Students have insufficient ability to effectively search for information. - Students have limited ability to organize and analyze information. - Students have inadequate skills in presenting the information. - Students often copy and paste assignments from their peers or from internet sources that lack validity.

Discussion

Profile of Critical Thinking and Problem-Solving Skills

The critical thinking and problem-solving skills of 33% of students are categorised as a beginner and 20% as basic, indicating that these skills are still low and need improvement. Other studies show that the critical thinking skills of students are still low in several majors in Indonesia, such as mathematics (Munawwarah et al., 2020), physics (Safitri et al., 2021), chemistry (Rasmawan, 2017; Wahyudi, 2020), Elementary School Teacher Education (Djufri et al., 2022; Farcis, 2019), and computer (Suryani et al., 2020).

Critical thinking and problem-solving skills are becoming increasingly important in daily life and in the workforce (Facione & Facione, 2013; Lukitasari, Hasan, et al., 2019; Nussbaum, 2021). With technological advancements and increasing global competition, individuals need these skills to face various complex challenges and problems (Nussbaum, 2021; Varenina, 2021). Therefore, the low level of critical thinking and problem-solving skills among students in several majors in Indonesia is a serious concern. To address the challenges that are becoming more complex, universities need to make efforts to improve the critical thinking and problem-solving skills of students (DeWaelsche, 2015; Jahanshahi, 2021; Kaya & Elster, 2019; Salmenperä, 2021). This can be done through curriculum improvement, the development of innovative learning methods, and increased collaboration with the industry. It is also important to provide training and programs on critical thinking and problem-solving skills for students in various majors so that they can prepare themselves to face the increasingly complex workforce. With these efforts, it is hoped that the critical thinking and problem-solving skills of students in Indonesia can improve, creating competent human resources who can compete at the global level.

Profile of Communication and Collaboration Skills

In a research study, 50% of respondents showed low levels of Communication and Collaboration skills, with 13% categorised as beginners and 37% as basic. This indicates the need for improvement in these skills among students. Similar findings have also been reported in overseas research, such as low Communication skills among students (Aslan, 2021; Cheraghi et al., 2021; J. Lee & Son, 2022) and collaboration skills (Li et al., 2022; Ritter et al., 2020; Sjølie et al., 2021). Similar findings have also been found in research in Indonesia, indicating the need to improve Communication and Collaboration skills among students (Firdaus et al., 2020; Hairida et al., 2021; Khoirunnisa & Habibah, 2020; Nengsi & Sartika, 2022). Therefore, efforts are needed to improve Communication and Collaboration skills among students.

The importance of Communication and Collaboration skills among students cannot be underestimated, especially in the world of work and social life (Mardikawati & Mundilarto, 2020; Purwasih et al., 2021). The ability to communicate effectively and work together in a team will be an added value for students in facing future challenges (Aini et al., 2020, 2020b; Carroll, 1980). In addition, by improving Communication and Collaboration skills, students will be better prepared to face global challenges and compete on the international stage (Aini et al., 2020b; Carey et al., 2010; Mercer-Mapstone & Kuchel, 2017).

The implication of these findings is that efforts are needed to improve Communication and Collaboration skills among students, both at the university level and as individuals. Universities can improve the quality of education by introducing more interactive and collaborative learning methods, such as the use of technology that supports interaction between students and lecturers (Aini et al., 2020; Carey et al., 2010; Carroll, 1980; Mercer-Mapstone & Kuchel, 2017; Purvis et al., 2014). In addition, individuals can also enrich themselves by participating in various extracurricular activities that can improve Communication and Collaboration skills, such as internship programs, student organisations, and joint projects (Carey et al., 2010; Hughes et al., 2018; Nurani et al., 2020; Panagopoulou et al., 2006; Purvis et al., 2014). By making these efforts, it is hoped that students can become communicative, collaborative, and ready to face future challenges.

Profile of Creativity and Innovation skills

The profile of Creativity and Innovation skills of students indicates that 30% of them fall under the beginner category, while 27% are classified as basic. These results show that 57% of the respondents have low scores in Creativity and Innovation skills. Other studies have also reported low scores in Creativity and Innovation skills, indicating the need for improvement (García-Aranda et al., 2020; Khoirunnisa & Habibah, 2020; Nakano & Wechsler, 2018; Tindowen et al., 2017). Low levels of Creativity and Innovation skills in students can have significant implications for their ability to face future challenges (García-Aranda et al., 2020; Khoirunnisa & Habibah, 2020; Nakano & Wechsler, 2018; Tindowen et al., 2017), especially in dealing with the constant changes happening in the workplace and society. Creativity and Innovation skills are essential in providing innovative and creative solutions to various problems

(Nakano & Wechsler, 2018; Nussbaum, 2021; Welch, 2021). Therefore, there is a need for efforts to enhance Creativity and Innovation skills in students.

Efforts to improve Creativity and Innovation skills in students can be made through project-based learning (Albar & Southcott, 2021; Chen et al., 2022; Sumarni & Kadarwati, 2020), creativity training (Crilly, 2021), the development of critical and divergent thinking skills (Bahrudin & Siswono, 2020a; Batlolona & Mahapoonyanont, 2019), and assignments that encourage students to think outside the box (Bahrudin & Siswono, 2020b; Batlolona & Mahapoonyanont, 2019; Crilly, 2021; Nuswowati et al., 2017). Additionally, technology can be used as a means to enhance Creativity and Innovation skills among students, such as using applications that facilitate collaboration and innovation in creating creative projects (Almazroui, 2022; Cortázar, 2021; García-Aranda et al., 2020; Sukerti et al., 2019; Yustina et al., 2020). In the era of globalisation that is increasingly complex and dynamic, Creativity and Innovation skills are critical for students to face various challenges in the future (Almazroui, 2022; Batlolona & Mahapoonyanont, 2019; Hairida et al., 2021). Therefore, there is a need for serious attention and concrete efforts to improve Creativity and Innovation skills among students to compete in the ever-changing and complex world of work and society.

The Profile of Information Literacy Skills

The value of Information literacy skills for students shows 17% in the beginner category and 13% in the basic category. 53% of students are in the intermediate category. Although the value of Information literacy skills is only 30% low, it is still few in the proficient and exemplary categories. This is the reason why many students still make mistakes in choosing sources of information and cannot evaluate the information they obtain. Other research results also show a low level of Information literacy skills among students. Information literacy is crucial in accessing, evaluating, and utilising information effectively and efficiently (Kaya & Elster, 2019; Reddy et al., 2022; Sample, 2020; Wu et al., 2022). In this digital era, where information can be easily accessed from various sources, the ability to information literacy is essential (Breivik, 2005b; Kaya & Elster, 2019; Lau, 2008; Reddy et al., 2022).

Information literacy skills are also crucial in improving the quality of academic and scientific work produced by students (Bear, 2020; Kaya & Elster, 2019; Reddy et al., 2022; Sample, 2020; Wu et al., 2022). Students with good levels of Information literacy skills will be able to obtain information from various accurate and relevant sources and evaluate the information properly to produce high-quality academic and scientific work (Erol, 2021; Fredy et al., 2020; Kong, 2014; Reddy et al., 2022; Sample, 2020; Sapitri & Ridlo, 2021; Wu et al., 2022). Conversely, if students lack information literacy skills, it can affect the quality of academic and scientific work produced.

In the context of social media use, the ability to information literacy is also very important (Cho et al., 2022; Vraga & Tully, 2021; Wusylko et al., 2022). Students need to be able to evaluate the information that is spread on social media so as not to fall into hoaxes or inaccurate information (Cho et al., 2022; Vraga & Tully, 2021; Wusylko et al., 2022). Students who have good information literacy skills will also be able to avoid content that is not useful or does not match their learning objectives (Vraga & Tully, 2021; Wusylko et al., 2022). Therefore, there is a need to make efforts to improve the level of information literacy among students. These efforts can be made through information literacy training, the use of trustworthy and quality information sources, and the development of a curriculum that supports the development of information literacy skills (Bear, 2020; Lau, 2008; Reddy et al., 2022; Sample, 2020; Vraga & Tully, 2021). Thus, students will be able to utilise information properly and produce high-quality academic and scientific work.

Differences in 21st-century skills and information literacy based on the academic level

Table 5 indicate that only Creativity and Innovation Skills have an Asymptotic Sig. Value or significance level less than 0.05 (0.021), thus it can be concluded that there is a significant difference between the mean Creativity and Innovation Skills in the Upper Semester and Lower Semester. On the other hand, Critical Thinking and Problem-Solving Skills, Communication and Collaboration Skills, and Information Literacy Skills show no significant difference between means in the Upper and Lower semesters, as the obtained Asymptotic Sig. Values (0.659, 0.216, and 0.561) are greater than the significance level of 0.05. The implications of this conclusion for future lectures are that special attention is needed in developing Creativity and Innovation Skills in Lower Semester students. This can be done by developing a curriculum that focuses on creative and innovative learning (Craig & Allen, 2015; Erol, 2021; VanTassel-Baska, 2021; Welch, 2021), providing opportunities for students to collaborate and participate in innovative projects (Andrini et al., 2019; García-Aranda et al., 2020; Haryono & Adam, 2021a, 2021b; Khairani Astri et al., 2022; Nata & Sujana, 2020; Panagopoulou et al., 2006; Sukerti et al., 2019; Yustina et

al., 2020), as well as providing constructive feedback to help students develop these skills (Haryono & Adam, 2021; Tarigan & Tarigan, 2022).

In addition, the Mann-Whitney U Test results also show a non-significant difference between Critical Thinking and Problem-Solving Skills, Communication and Collaboration Skills, and Information Literacy Skills in Upper and Lower Semester students. However, this indicates a low increase in these skills from the Lower Semester to Upper Semester. Therefore, it is necessary to pay attention to the development of these skills in future lectures, both in the Upper and Lower Semesters. This can be done by integrating learning that strengthens these skills in the curriculum (Abaci, 2022; Ameen, 2013; Aslan, 2021; Greenstein, 2012; Lukitasari, Purnamasari, et al., 2019; Susilowati et al., 2022; Tight, 2021; Trilling & Fadel, 2009), and providing opportunities for students to develop these skills through various in-class and out-of-class activities (Albar & Southcott, 2021; Ameen, 2013; O. S. Lee, 2017; Suciati et al., 2022; Susilowati et al., 2022; Tight, 2021; Trilling & Fadel, 2009; Yustina et al., 2020).

Challenges and weaknesses experienced by students in developing 21st-century skills and information literacy

First, regarding critical thinking and problem-solving skills, students have difficulty analysing, evaluating, and understanding material in depth. Students are also not adequately trained with questions or problems that stimulate critical thinking skills. In addition, the lack of practical experience in the problems given makes students only learn theoretically. The lack of guidance and support in the learning process is also an important factor affecting critical thinking development. Students may lack adequate concepts, knowledge, and skills in certain fields or subjects, hindering their ability to think critically and solve problems effectively. Critical thinking and problem-solving skills require continuous practice and development. However, some students may not have sufficient opportunities to hone these skills in coursework or other academic activities. Some lecturers may not use effective teaching methods or strategies to encourage their students' critical thinking and problem-solving skills, such as involving students in discussions, group activities, and real-world problem-solving scenarios. Some students may also lack motivation or interest in developing their critical thinking and problem-solving abilities, resulting in a lack of effort and adequate practical skills in presenting the information.

Secondly, regarding communication and collaboration skills, some students face obstacles in public speaking, such as in presentation and discussion activities. Difficulties in expressing opinions in oral and written communication and team members' egos also hinder collaboration. Additionally, some students have difficulty working in teams, are unable to understand other people's perspectives and are ineffective in using technology. The inability to communicate effectively causes students difficulty conveying information clearly and structurally. They tend to be unable to organise information and stutter in speech. The inability to work in teams often causes students to have difficulty building trust, collaborating, or leading teams. Students often lack the skills to manage differences of opinion and make effective decisions. The lack of ability to understand other people's perspectives often causes students to misunderstand other people's perspectives and tend to only focus on their views (Carey et al., 2010; Carroll, 1980; Nurani et al., 2020; Rivers & Ross, 2018; Thomson, 2020). This can hinder the ability to collaborate and make good decisions within the team (Carroll, 1980; Moore & Morton, 2017). The inability to deal with conflicts causes students to avoid conflicts or take ineffective actions in resolving conflicts. Students often have difficulty giving constructive feedback to their peers. They tend to use harsh words or do not take the time to think about useful and helpful feedback. Additionally, students often have difficulty using technology effectively in communication and collaboration. They may not know how to use tools such as email, teleconferences, or online collaboration applications.

Thirdly, regarding creativity and innovation skills, students face difficulties finding product solutions that can solve given problems, integrating ideas with group members, and discovering new and original things. Poor problem-solving abilities and difficulty adapting to changes and new ways of thinking also influence the development of creativity and innovation skills. Students often struggle to generate new and innovative ideas (Dwyer et al., 2014; García-Aranda et al., 2020; Sumarni & Kadarwati, 2020; Tang et al., 2020). They may be trapped in conventional thinking patterns and lack the courage to think outside the box. Students often have difficulty identifying and solving problems in innovative ways. They may rely solely on conventional methods and cannot tackle complex problems. Students are often afraid of failure and are hesitant to try new things. This can hinder creativity and innovation because they are unwilling to take risks. Students often have difficulty adapting to changes and considering new approaches to handling situations. Students often have difficulty collaborating and integrating ideas from their peers. This can hinder creativity and innovation because their ideas are not expanded and developed (García-Aranda et al., 2020; Sumarni & Kadarwati, 2020).

Fourthly, regarding information literacy, students still encounter challenges in finding accurate sources of information, using information sources without further evaluation, and lacking the ability to organise, analyse, and present information effectively. In addition, many students engage in plagiarism in academic assignments. Students often face difficulties in finding accurate and relevant information. They may not know how to use available information resources or have limited knowledge of libraries and online databases. Students often struggle to evaluate the information sources they find. They may not be able to distinguish between credible and non-credible sources of information (Ishimura & Fitzgibbons, 2023; Kaindio & Wagithunu, 2014; Kuhlthau, 2021; Nzomo et al., 2021; Osmani et al., 2020; Purwasih et al., 2021; Sulistiyarini & Sabirin, 2020; Vraga & Tully, 2021). Students frequently face difficulties in organising information and making appropriate analyses. They may not know how to take notes, categorise information, and apply critical skills. Students often find it challenging to present information effectively and engagingly. They may not know how to create good presentations or write clear, structured reports. Students frequently do not understand information ethics and lack knowledge of how to avoid plagiarism or copyright infringement.

The Implications and Limitations

This research implies that there is a need for the development of a curriculum that focuses on creative and innovative learning, providing opportunities for students to collaborate and participate in innovative projects and providing constructive feedback to help students develop these skills. In addition, there is a need for the integration of learning that strengthens these skills in the curriculum and provides opportunities for students to develop these skills through various activities in and outside the classroom. In future classes, efforts are needed to enhance the development of 21st-century skills and information literacy through more effective learning strategies, such as using technology, guidance and support in the learning process, and increasing students' motivation and interest in developing these skills. Furthermore, there is a need to improve the quality of learning resources and teaching to help students find, organise, analyse, and present information accurately and effectively.

Although this study analysed quantitative data and conducted qualitative data triangulation, the number of respondents was still limited. Subsequent research could conduct a census to comprehensively understand the profile of 21st-century skills and information literacy. The data obtained from the questionnaire were limited to students' perceptions, which may not be accurate enough to measure critical thinking skills. For future research, we suggest using tests to measure such skills.

4. CONCLUSION

Based on the research results and discussions, it can be concluded that critical thinking and problem solving skills, communication and collaboration skills, creativity and innovation skills, and information literacy skills are still low for most students. Creativity and innovation skills significantly differed significantly between upper and lower semesters. Therefore, special attention is needed to develop these skills in the curriculum. In addition, other skills must be improved for lower to upper semesters students. This can be done by integrating learning that strengthens these skills in the curriculum and providing opportunities for students to develop these skills through various activities in and outside of the classroom.

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