

**THE 21ST CENTURY SKILLS IN THE DIGITAL TECHNOLOGICAL
WORLD: A STUDY OF THE STUDENTS' READINESS AND
PROSPECTIVE GRADUATES TO WORK IN GLOBAL COMPETITION**

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Abstract

This study examines the preparedness of education students in essential 21st-century skills and English proficiency in a digital work environment. We surveyed 300 students from various educational majors, mainly those in applied sciences and social sciences. The results reveal that students perceive their preparedness in 21st-century skills as high. In the elements of digital soft skills readiness, students indicated a high level of readiness. Upon examining the sub-elements, it was evident that digital IT usage, digital learning, critical thinking, digital problem-solving, digital communication, and digital collaboration demonstrated high levels of skill. At the same time, digital numeracy was moderate, indicating a need for improvement in quantitative digital literacy. The digital hard skills readiness dimension was also high, reflecting adequate knowledge and technical skills in the digital environment. The readiness for digital competitiveness is no exception, having high values with respect to its underlying dimensions (see, e.g., the variables of digital lifelong learning, digital employability and digital entrepreneurship). In digital English, students are remarkably well-prepared; however, they have a high level of reading skills in the digital domain, but their writing abilities, while falling within average limits, do not correspond to expectations. Students are strongly encouraged to enhance their digital 21st-century and English skills as part of preparation for the global workplace. Satisfied students' digital literacy should become a driving force for them to enhance their digital 21st-century and English skills. These skills need to be strengthened for the digital work environment.

Keywords: 21st Century Skills, Digital Technological, English Skills, Global Workplace , Students' Readiness

INTRODUCTION

21st-century skills have become a crucial requirement for entering the job market and applying in a real work environment. Our research has formulated the 21st-century skills, which include three major competencies: soft skills, hard skills, and competitiveness (Hadiyanto, Noferdiman, et al., 2021; Hadiyanto, Sulistiyono, et al., 2022; Hadiyanto, Sulistyo, et al., 2022). The skills have become essential not just in traditional offices but also in our increasingly digital and hybrid world. Unprecedented development and innovative computerized technology have transformed the way people work from conventional technology to digital and AI technology, especially in education and the workforce (Evseeva et al., 2021; Shtaltovna & Muzzu, 2021). The digital workplace and learning space uses English as its primary communication language for all four essential skills which include speaking and listening and reading and writing. The digital work environment depends on English to enable people to access information and participate in discussions and execute tasks and provide instructions. The global job market requires students and upcoming graduates to develop digital literacy and 21st-century skills and English language proficiency for success (Berger & Frey, 2016; Rukmini, 2021; Zorina, 2021).

Multiple research studies have investigated the digital competencies and 21st-century abilities and English language skills of university students and their graduates. Some studies investigated these skills independently, however they failed to demonstrate their digital environment connections (Dasaradhi et

al., 2016; Forutanian, 2021; Hardini et al., 2024; Kateryna et al., 2020; Seki, 2024; Silber-Varod et al., 2019). Research lacks investigations about the combined readiness of students and future graduates to handle global challenges through their English skills and digital literacy and 21st-century competencies. This gap emphasizes the crucial position of this study.

Based on the discussion above, the study had investigated the preparedness of education student to enter global and digital workplace in the side of digital the 21st Century Skills include three main areas: digital soft skills, digital hard skills, and digital competitiveness. Digital Soft skills encompass six vital skills, such as digital communication, digital IT usage, numeracy, critical thinking and learning, problem-solving, and collaboration. On the side, digital hard skills relate to scientific and technical expertise in one's field that is applied in a digital environment. Finally, having digital competitiveness is very much related to digital employability, entrepreneurship and the need to learn throughout one's life. It is also important to prepare future educational graduates in these aspects.

METHODS

The study applied mixed quantitative and qualitative methods. Five Likert scale questionnaire were generated in data collection. The respondents were able to answer starting from strongly agree to strongly disagree. As many as 300 students of the Faculty of Education participated in the survey. Among the respondents, there were 82 third year students, 141 fifth year students and 77 seventh year students. According to gender, 46 males and 254 females.

The students had varied interests in the fields of study. There are 71 respondents from Language and Literature Education. It is the largest number among the field of the study, followed by 46 in Education Science, 39 in Social Sciences Education, 25 in Early Childhood Education & Fundamentals, nine of the respondents are in the field of Mathematics and Natural Sciences Education, nine in Physical Education and Training, and 16 in History, Art, and Archaeology.

Most respondents demonstrate impressive academic performance. The 196 the students involved in the research had GPAs from 3.76 to 4.00. The CGPA of 80 students was in the range of 3.51-3.75 and 17 students has earned GPAs between 3.26 and 3.50. Five students scored between 3.00 and 3.25 in academic and two students scored below 3.00.

The Jambi University English Language Testing (JUELT) revealed a diversity of learners' competency. The result revealed that four students got 500 and above six students get score lies between 451-499 and one student get score lies between 400-450. The second cluster consists of students who attained scores ranging from 350 to 399, being comprised of a total of 29 students, the third and smallest cluster contains 10 students who earned scores above 400. The academic environment demonstrates both positive aspects and development opportunities through the collected data. Data was collected through a self-evaluation questionnaire. There were three variables measured in this study, including 21st Century Skills, Digital Literacy Readiness, and English Skills in a Digital Working Environment

Descriptive analysis was employed to present the mean scores for 21st-century skills readiness level, digital literacy readiness, and students' English skills in a digital working environment. This analysis is also used to determine the level of digital literacy, 21st-century skills, and English skills in the digital world, to see the strengths and weaknesses in detail. Mean score in the range 1.00 to 1.80 was interpreted as very low, 1.81 to 2.60 as low, 2.61 to 3.20 as medium, 3.21 to 3.40 as high and 3.41 to 5.00 as very high.

FINDINGS AND DISCUSSION

Findings

The results from our analysis revealed that students show different levels of readiness in three key areas: 21st-century skills in the digital age, digital literacy, and English proficiency in a digital work environment. Although there were several similarities as shown in Table 1, overall students were highly

skilled with DCS. Each area (Digital Communication, Digital IT Usage, Digital Learning, Critical Thinking about IT/Digital Problem Solving and Digital Collaboration) performed well with scores above aforementioned cutoff points, except for Digital Numeracy which scored an acceptable level.

The scores of readiness for digital hard skills and digital competitiveness were high. in terms of digital competitiveness, students exhibited very positive results, also within the area of Digital Entrepreneurship as well as in Digital Lifelong Learning and Digital Employability. On the whole, students are satisfactory in 21st-century skills preparedness along all of seven broad dimensions.

Table 1. Readiness Level of 21st Century Skills

Elements Students Readiness	Min.	Max.	Mean	S.td	Level
A. Digital Soft Skills Readiness	1.78	5.00	3.82	.571	High
1. Digital Communication	1.00	5.00	3.86	.693	High
2. Digital IT Usage	2.00	5.00	4.11	.628	High
3. Digital Numeracy	1.00	5.00	3.30	.798	Medium
4. Digital Learning and Critical Thinking	1.67	5.00	3.92	.678	High
5. Digital Problem Solving	1.33	5.00	3.86	.678	High
6. Digital Collaboration	1.33	5.00	3.84	.718	High
B. Digital Hard Skills Readiness	1.00	5.00	3.54	.704	High
C. Digital Competitiveness Readiness	1.33	5.00	3.69	.653	High
1. Digital Entrepreneurship	1.33	5.00	3.56	.759	High
2. Digital Lifelong Learning	1.67	5.00	3.77	.731	High
3. Digital Employability	1.00	5.00	3.74	.718	High
Overall 21ST Century Skills	1.57	5.00	3.75	.580	High

In Table 2, we take a closer look at the average scores for different aspects of digital literacy readiness. the findings indicate that students are proficient in all literacies and technologies, such as information & data literacy, communication & collaboration, digital content creation, digital safety, digital technology problem solving, and digital readiness use. Most students were proficient in all these areas. But it's also true that a pretty sizeable minority of students fell short of the benchmark mean score of 4.21, which indicates an extremely high level of competence. All in all, students appear to be strongest in digital literacy, then their preparedness for 21st century skills essential in the digital world, and lastly their proficiency in English in a digital working environment.

Table 2. Digital Literacy Readiness

Digital Literacy Readiness	Min.	Max.	Mean	S.td	Level
1. Information & Data Literacy	2.00	5.00	3.84	.678	High
2. Communication & Collaboration	2.00	5.00	3.96	.692	High
3. Digital Content Creation	2.00	5.00	3.93	.701	High
4. Digital Safety	2.00	5.00	3.98	.687	High
5. Digital Technology Problem Solving	2.00	5.00	3.83	.738	High
6. Digital Readiness Usage	1.67	5.00	3.95	.718	High

In Table 3, we investigate the mean self-assessment scores of how students perceive their English skill readiness toward these areas for the digital workplace. The findings reveal that students' preparedness for digital writing, listening, and speaking skills were at a moderate level. Nevertheless, under the subskill of digital reading skills, the mean scores are significantly higher, which implies a great

level of preparedness in the subskill. Of course, it was very apparent that when approached with the different English skills for the digital world, students were most competent in reading.

Table 3. English Skills

English Skills in a Digital Working Environment	Min.	Max.	Mean	S.td	Level
1. Digital Reading Skills	1.00	5.00	3.53	.797	High
2. Digital Writing Skills	1.00	5.00	3.22	.881	Medium
3. Digital. Listening Skills	1.00	5.00	3.30	.915	Medium
4. Digital Speaking Skills	1.00	5.00	3.12	.891	Medium

Discussion

The findings of this study indicate that students are well-equipped to meet the challenges associated with the 21st century, and possess high levels of digital literacy and English skills in a digital age. This is a positive sign, particularly considering how far HE has come not only in integrating digital competences and innovative learning frames into their programmes over the past years (De Freitas et al., 2016; Sepriyanti & Kustati, 2022). It is the high scores for digital communication, using information technologies and problem-solving that indicate students are becoming very adept at using technology to good effect both in their studies and in work. Much of this is down to a rapid move towards the use of digital platforms and online learning during and post-COVID-19 that has seemingly increased students' readiness for the digital world (Hadiyanto, Wulandari, et al., 2021; Samad & Munir, 2022).

On the other hand, although students are highly digitally literate overall—especially in matters of digital security awareness—the moderately high scores in digital numeracy indicate there are still issues. Numerical proficiency and data handling remain essential to success in technology-related fields, and that is one topic that needs to be addressed (Brady, 2011; Fathurahman et al., 2023).

Interestingly, students have shown solid digital reading competence but only fairly good writing, listening, and speaking English skills. This gap highlights that they are good at reading for information in web texts, but they can hardly speak and write well, especially in working workplace. This pattern is consistent with results from other research that has suggested that non-native English speakers are faster at acquiring passive rather than active language skills. Such restrictions might affect students' opportunities to find employment abroad or to work internationally, where the ability to communicate effectively in English is essential (Ashraf et al., 2017; Barragán Maldonado, 2020).

Hence, overall Indonesian students have corrected expectations or orientations toward 21st century skills and digital literacy but they still need a lot more to be fulfilled. Concerted efforts must be made to enhance digital literacy and the English communicative competence. Universities should consider adding data-driven learning, English-specific purposes in virtual learning environments, and cross-disciplinary task project-based learning to their curricula (Singh & Tiwari, 2022). Furthermore, it would be necessary for subsequent enquiry to examine how digital pedagogy and strategic leadership investment could support whole-institution digital capability and contribute to enhanced graduate employability.

This divergence shows that, though they are excellent at understanding information from web texts, they can barely speak and write well, especially in working places. This trend is consistent with the other studies that suggest that listening and reading skills are acquired more quickly by non-native English speakers than active language skills (Azir & Widi, 2021; Rika & Yuni, 2022). The constraints might reduce the students' chances to get a job in any overseas or international organization where good English speaking and writing skills are mandatory.

Students in Indonesia are making progress in their quest for 21st-century skills and digital literacy, yet there's still a lot of distance to cover. Specific actions are needed to improve digital literacy and English communication abilities. Data-driven learning, ESP in online context, as well as interdisciplinary task-based projects, may be considered by universities as applicable modules in future

curricula (Asrizal et al., 2022; Parmini et al., 2023; Rinekso, 2021). Furthermore, research in the future might investigate the extent to which digital pedagogies, combined with institutional co-investment, can nurture strong digital capabilities and, through this, contribute to enhancing graduate employability.

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