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21st Century Skills of Practice Teachers: Inputs to Curriculum Enhancement and Instructional Development

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A B S T R A C T

This descriptive-correlational research was conducted to determine students' 21st-century skills to help them be more effective, efficient, and productive in the ever-changing education landscape. The study's respondents were randomly selected student teachers during the school year 2022-2023 at the College of Education of Iloilo State College of Fisheries, a state higher institution in the Province of Iloilo, Philippines. The research instrument used to gather data was a researcher-made questionnaire with face and content validated by the five experts in the field of education and research. It was developed based on the Partnership for 21st Century Skills (P21). The results revealed that the respondents developed 21st-century skills at a level above average. Students generally possessed 21st-century skills needed to face the ever-changing demands of the modern work environment. Teacher education students have developed their 21st-century skills in terms of literacy and life skills. They have not fully mastered their learning skills. The development of learning skills helps students acquire the necessary literacy skills. Moreover, life skills can foster the acquisition of literacy and learning skills.

Keywords:21st-century skills, learning skills, literacy skills, life skills

1. Introduction

In this digital era where competition is growing, people are increasingly mobile, and the global economic center of gravity is changing at a speed not seen before. Students must acquire and develop new knowledge and skills to survive in these dynamic and virtual learning environments (VLEs) to prepare them to adapt to the ever-changing world. One way of responding to these challenges is a more robust competitive education to adapt to the changing environment and prepare them for success in school, work, and life. To learn effectively and live productively in the 21st century, they must learn and develop 21st-century Skills. These are skills that today's generations need to succeed in their careers during the Information Age.

The role of higher education institutions can not only be limited to imparting knowledge but also to maintaining a competitive economy and securing the dream of graduates to get jobs and become socially recognized and successful in their respective fields of endeavors (Menez, 2014).
Industrial revolution 4.0 impacted teaching and learning. E-learning tools offer opportunities for remote, self-paced learning. Teachers act as facilitators, practice organizational, collaborative, and time management skills, and develop reasoning and inferencing skills. Artificial Intelligence (AI) supports students' learning. Students will become more and more involved in forming their curricula. Conventional assessment platforms have become irrelevant and insufficient (Fisk, 2017).

Today's education landscape demands developing 21st-century skills indispensable for participation, achievement, and competitiveness in the global economy. Educational institutions have a critical role to play in developing those skills. The 21st century requires higher education systems to cope with the crucial global demands set for education and help students prepare for the future. Educational systems must develop students into 21st-century learners to achieve their full adult potential. Schools must develop students with a range and knowledge that facilitate mastery and application of English, mathematics, and other subjects. Furthermore, business and political leaders are increasingly asking schools to develop skills such as problem-solving, critical thinking, communication, collaboration, and self-management, often referred to as 21st-century skills (Pellegrino & Hilton, 2012).
The Glossary of Education Reform defines 21st Century Skills as knowledge, skills, work habits, and character traits. Educators, school reformers, college professors, employers, and others believed these skills are critical to success in today's world, particularly in collegiate programs and

contemporary careers and workplaces. All academic subject areas, educational, employment, and civic settings throughout a student's life can apply these skills.

The Partnership for 21st Century Skills (P21, 2007) is a joint government–corporate organization which lists three types of skills: learning skills (creativity and innovation; critical thinking and problem-solving; communication and collaboration), literacy skills (information literacy; media literacy; ICT literacy), and life skills (flexibility and adaptability; initiative and self-direction; social and cross-cultural skills; productivity and accountability; leadership and responsibility).

The rapid change in the economy and education influenced the development of 21st-century skills (Rutkowski, et al., 2011). These digital skills are technical, information, communication, collaboration, creativity, critical thinking, and problem-solving (Van Laar et al.,2017).
The gap between the skills people learn and their needs are becoming more apparent. According to the World Economic Forum report (New Vision for Education: Fostering Social and Emotional Learning Through Technology), traditional learning falls short of equipping students with the knowledge they need to thrive.

According to ACTRC (2015), daily life and work challenges have undergone a transformation brought about by rapid advances in technology and globalization. Many employers and educators have noted that a new set of skills is required to succeed in this world of new challenges. New solutions that need greater collaboration, flexibility, and innovation to assimilate a range of changing perspectives and new technologies replaced solutions that rely on fixed knowledge and linear thinking

To determine students' 21st-century skills that will help them become more effective, efficient, and productive citizens in the ever-changing education landscape, thus this study.

1.1. Statement of the Problem

This study will examine the 21st-century skills of students. Specifically, it sought to answer the following:
1. What is the level of 21st-century skills of students in terms of (a) learning skills, (b) literacy skills, and (c) life skills?
2. What is the level of learning skills of students in terms of (a) critical thinking and problem-solving; (b) creativity and innovation; (c) communication, and (d) collaboration?
3. What is the level of literacy skills of students in terms of (a) information literacy; (b) media literacy; and (c) technology literacy?
4. What is the level of life skills of students in terms of (a) flexibility and adaptability; (b) initiative and self-direction; (c) social and cross-cultural skills; (d) productivity and accountability; and (e) leadership and responsibility?
5. Is there a significant relationship between learning, literacy, and life skills?

1.2. Theoretical Framework

This study was anchored on the popular framework designed by the Partnership for 21st Century Skills (P21, 2007). The framework combines content knowledge, specific skills, expertise, and literacies students must master to succeed in work and life. P21 believes that the "base" of 21st-century learning is acquiring necessary academic subject knowledge. Schools must build on that base with additional skills, including learning, life, and literacy Skills.

2. Review of Related Literature

The Queensland Curriculum and Assessment Authority (2015) defined 21st-century skills as high-priority skills and attributes believed to be the most significant to help students and learners live and work successfully in the 21st century. Furthermore, Johnson (2009) stressed that 21st-century skills are not only more than technological literacy but also include critical thinking, problem-solving, communication, and teamwork, which are necessary to succeed in work and life. According to Moyer (2016) and Rotherham and Willingham (2009), these skills are essential for the success of curricular programs, student life, careers, work environment, and the student's academic life.

The information, media, and technology skills are competencies that learners can use to fact-check, verify and dissect information from different sources such as social media and the internet. They can use these essential skills to fight against misinformation and fake news.

Life and career skills are students' abilities that are useful as they enter the real world of work and navigate through life in the VUCAD2 (volatile, uncertain, complex, ambiguous, diverse, and disruptive) world. With the VUCAD2 world, students must be more equipped with the necessary life skills and career skills. Students must also obtain learning and innovation skills that are useful in this knowledge-based society and this complex digital world (Rogayan et al., 2021).

3. Methodology

This study utilized the descriptive-correlational research method. Descriptive research is the collection of information from a group of people to describe some aspects or characteristics of the population of which that group is a part (Fraenkel & Wallen, 2003). The correlation research method was used to determine the direction and extent of the relationship between variables of the population under study (Ardales,1992). It establishes the relationship between two or more variables studied without any attempt to influence them.

The study's respondents were randomly selected student teachers during the school year 2022-2023 at the College of Education of Iloilo State College of Fisheries, a state higher institution in the Province of Iloilo, Philippines.

The research instrument used to gather data was a researcher-made questionnaire with face and content validated by the five experts in the field of education and research. It was developed based on the Partnership for 21st Century Skills (P21). The skills include learning skills, literacy skills, and life skills. Learning skills include critical thinking and problem solving, creativity and innovations, communication, and collaboration. Literacy skills are composed of information literacy, media literacy, and technology literacy. Life skills consist of flexibility and adaptability, initiative and self-direction, leadership and responsibility, productivity and accountability, and social and cultural skills. Pilot testing results revealed that Cronbach Alpha Reliability Coefficient was .843 which indicates all items exhibit high levels of reliability.

The responses to each item were summed up, and the mean score was computed. The researcher utilized the following scale of means and their description to determine the level of 21st-century skills:

Means of Scale	Descriptive
3.40 – 4.00	Excellent
2.80 – 3.39	Above Average
2.20 – 2.79	Average
1.60 – 2.19	Low
1.00 – 1.59	Poor

Permission to conduct the study was obtained from the SUC President and Vice President for Academic Affairs offices and channeled through the Dean. When permission was granted, the researcher distributed the research instrument among the respondents through Google forms.

For descriptive analysis, the researcher utilized mean and standard deviation. For inferential statistics, the researcher used Pearson's r to determine the significance of the relationship between learning, literacy, and life skills.

4. Results and Discussions

The results inform us that the respondents possess 21st-century skills (M = 2.81, SD = .252) at a level above average. Results revealed that students' literacy skills (M = 2.98, SD = .286) and life skills (M = 2.81, SD = .344) are above average. The students had a moderate level of acquisition of learning skills (M= 2.64, SD = .292). These findings imply that students demonstrated the ability to explore and develop new ideas, intentionally apply sound reasoning processes, and frame, analyze and solve complex problems using appropriate mathematical tools. Moreover, students have an above-average ability to access, analyze, manage, integrate, evaluate, and create information in various forms using the right technology. Students exhibit average leadership skills, behave ethically, respect others, accept responsibility for personal actions, take the initiative to plan and execute tasks and interact productively as group members. Table 1 presents the results.

Table 1. Students' 21st Century Skills.

21st Century Skills	M	SD	Description
Learning Skills	2.64	.292	Average
Literacy Skills	2.98	.286	Above Average
Life Skills	2.81	.344	Above Average
Over-all Mean	2.81	.252	Above Average

Regarding learning skills, students have high collaboration skills (M = 2.97, SD = .494). The result suggests that students can work with others toward a common goal. Students can collaborate and share ideas and effort to complete a task or activity. They can work with other students to set goals and create a plan for the team, give feedback to peers or assess other students' work and assume shared responsibility for collaborative work,

Their creativity and innovation skills (M = 2.58, SD = .422), critical and problem solving skills (M = 2.53, SD = .478) and communication (M = 2.49, SD = .373) were average. Students have an average acquisition of skills related to inventiveness and innovation, rational thinking and problem-solving, and communication and teamwork. They need to improve their ability to generate and refine solutions to complex problems or tasks based on the synthesis, analyze and present what they have learned in new and original ways, and demonstrate originality and inventiveness. Students should master the skills to investigate questions without clear-cut answers, analyze, and evaluate different points of view or sources of information, interpret information, and draw appropriate conclusions based on evidence and reasoning. Table 2 shows the results.

Table 2. Students' Learning Skills.

Learning Skills	M	SD	Description
Critical Thinking and Problem Solving	**2.53**	**.478**	**Average**
investigate questions for which there are no clear-cut answers	2.40	.626	Average
analyze and evaluate different points of view or sources of information	2.47	.836	Average
Creativity and Innovations	**2.58**	**.422**	**Average**
generate and refine solutions to complex problems or tasks based on synthesis	2.55	.633	Average
analyze and present what I have learned in new and original ways	2.62	.527	Average
demonstrate originality and inventiveness	2.58	.629	Average
Communication	**2.49**	**.373**	**Average**
present and deliver oral presentation	2.55	.603	Average
share information through a variety of media, as well as orally and in writing.	2.42	.498	Average
communicate effectively in diverse environments	2.47	.690	Average
Collaboration	**2.97**	**.494**	**Above average**
work with other students to set goals and create a plan for the team	2.95	. 591	Above average
give feedback to peers or assess other students' work	3.02	.521	Above average
assume shared responsibility for collaborative work	2.95	.524	Above average

The study revealed that students have high levels of literacy skills such as technological literacy (M = 3.12, SD = .472), information literacy (M = 2.95, SD = .285), and media literacy (M= 2.89, SD = .301), as shown in Table 3. Almost all indicators were rated above average by the respondents. Students are high technology, information, and media literate. They use technology to research, organize, evaluate, and communicate information, use digital technologies, communication/networking tools, and social networks appropriately and select appropriate technology tools or resources for completing a task. Students can highly access the needed information effectively and efficiently, evaluate information critically and competently and use information accurately and creatively. They have extraordinary skills in understanding how and why media messages are constructed, utilizing the most appropriate media creation tools, and applying the fundamental understanding of the ethical/ legal issues on media access and use.

Table 3. Students' Literacy Skills.

Literacy Skills	M	SD	Description
Information Literacy	**2.95**	**.285**	**Above Average**
access the needed information effectively and efficiently	2.95	.356	Above Average
evaluate information critically and competently	2.93	.262	Above Average
use information accurately and creatively	2.96	.429	Above Average
Media Literacy	**2.89**	**.301**	**Above Average**
understand both how and why media messages are constructed	2.89	.315	Above Average
utilize the most appropriate media creation tools	2.85	.356	Above Average
apply fundamental understanding of the ethical/ legal issues on media	2.93	.378	Above Average

access and use			
Technology Literacy	**3.12**	**.472**	**Above Average**
use technology as a tool to research, organize, evaluate, and communicate information.	3.09	.519	Above Average
use digital technologies, communication/networking tools and social networks appropriately	3.20	.524	Above Average
select appropriate technology tools or resources for completing a task	3.05	.488	Above Average

As presented in Table 4, students are moderately flexible and adaptable. They possess average skills to adapt to change and new ways of working quickly and easily, learn new methods, procedures, or techniques and shift priorities in response to the demands of a situation. However, they have high initiative and self-esteem. They can look for new ways to learn, utilize time, manage work efficiently, and demonstrate a willingness to take risks. They have developed excellent leadership skills and are responsible. They go out of their way to serve those in need, evaluate a given situation, come to a well-reasoned conclusion, and inspire others to reach their very best through example and selflessness. Students are highly productive and accountable. They work positively and ethically, participate actively, be reliable and punctual, and prioritize, plan and manage work to achieve the intended result. Students are generally friendly. They can interact effectively with others, respect cultural differences, work effectively with people, and respond open-mindedly to different ideas and values.

Table 4. Students' Life Skills

Life Skills	M	SD	Description
Flexibility and Adaptability	**2.55**	**.609**	**Average**
adopt to change and new ways of working quickly and easily.	2.55	.689	Average
learn new methods, procedures, or techniques	2.51	.690	Average
shift my priorities in response to the demands of a situation	2.60	.830	Average
Initiative and Self-Esteem	**2.99**	**.509**	**Above average**
look for new ways to learn	3.04	.637	Above average
utilize time and manage work efficiently	2.96	.576	Above average
demonstrate willingness to take risks	2.96	.508	Above average
Leadership and Responsibility	**2.86**	**.404**	**Above average**
go out of my way to serve those in need	2.84	.462	Above average
evaluate a given situation and come to a well-reasoned conclusion	2.87	.432	Above average
inspire others to reach their very best via example and selflessness	2.87	.511	Above average
Productivity and Accountability	**2.91**	**.371**	**Above average**
work positively and ethically	2.98	.490	Above average
participate actively, as well as be reliable and punctual	2.85	.591	Above average
prioritize, plan and manage work to achieve the intended result	2.89	.497	Above average
Social and Cross-Cultural Skills	**2.76**	**.443**	**Average**
interact effectively with others	2.73	.525	Average
respect cultural differences and work effectively with people	2.78	.567	Average
respond open-mindedly to different ideas and values	2.78	.498	Average

Results revealed that there is a high positive and significant relationship between learning and literacy skills (r = .723, p =.000). Further, moderate positive and significant relationships were noted between life and literacy skills (r = .438, p = .000) and between learning and life skills (r = .348, p = .009).

Table 5. Relationships between Learning Skills, Literacy Skills and Life Skills

SKILLS	R	sig
Learning Skills	.348*	.009
Life Skills		
Learning Skills	.723**	.000
Literacy Skills		
Life Skills	.438**	.000
Literacy Skills		

* p < .05, ** p < .001

5. Conclusions

Students generally possessed 21st-century skills needed to face the ever-changing demands of the modern work environment. Teacher education students have developed their 21st-century skills in terms of literacy and life skills but have not fully mastered their learning skills. They can very well work in a team and with other people. However, enhancing their critical thinking, problem-solving, creativity, innovation, and communication skills are necessary.

Learning skills is related to literacy skills. Students learning skills facilitate the development of literacy skills. The development of learning skills helps students acquire the necessary literacy skills. Moreover, life skills can foster the acquisition of literacy and learning skills.

6. Recommendations

The curriculum should prepare students to thrive in the future. Schools need to prioritize the skills that will be in the most significant demand, such as those deemed to be most important, to face life's challenges beyond school. Adapt and develop new ways of teaching and learning that reflect a changing world in the revision of the curriculum.

The curriculum may provide industry-specific or technical skills to help students more easily identify problems requiring critical thinking and analysis by providing research, inferences, and problem-solving activities—a focus on inquiry and student-led investigations. Performance-based activities and assessments are integrated into the curriculum to meet 21st Century expectations.

Create an idea-friendly environment that enhances creativity, innovation, communication, and collaboration. Integrate courses and instructional activities that will equip students to be academically, emotionally, and socially prepared to live and work in a diverse world.

Strengthen international relations activities and linkages to increase students' mobility to meet the demands of globalization.

Provision of seminars and training on blended learning, media and information, and communications technology to prepare students to be successful in a technology-driven work environment.

The needs of the community be a part of the basis in reviewing the curriculum to make necessary enhancements in terms of increasing extension and training activities in the communities and strengthening local government unit partnerships.

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