

Pandemic Effects on 21st-Century Skills Utilization Among Business and Management Students: Basis for Skills Enhancement

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ABSTRACT

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The outbreak of COVID-19 pandemic severely affected international education systems, with advocated for 21st -century skills among tertiary students remaining principles at risk. One of the research objectives was to explore how the outbreak (of pandemic) influenced Business and Management students—from Palawan State University–Palawan College of Arts and Trades (PSU-PCAT)—in using 21st-century skills of learning, earning basis for their improvement. A descriptive-quantitative research design was used, using a validated researcher-made questionnaire based on the 21st century skills framework (Learning, Literacy and Life Skills). Respondents were chosen through proportional stratified random sampling and totaled 310 students (50% from each program) during the First Semester of Academic Year 2023–2024. Frequency, percentage, and weighted mean were used to analyze data.



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The results showed that an overall mean of students agreed regarding a positive use of 21st-century skills across all subdomains: a mean score of 2.78 in Learning Skills, 2.73 in Literacy Skills and 2.78 in Life Skills was found. Learning and Life Skills domain received the highest mean scores among the three categories, indicating that students perceived stronger growth in their critical thinking, adaptability, leadership abilities, and problem solving. These results suggest that, despite the challenges of emergency remote learning, students perceived important 21st century skills were maintained over the pandemic period. The findings highlight the importance of focused skills development initiatives that can enhance students' skillsets from moderate agreement with abilities to mastery in practical digital literacy and applied critical inquiry. The results lend empirical insight for advancement of curricula and institutional strategies to strengthen not only career readiness but also long-term employability in the post-global pandemic educational environment.

INTRODUCTION

The accelerated progress of the Fourth Industrial Revolution (4IR) and increasing requirements of a worldwide workforce have placed 21st-century skills at the forefront of priorities for educational reform around the globe (Bühler et al., 2022; González-Pérez & Ramírez-Montoya, 2022). These skills — typically grouped into categories like Learning Skills, Literacy Skills, and Life Skills (critical thinking, creativity, communication, collaboration, digital literacy ability to adapt and lead) These competencies are universally acknowledged as critical in helping graduates to respond to uncertainty, address complex challenges, and stay employable in rapidly changing professional landscapes. Thus, higher education institutes are now expected to guarantee graduates not only scholarly understanding but also transferable cognitive and socio-emotional competencies following the Education 4.0 frameworks.

The advent of the COVID-19 pandemic severely interrupted this trajectory. The worldwide health emergency forced institutions to suddenly migrate from traditional in-person teaching into emergency remote instruction alongside digital formats (Sarier & Uysal, 2022). This abrupt pedagogical shift initiated a catapulting of existing pressures on universities to produce work-ready graduates, all in the context of limited technological, economic and social conditions. Research highlights that students were expected to have improved skills outside of content delivery, needing higher levels of self-regulation, digital literacy, adaptability and collaborative skills to maintain academic performance in remote learning spaces (Trevallion et al., 2021; Pathiranage & Karunaratne, 2023). The

pandemic did not just interrupt instruction; it was a stress test of what 21st-century skills look like in action, under crisis conditions.

The pandemic's impact on skill development in the context of ASEAN was exacerbated by structural inequalities and technological disparity. Research conducted in Southeast Asia shows uneven access to digital infrastructure, limited institutional readiness, and varying levels of student preparedness for online learning (Ramasamy et al., 2021; Mailizar et al., 2020). In the Philippines, for example, Rotas and Cahapay (2020) reported significant problems faced by university students in relation to their unstable internet connection, unavailability of digital devices, financial shortages and decreased engagement resulting in less need for developing or using higher order skills. The implication of these findings is that even if the 21st-century competencies are globally endorsed, their real-world inculcation during the pandemic were influenced by national socio-economic realities in consideration to those developing nations (DAOs) especially within ASEAN group.

In part due to international calls for a relevant educational system, the Philippines enacted Republic Act No. 10533 or the Enhanced Basic Education Act of 2013 which established K to 12 Program as part of our educational system. An underlying goal of the reform was to embed 21st-century skills throughout successive levels of curriculum in order that graduates be prepared for post-secondary education and work (del Valle, 2021). The shift to modular, online learning during the pandemic has been challenging for the effective delivery of these competencies, especially in practice-oriented and performance-focused disciplines.

This of course remains a big concern for the Business & Management students especially, since their academic preparation is directly linked to the industries that are currently going through rapid digital transformation and economic volatility. In a contemporary business context, advanced level critical thinking skills, information analysis capabilities, adaptability matures and leadership along with digital style communication is essential (Dumitru & Halpern, 2023). Furthermore, in a digital world of post-truth, having skills to examine critically and think through the information and media content one reads has become invaluable for ethical and strategic decision-making (Chinn et al., 2020; Ejue & Etim, 2024). Although studies confirm that specific competencies can be maintained in online and experiential learning models (Kim et al., 2025; Webb et al., 2021), little research has examined the challenges of students attending geographically isolated state universities during emergency remote education, nor whether these students have indeed capitalized on these skills.

While there exists a vast body of international and regional literature on

education system alterations due to pandemic conditions, the empirical evidence on discipline-specific approaches to 21st-century skill utilization among Philippine state universities in island provinces like Palawan are still under-explored. ASEAN literature on the topic mostly focus on either technology readiness or overall student adjustment, with little consideration of integrated assessments of Learning, Literacy and Life Skills as a holistic model. In addition, very few studies have quantitatively assessed students' perceived use of these competencies rather than simply exposure to instruction. This gap highlights the need for focused, discipline-specific exploration of whether intended outcomes from curriculum reforms were maintained amidst COVID-19 crisis-led educational restructuring.

Hence, this research explores the perceived impact of the COVID-19 pandemic on the use of 21st-century skills among Business and Management students from Palawan State University–Palawan College of Arts and Trades (PSU-PCAT). The analysis of students' perceptions across Learning Skills, Literacy Skills and Life Skills is therefore a novel empirical contribution upon which targeted skills enhancement initiatives can be built to boost institutional responsiveness to recovery plans in education and the labor market after the pandemic.

OBJECTIVES OF THE STUDY

The study aimed to (1) identify the respondents' profile, (2) determine the level of satisfaction of the respondents in terms of learning skills, literacy skills, and life skills; and (3) recommend intervention programs for the improvement of the Senior High School curriculum.

By exploring these objectives, this study aims to provide valuable insights into the effects of the pandemic on the use of 21st-century skills as perceived by business and management students at PSU-PCAT, serving as a basis for skills enhancement and further improvements in the educational system. Overall, the students agreed that they had been given activities and teachings related to various aspects of media literacy. They have developed skills in identifying different types of media, framing questions, locating and collecting information, analyzing and interpreting information, and using media for learning purposes. The majority of the respondents agreed with the statements, suggesting a positive perception of their learning experiences in developing these literacy skills.

METHODOLOGY

Research Design

This investigation employed a descriptive-quantitative research design to systematically assess and describe the current perceptions of Business and Management students regarding their utilization of 21st-century skills following the pandemic-induced shift in educational modalities. This design is appropriate as it involves collecting quantifiable data to characterize the student population's profiles, measure the frequency of skill usage, and determine overall satisfaction levels without manipulating experimental variables.

Participants

The respondents in this quantitative study were tertiary-level students enrolled in the Business and Management programs at the Palawan State University - Palawan College of Arts and Trades (PSU-PCAT), during the First Semester of the 2023-2024 academic year. The target population consisted of students from all year levels across four distinct programs: Bachelor of Science in Tourism Management, Bachelor of Science in Hospitality Management, Bachelor of Science in Business Administration, and Bachelor of Science in Entrepreneurship.

A Proportional Stratified Random Sampling technique was employed to determine the sample size and ensure proportional representation across all academic programs. This method involved treating each program (course) as a separate stratum. To achieve a sufficiently representative sample while managing logistical constraints, 50% of the total student enrollment from each stratum was selected as the sample size for that specific program.

The decision to choose 50% of the total enrollment from each program was based on balancing representativeness with feasibility for data collection and analysis. As the population ($N = 618$) was of a moderate size, and respondents were institutionalized adults who would be easy to access, a relatively large sampling fraction was deemed acceptable in order to achieve statistical reliability and low levels of sampling error. Based on probability sampling principles, a higher percentage of participants bolsters external validity and increases the precision of descriptive estimates whether or not subgroup comparisons are planned (Rahman et al., 2022). Proportional stratified sampling was adopted using a high sampling fraction to ensure balanced representation within programs while maintaining sufficient analytical power for correlational analysis.

The total population across the four programs was calculated, and the resulting sample distribution is presented in the table below:

Table 1
Distribution of Respondents

Course	No. of students enrolled	Number of Respondents per program	Percentage
BS Tourism Management	102	51	50%
BS Hospitality Management	239	120	50%
BS in Business Administration	205	103	50%
BS Entrepreneurship	72	36	50%
Total Respondents		310	

Based on the proportional stratified sampling, the total number of respondents for the study was 310 students, ensuring that the findings accurately reflect the perceptions of students across all four identified Business and Management programs at PSU-PCAT.

Instrumentation

The instrument was developed based on a comprehensive review of literature pertaining to the Partnership for 21st Century Skills framework, which categorizes competencies into Learning, Literacy, and Life Skills. To ensure the instrument's content validity and relevance, it was subjected to critical evaluation by a panel of three (3) experts specializing in *Educational Measurement, Business Management, and Research Methodology*. Their feedback informed the refinement of the item phrasing and structure before deployment. Following expert validation, the questionnaire underwent a pilot test with a group of tertiary students who shared similar characteristics with the actual sample but were not included in the final respondent pool. The reliability of the instrument's quantitative sections (Parts II, III, and IV) was established using Cronbach's Alpha reliability coefficient, thus confirming the instrument's stability and suitability for the main data collection.

The final instrument consisted of five (5) distinct parts designed to gather both quantitative and qualitative data. Part I served to profile the respondents, gathering essential demographic information such as age, gender, year level, and specific program of enrollment, all of which are necessary inputs for the subsequent correlational analysis. The core of the instrument consisted of Parts II, III, and IV, which utilized a uniform 5-point Likert-type scale to quantitatively measure the respondents' self-perceived satisfaction with and utilization of the three major categories of 21st-century skills. Specifically, Part II focused on the Learning Skills domain. Part III addressed Literacy Skills, covering competencies such as information literacy, media literacy, and technology literacy, which

became particularly relevant during the transition to distance learning. Finally, Part IV evaluated the Life Skills domain, assessing attributes such as flexibility, leadership, and productivity. The interpretation of the quantitative scores in these three core sections was based on the following weighted metrics:

The instrument concluded with Part V: Suggestions for Enhancement. This section incorporated an open-ended question to capture qualitative, free-form data, soliciting candid suggestions and recommendations from the students. The primary purpose of this final part was to gather specific, actionable insights to improve the curriculum and skill-building activities, with a targeted focus on strengthening the foundation of the 21st-century skills deemed necessary for successful tertiary education and subsequent employment.

Item level analysis was also performed during pilot testing phase, along with calculating Cronbach's Alpha for testing internal consistency reliability. Item–Total Correlation Coefficients: The corrected item–total correlation coefficients were inspected in order to determine how strongly each item contributed to its domain (Learning Skills, Literacy Skills and Life Skills) as a whole. Dropped items had low item–total correlation values and were evaluated for possible ambiguity, redundancy, or misfit with the construct intended to be measured. This ensured that every retained variable reflected an acceptable correlation with the composite scale score, thus further enhancing construct reliability and reducing measurement error. The use of both Cronbach's Alpha and item–total correlation analysis provided even greater psychometric robustness to the instrument before it was administered to the main sample.

Ethical Consideration

This study was designed in accordance with relevant guidelines and regulations. When conducting the data collection, official consent was acquired from the University administration as well as from heads of departments of the Business and Management programs of Palawan State University–Palawan College of Arts and Trades (PSU-PCAT) before proceeding on with data gathering. Participation in this study was voluntary, and informed consent was obtained from each respondent prior to completing the questionnaire. The consent form specifically described the purpose of the study, the procedures involved, the anticipated duration and their right to withdraw at any time without penalty.

No personally identifiable information was collected to maintain confidentiality and anonymity. Responders were coded and maintained with high confidentiality, and data are only to be used for academic and research purposes. All collected data were stored securely and only the researchers had access to them. This study was conducted in accordance with institutional research ethics

guidelines and followed ethical principles of respect for persons, beneficence, and justice per ethical standards for social science research.

Data Analysis

The use of descriptive statistics—specifically Frequency, Percentage, and Weighted Mean—was essential in this study for summarizing and interpreting the quantitative data gathered from the student respondents. Frequency Count and Percentage were utilized as the foundational tools to accurately present the demographic profile of the sample, characterizing the distribution of respondents across various categories such as course, year level, age, and gender. This enabled a clear, empirical description of the studied population. For the core research questions concerning the students’ self-assessed level of satisfaction and perceived utilization of 21st-century skills, the Weighted Mean was computed. The Weighted Mean served as the measure of central tendency, providing an average score for each skill item and each skill domain. By interpreting these mean scores against the established 5-point Likert scale, the researchers could quantitatively determine the overall perceived level of agreement or disagreement, thereby establishing the general trend and magnitude of skill usage among the Business and Management students. The calculation of an overall assessment involves providing a singular, comprehensive metric of the collective perception regarding the pandemic’s effects on students’ skill development.

RESULTS AND DISCUSSION

Table 2
Profile of the Respondents

Course	Number of Students		Percentage
	Enrolled	Number Of Respondents	
Bs Tourism Management	102	51	50%
Bs Hospitality Management	239	120	50%
Bs In Business Administration	205	103	50%
Bs Entrepreneurship	72	36	50%
Total Respondents		310	

Presented in table 2 are the findings for the demographic profile of the respondents, which indicated that the survey had a total of 310 respondents. Each program or course had 50% of its enrolled students participating in the survey, resulting in an equal representation across all programs.

The findings indicate that the survey achieved an equal representation of respondents from each program, with half of the enrolled students from each program participating in the survey. This ensures a balanced and representative sample for analysis and insights.

Profile of the Respondents

It was observed that the survey achieved an equal representation of respondents from each program, with 50% of the enrolled students participating in the survey across all programs. This suggests that efforts were made to ensure a balanced sample, allowing the findings to be generalized to the entire student population in the respective programs.

The equal participation rate across programs has several implications. First, it suggests that the survey results are representative of the perspectives and experiences of the students in each program. Equal representation increases the validity of the findings and enables comparisons and analysis among the different programs.

Secondly, having a representative sample from each program enables a comprehensive analysis of the perceptions and experiences of students in various fields of study. It provides insights into the specific needs, challenges, and strengths within each program, which can inform curriculum development, teaching methodologies, and support services tailored to the unique requirements of each discipline.

Furthermore, by achieving an equal representation of respondents, potential biases related to program size or popularity are mitigated. This ensures that smaller programs receive the same level of attention and consideration in terms of understanding student prospects and addressing their needs.

The successful proportional stratification of the sample aligns with established quantitative research principles emphasizing external validity and statistical power. Employing stratified random sampling ensures that critical subgroups are adequately represented in the final sample (Rahman et al., 2022). This methodological choice effectively mitigates selection bias often associated with non-proportional sampling, where the findings from a much larger stratum could disproportionately skew the overall results, potentially leading to inaccurate conclusions about the smaller strata. The proportional representation across all programs not only enhances overall reliability but also facilitates robust comparative analysis, which is necessary to accurately identify discipline-specific needs for skills enhancement programs. This ensures that interventions are tailored to the unique requirements of each business discipline.

Table 3*Perceptions on the Use of the 21st-Century Skills in terms of Learning Skills*

Learning Skills	Mean	Verbal Interpretation
1. We were taught to understand the links between ideas.	3.2	AGREE
2. We were exposed to activities that will help us determine the importance and relevance of arguments and ideas.	2.79	AGREE
3. We were taught to recognize build and appraise arguments.	2.69	AGREE
4. We were given the different task that will help us identify inconsistencies and errors in reasoning.	2.8	AGREE
5. We were taught how to approach problems in a consistent and systematic way.	2.89	AGREE
6. We were exposed to reflect on the justification of our own assumptions beliefs and values.	2.57	AGREE
7. We were given activities that will help us think about a topic or issue in an objective and critical way.	2.79	AGREE
8. We were taught to identify the different arguments there are in relation to a particular issue.	2.77	AGREE
9. We were given the task to evaluate a point of view to determine how strong or valid it is.	2.77	AGREE
10. We were given an activity that will recognize any weaknesses or negative points that there are in the evidence or argument.	2.8	AGREE
11. We were taught to provide structured reasoning and support for an argument that we wish to make	2.77	AGREE
12 We were taught to notice what implications there might be behind a statement or argument.	2.78	AGREE
Overall Assessment	2.78	AGREE

The data provided in Table 2 indicate that the respondents generally agreed with the statements related to learning skills. The mean scores for all the learning skills range from 2.57 to 2.89, with an overall assessment mean of 2.78, which falls under the “Agree” category based on the given scale.

The respondents’ perceptions of the use of 21st-century skills in learning indicate that, overall, the students agreed that they have been taught and exposed to various skills and activities related to understanding, analyzing, and evaluating arguments, as well as problem-solving approaches. The majority of the respondents agreed with the statements, suggesting a positive perception of their

learning experiences in developing these skills.

Perceptions on the use of 21st Century skills in terms of Learning Skills

Table 3 shows that respondents believe they have been exposed to, equipped with, and taught a variety of skills and activities that have aided their development in areas such as critical thinking, problem solving, and argumentation.

The mean scores, ranging from 2.57 to 2.89, with an overall assessment mean of 2.78 (falling under the “Agree” category), indicate a positive perception among students towards their learning experiences in acquiring and applying these skills. These results were aligned with the emphasis placed on 21st-century skills in education.

The positive perception of the respondents towards learning skills has implications for curriculum design, teaching methodologies, and assessment practices. It implies that incorporating activities and tactics that encourage critical thinking, problem-solving, and argumentation can enhance student engagement, motivation, and learning outcomes.

Providing students with opportunities to participate in activities that stimulate analysis, assessment, and reflection can help them think critically, make informed decisions, and effectively convey their ideas.

The observed “Agree” level regarding the utilization of Learning Skills is highly relevant and aligns with studies on educational resilience during disruption. Research during the pandemic confirmed that while physical engagement shifted, the core importance of critical thinking and complex problem-solving remained non-negotiable for academic and career continuity (Salama & Patil, 2025). For Business and Management students specifically, this positive perception may be attributed to the curriculum’s heavy reliance on case study analysis, strategic decision-making exercises, and reasoned argumentation—activities that often translate effectively to online or modular assignment formats where asynchronous reflection is possible (Kim et al., 2025). The ability to analyze complex scenarios and articulate reasoned solutions is a required competency for employability in the modern, disruptive business landscape (Dumitru & Halpern, 2023). Therefore, the perceived positive application of these skills by PSU-PCAT students suggests that the institution’s delivery, even under duress, managed to sustain the development of these essential cognitive abilities, confirming the efficacy of the curriculum in prioritizing foundational learning skills (Johnson & Christensen, 2020). This positive perception has significant implications for enhancing curriculum design and teaching methodologies, highlighting the success of activities that stimulate analysis, assessment, and reflection in fostering critical thought and effective communication.

Table 4*Perceptions on the Use of the 21st-Century Skills in terms of Literacy Skills*

Literacy Skills	Mean	Verbal Interpretation
1. We were given activities that will teach us the ability to identify different types of media	2.84	AGREE
2. We were given task that will teach us to frame and clarify questions	2.67	AGREE
3. We were taught to locate and collect information from a range of sources	2.8	AGREE
4. We were exposed to learn to organize information and represent it in ways suited both to the type of information and to their purposes	2.68	AGREE
5. We were taught how to analyze and interpret information judge its quality and decide what conclusions or inferences might reasonably be drawn from it	2.78	AGREE
6. We were given activities that will teach us on how to use and share information with others	2.62	AGREE
7. Evaluated media through in-class or take-home exercises.	2.52	AGREE
8. We were allowed to “learn by doing” studying and creating a range of products from print ads to television scripts.	2.77	AGREE
9. We were taught the relevance of media literacy into different subjects as a catalyst for interdisciplinary learning.	2.77	AGREE
10. We were taught to engage our favorite media for learning purposes.	2.75	AGREE
Overall Assessment	2.73	AGREE

Based on the data provided, the findings indicate that the respondents generally agreed with the statements related to literacy skills. The mean scores for all the literacy skills items range from 2.52 to 2.84, with an overall assessment mean of 2.73, which falls under the “Agree” category based on the given scale.

The perception of the respondents on the use of the 21st century skills for literacy skills indicates that, overall, the students agreed that they have been given activities and teachings related to various aspects of media literacy. They have developed skills in identifying different types of media, framing questions, locating and collecting information, analyzing and interpreting information, and

using media for learning purposes. The majority of the respondents agreed with the statements, suggesting a positive perception of their learning experiences in developing these literacy skills.

Perceptions on the use of the 21st Century skills in terms of Literacy Skills

The findings suggest that the respondents generally agreed with the statements related to literacy skills. This indicates that the students perceived that they have been exposed to activities and teachings that enhance their skills in media literacy and information processing.

The mean scores ranging from 2.52 to 2.84, with an overall assessment mean of 2.73 (falling under the “Agree” category), indicate a positive perception of the students towards their learning experiences in developing literacy skills. These findings align with the importance of media literacy in the 21st century, where individuals need to critically analyze and interpret information from various sources.

The positive perception of the respondents towards literacy skills has implications for both educators and students. It suggests that integrating media literacy activities into the curriculum can equip students with the necessary skills to navigate and critically engage with media content. By developing skills in information processing, questioning, and analyzing media messages, students can become more discerning consumers of information and active participants in the digital landscape.

This finding strongly supports the notion that digital and information literacy skills are essential for immediate survival and success in emergency remote learning settings. The abrupt shift to modular and online platforms compelled students to independently source, evaluate, and process information from various digital sources, thereby requiring the immediate practical application of these skills (Webb et al., 2021). Literature confirms that in the Fourth Industrial Revolution and a post-truth era, the capacity to critically analyze and interpret information—which includes questioning, assessing credibility, and understanding media messages—is fundamental for informed decision-making in both academic tasks and professional business environments (Chinn et al., 2020; Ejue & Etim, 2024). The perceived competence in Literacy Skills among the PSU-PCAT Cuyo students indicates that the curriculum’s emphasis on information management and the necessity of navigating digital content during the crisis effectively fostered their development. This suggests that integrating robust media and digital literacy activities into the regular curriculum can equip future business students with the necessary cognitive tools to become discerning consumers of information and active participants in the rapidly evolving digital

landscape (Raharjo et al., 2024).

Table 5
Perception on the Use of the 21st Century Skills in terms of Life Skills

Life Skills	Mean	Verbal Interpretation
1. We were taught to adapt to different situations.	2.8	AGREE
2. We were given a different task to develop our leadership qualities	2.77	AGREE
3. We were given activities that would showcase our initiative	2.77	AGREE
4. We were exposed to different events that can develop our social skills	2.78	AGREE
5. We were given activities that will enhance our productivity	2.78	AGREE
Overall Assessment	2.78	AGREE

The findings suggest that the respondents generally agreed with the statements related to life skills and the mean scores range from 2.77 to 2.80, with an overall assessment mean of 2.78.

They agreed that they have learned to adapt to different situations, develop leadership qualities, showcase initiative, enhance social skills, and increase productivity. Overall, the majority of the respondents agreed with the statements, indicating a positive perception of their experiences in utilizing 21st-century life skills.

Perceptions on the use of the 21st Century skills in terms of Life Skills

The findings indicate that the respondents generally agreed with the statements related to life skills and their perceptions of using 21st-century skills. The mean scores ranging from 2.77 to 2.80, with an overall assessment mean of 2.78 (falling under the “Agree” category), suggest a positive perception among the respondents regarding their development of life skills.

The respondents’ agreement with the statements reflects their belief that they have been provided with opportunities to learn and develop essential life skills. These skills include adaptability, leadership qualities, initiative, social skills, and productivity enhancement. The respondents’ positive perception indicates that they view their educational experiences as effective in fostering these skills, which are crucial for success in the 21st century.

Related studies and literature emphasize the importance of life skills

in preparing individuals for personal and professional success (Jeyapriya & Jayachithra, 2023; Napolitano et al., 2021). In line with that, the World Economic Forum's Future of Jobs report (2020) identifies several key skills, including adaptability, leadership, initiative, and social skills, as critical for thriving in the rapidly changing job market. The findings of the current study align with these broader skill requirements and suggest that respondents perceive their educational experiences as equipping them with the necessary 21st-century life skills.

These findings have major consequences for both instructors and students. Educators can leverage the positive perception of students by further integrating activities, projects, and experiences that promote the development of life skills (Ghosheh Wahbeh et al., 2021). The consequences of these findings are substantial for both educators and students. Providing students with opportunities to engage in real-world scenarios, cooperate with their peers, and take on leadership responsibilities can enhance their proficiency in these skills.

For students, recognizing the value of life skills and their positive perception of their development can motivate them to actively participate in activities that foster these skills (Zamiri & Esmaeili, 2024). It can also encourage them to seek further opportunities for growth and development in areas such as adaptability, leadership, initiative, social skills, and productivity enhancement.

Although the findings suggest a generally favorable perception of 21st-century skill utilization, important caveats need to be taken into consideration when interpreting the results based on study methodological limits. Due to the self-reported nature of included data, results may be subjected to social desirability bias if respondents overestimate their exposure and development of certain competencies. In addition, they use a descriptive-quantitative design that makes it impossible to establish causal relations between the pandemic and actual acquisition of skills. Using weighted mean gives us an idea on the central tendency; however, since no inferential statistical testing was performed, we could not explore further to examine what statistically significant differences exist among programs or year levels. Moreover, the clustering of responses within the "Agree" category across all domains may suggest a central tendency effect whereby moderate satisfaction was expressed rather than strong, exceptional skills mastery. These methodological considerations provide an impetus for the design of future mixed-methods or longitudinal studies to ascertain whether perceived utilization correlates with measurable competency performance by attitude scaling.

The findings have substantial implications from the perspective of business education. As you know the fields of Business and Management are inherently practical, bringing into play analytical reasoning capability, strategic decision-

making skills, management abilities for working in teams as well as across functions, leadership skills and digital communication competencies. While students indicated agreement with exposure to these skills, moderate mean scores indicate that efforts for enhancement should focus more on application at the level of mastery than mere exposure. Enhancing curricular inclusion of experiential learning including simulation-based decision-making tasks, digital entrepreneurship projects, co-curricular case competitions and real-world solicitations to solve industry problems can be explored. Deepening alignment between academic assignments and real-life business problems would guarantee that 21st-century competencies are not just seen but actually applied. As organizations begin to pivot in a post-COVID economic environment, an ability to execute tools and applications that empower teams will be critical competitive advantages; as such, business education must proactively engineer learning spaces that take relatively low-level competence of such tools and push them all the way to executive readiness.

CONCLUSION

The study was conducted to assess the perceived utilization of 21st-century skills (Learning Skills, Literacy Skills and Life Skills) among Business and Management Students of Palawan State University–Palawan College of Arts and Trades (PSU-PCAT) amidst the pandemic where transition from face-to-face classes into remote learning and modular learning. Findings indicated that respondents tended to agree that they were exposed to and able to use these competencies, as all three domains received moderate mean scores in the “Agree” range.

While the results imply that the curriculum managed to sustain foundational 21st-century skill development during the disruption, it is worth noting that responses were clustered around moderate levels of agreement which point to a need to move beyond exposure toward mastery and applied proficiency. Affected outcome suggests an opportunity to enrich the curriculum, especially by intensifying experiential learning and stronger ways of teaching such as simulation-based business decision making, digital entrepreneurial projects in teammates, interdisciplinary cases cross-analyses between courses or other departments, leadership immersion activities and organized integrations of digital literacy in multiple student courses.

The findings inform broader efforts toward educational reform by establishing that curriculum alignment with 21st-century competencies must be manifested at the student level, not only in policy but also in practice. Against the backdrop of

the Philippines' K–12 reform agenda and Education 4.0 frameworks, this study reinforces the role of institutional resilience and adaptive design in curricula of geographically isolated state universities, particularly during a crisis. The study enriches our understanding on post-pandemic curriculum recalibration for the purpose of developing graduate employability, digital readiness and sustainable long-term workforce competitiveness through establishing a data-driven basis for identifying specific domains in need of further strengthening.

Finally, further incorporation of Learning, Literacy and Life Skills through the applied Business and Management framework leads to graduates who do not only react to crises but develop solutions that will allow them to generate revenue in the future amidst predicted economic evolution

TRANSLATIONAL RESEARCH

The discoveries build upon past descriptive analysis in a way which provides the groundwork for implemental educational enhancements at both institutional and policy levels. Through recognizing that students “agree” with their exposure to 21st century Learning, Literacy and Life Skills but have moderate levels of perceived mastery, the study calls attention to the need for moving from activity-based competency exposure to systematic competency growth.

Institutionally, the results can help inform curriculum policy development in PSU-PCAT through providing justification for integrating measurable 21st Century skill outcomes across course syllabi. Performance-based assessment rubrics that are used to evaluate Learning, Literacy and Life Skills domains may be adopted by departments so that specific competencies can not only be introduced but evaluated in the form of applied outputs including case analyses, business simulations, digital marketing projects and strategic decision-making exercises. Similarly, this alignment allows for robust internal quality assurance mechanisms and coherence in national higher education reforms.

The results also provide a rationale for implementing targeted digital learning tools and faculty training programs. Research-based models of digital pedagogy, experiential virtual simulations, and technology-enhanced assessment strategies can prepare faculty with the advanced techniques needed to enrich student competency application. Similar tides may shift institutionalization of student-centric digital literacy enhancement programs — such as information verification, ethical use of media (ingenuity), collaborative platforms and tools for productivity to be made into co-curricular training initiatives.

For wider dissemination of the study findings, they might be disseminated via academic forums, institutional workshops, curriculum review seminars and

faculty development conferences. These results could be shared at university-wide in-services—facilitating interdisciplinary engagement around renewing 21st-century skill-pedagogy partnerships. The results could also influence institutional-level policy discussions in colleges and universities that address post-pandemic instructional resilience and strategic educational innovation.

Ultimately, this translational framework helps guarantee that the research acts in not only a descriptive role of student perceptions but also as a tactical tool for supporting curriculum revision, digital reformation and institutional capacity building. The study effectively binds its empirical findings to policies that can be altered, course improvements, and training programs to further the sustainable skills-oriented higher education reform post-pandemic.

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