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The Educational Technology for 21st Century Learners' Academic Resiliency in Immaculada Concepcion College

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Abstract

This study explores the role of educational technology in strengthening the academic resiliency of 21st-century learners at Immaculada Concepcion College. The purpose of the research is to determine how digital tools, online learning platforms, and interactive resources help students adapt to academic challenges, stay motivated, and enhance their learning performance. A qualitative research design was utilized, employing purposive sampling of junior high school students who actively use educational technology in their learning. Data were collected through interviews and analyzed through thematic coding to identify common patterns in student experiences. Results revealed that technology supports academic resiliency by providing

flexible access to learning materials, improving understanding through multimedia resources, increasing engagement, and promoting independence and self-discipline. Students also reported better problem-solving capabilities and sustained motivation due to technology-based learning support. The study concludes that educational technology significantly contributes to learner adaptability and persistence, and it recommends strengthening digital literacy programs, enhancing technological infrastructure, and offering continuous support to educators and students to further develop resilient, future-ready learners.

Keywords: 21st Century Learner, Technology, Education, Academic Resiliency and Information and Communication Technology

1. Introduction

1.1 Context and Rationale

Education in the 21st century is being reshaped by rapid technological advancements that continuously influence how learners acquire knowledge, develop skills, and overcome academic challenges. The integration of educational technology in classrooms has transformed traditional teaching and learning processes into dynamic, interactive, and learner-centered experiences. From digital platforms, online learning management systems, and interactive applications to collaborative tools and virtual classrooms, technology has become an essential component of modern education. These innovations do not only enhance learning outcomes but also support the development of critical thinking, creativity, problem-solving, and communication skills—competencies that are vital for 21st-century learners.

One of the pressing issues in contemporary education is the growing demand for academic resiliency, which refers to the learners' ability to adapt, persevere, and succeed despite academic difficulties and challenges. With the rise of remote and blended learning environments, particularly heightened during the COVID-19 pandemic, the role of technology in fostering resilience among students has become more evident. Educational technology provides diverse opportunities for students to engage in self-directed learning, access vast learning resources, and receive immediate feedback, which can strengthen their confidence and persistence in addressing academic tasks.

At Immaculada Concepcion College, like in many other educational institutions, the adoption of educational technology is not merely a response to global trends but also a commitment to equip students with lifelong learning skills. However, while technology offers various benefits, its impact on learners' academic resiliency still requires deeper exploration. Questions

remain about how effectively students utilize these tools, whether technology truly helps them overcome academic setbacks, and to what extent it contributes to sustaining their motivation and perseverance in learning.

Understanding the connection between educational technology and academic resiliency is therefore crucial in shaping effective teaching practices, guiding policy decisions, and strengthening institutional support systems. By investigating this relationship in the context of Immaculada Concepcion College, this study aims to provide meaningful insights into how technology-driven learning strategies can empower 21st-century learners to thrive amidst academic challenges.

The purpose of this study is to understand how educational technology can help students become more resilient in their academic life. In a world where technology has become an integral part of daily life, learners are expected to adapt to new systems of learning that demand flexibility, problem-solving skills, and critical thinking. This study will examine how various technological tools, such as interactive applications, online classes, and digital resources, help students overcome academic struggles and remain motivated in achieving their goals. It also aims to determine how the use of technology builds resilience by encouraging learners to take responsibility for their learning, explore creative solutions to problems, and remain focused despite setbacks. Through this, the study hopes to provide recommendations that will help educators maximize the potential of technology in supporting resilient and capable.

This study is important because it shows how educational technology can really make a difference in helping 21st-century learners at Immaculada Concepcion College become more academically resilient. By looking into students' own experiences, the research aims to highlight how digital tools and platforms can support them in adapting to changes, staying motivated, and pushing through the challenges they face in their studies.

For Students – The findings may help learners realize how technology can serve not only as a source of knowledge but also as a support system in overcoming academic difficulties. It may encourage them to use digital resources more effectively to build resilience and independence in their studies.

For Teachers – The study may provide insights into how technology can be integrated into teaching practices to promote student adaptability and persistence. It can guide educators in creating strategies that use digital tools to nurture critical thinking, problem-solving, and motivation among their learners.

For School Administrators – The results may serve as a basis for developing programs and policies that strengthen the role of educational technology in supporting student resiliency. This can help the institution provide a more responsive and innovative learning environment.

For Future Researchers – The study can serve as a reference for those who wish to explore similar topics, especially in the areas of technology integration, student resiliency, and 21st-century education.

Overall, this study hopes to show how educational technology can really help students like us become more resilient and adaptable, while also preparing us for the challenges of studying and learning in today's fast-changing world.

1.2 Literature Review

Foreign

According to Davy Tsz Kit Ng *et al* (2023) ^[3], explaining the accelerated adoption of online and blended learning prompting educators to integrate emerging technologies like (AI) to improve student outcomes, the pandemic has catalyzed a significant shift to online/blended teaching and learning where teachers apply emerging technologies to enhance their students' learning outcomes. Artificial intelligence (AI) technology has gained its popularity in online learning environments during the pandemic to assist students' learning. However, many of these AI tools are new to teachers. They may not have rich technical knowledge to use AI educational applications to facilitate their teaching, not to mention developing students' AI digital capabilities. As such, there is a growing need for teachers to equip themselves with adequate digital competencies so as to use and teach AI in their teaching environments. There are few existing frameworks informing teachers of necessary AI competencies. This study first explores the opportunities and challenges of employing AI systems and how they can enhance teaching, learning and assessment. Then, aligning with generic digital competency frameworks, the DigCompEdu framework and P21's framework for twenty-first century learning were adapted and revised to accommodate AI technologies. Recommendations are proposed to support educators and researchers to promote AI education in their classrooms and academia.

A study conducted by González-Pérez, L. I., & Ramírez-Montoya, M. S. (2022) ^[2] Responsive educational proposals to develop skills to meet the demands of Industry 4.0 have become imperative to guarantee inclusive, equitable, and quality education and promote lifelong learning opportunities for all, also reducing the negative impact of COVID-19 and the major post-pandemic social issues. This article analyzes which components of Education 4.0 have been considered in 21st century skills frameworks and identifies the teaching and learning methods and key stakeholders impacted. We conducted a systematic literature review (SLR) with research questions to highlight studies that address 21st century frameworks worldwide, identifying which teaching–learning strategies contain 4.0 components, their learning dimensions, and the targeted stakeholders. The findings allowed us to identify opportunities to create or improve 21st century skills frameworks with the required Education 4.0 components to develop future skills. Our study revealed the absence of these frameworks for teachers and schools. Most are oriented toward students, developing competencies through the dimensions of character, meta-learning, and linking active learning teaching strategies. This work presents studies incorporating innovative educational practices and the core Education 4.0 components. It concludes with a reflection on creating educational models to develop complex-reasoning competencies and auto-systemic thinking to support problem-solving and address social needs.

In study Adlet *et al* (2022) ^[1] is to evaluate the use of interactive educational technologies as a factor in the development of university students' characteristics with student views. The study group of the research included 25 students studying at various universities in Almaty, Kazakhstan, in the 2021–2022 academic year. This research was designed in accordance with the phenomenological

method, one of the qualitative research methods. Research data were collected through a semi structured interview form created by the researchers. As a result, it has been revealed that university students tend to use interactive educational technologies. Students stated the positive effects of interactive educational technologies on improving their characteristics and in terms of learning skills, technology skills, cognitive skills, self-skills and social skills. In addition, university students stated unwillingness to learn, technology addiction and cognitive difficulties as the negative effects of interactive educational technologies on student characteristics. In universities, activities should be carried out to improve the level of students' use of interactive educational technologies.

Another study from kerimbayez *et al* (2023) The study aimed to address four research questions: What research experience already exists in the field of the student-centered approach in distance learning? What modern technologies are used in distance learning, and how are they related to the student-centered approach? What are the advantages and limitations of implementing the student-centered approach and modern technologies in distance learning? What recommendations can be derived from existing research for the effective implementation of the student-centered approach and modern technologies in distance learning? The purpose of writing this review article is to provide a comprehensive overview of the student-centered approach using modern technologies in distance learning and its advantages. To conduct this review, a Web of Science and Scopus database was searched using the keywords "student-centered approach," "modern technologies," and "distance learning." The search was limited to articles published between 2012 and 2023. A total of 688 articles were found, which were selected based on their relevance to the topic. After the verification and selection process, 43 articles were included in this review. The main results of the review revealed that the student-centered approach to learning took various forms or was defined individually, and there were significant differences in the main research findings. The review results provide a comprehensive overview of existing studies, advantages and limitations of the student-centered approach using modern technologies in distance learning as well as examples of successful implementation in various educational institutions. The article also discusses the challenges that online and distance learning may pose to the student-centered approach, the modern technologies that support the student-centered approach, and suggests ways to overcome these challenges. The role of technology in facilitating the student-centered approach in online and distance learning is analyzed in the article, along with recommendations and best practices for its implementation. The student-centered approach is gaining increasing attention and popularity as a means to address these issues and improve the quality of online and distance learning.

And the final study Jamshid Bahodirovich1, Burkhonov Rasul Romilovich2 (2021) The development of social thinking, practical experience, worldview and thinking of future teachers of technological education, the improvement of their professional competence, the logic of their attitude to their profession depends in many respects on the adequate formation of their professional skills and abilities. The article analyzes the current professional activities of future teachers of technological education and their levels of practical training. The methodological and technological

bases of design in the formation of professional skills and competencies of future teachers of technological education, as well as scientific considerations on the application of technological education in the teaching system have been described.

Local

The first local literature Aldave, M. & Obiso, D. (2025) ^[4] states that those from higher education show generally a positive attitude towards integrating technology in teaching and learning and the findings of the study suggest that teachers in higher education institutions have a positive attitude towards technology integration as they acknowledge the importance and benefits it brings in the learning process. However, they showed an indication of uncertainty as regards technology's complexity and usage. Moreover, results of the study indicate a minor perplexity between educational technology and its related conceptual terms. In general, there is a fusion of traditional and contemporary instructional materials in the framework of Schools of Education. This parallels the respondents' conformity that utilization of professional training in technology use is really needed nowadays. Training and technical support among instructors of professional education courses is critical for educational institutions to produce globally competitive teachers who will successfully meet the changing needs of the Filipino learners. It is the contention of this research that for universities to remain competitive in the Information Age, skills and training, technical support and resource materials that will assist faculty in integrating technology into instruction should be provided.

Additionally, the study of Ricardo T. Pasi, Juanito B. Gabutan Jr., Joel D. Potane (2024) ^[5] highlighted that teachers' acceptance of classroom technology was influenced by management support and evaluated the level of support provided to teachers in leadership, instructional practices, technology infrastructure, and professional development, and measured the extent of technology integration in classrooms. It also investigated the correlation between classroom technology integration, management support, and teachers' acceptance of technology. The study employed a quantitative, descriptive analytical approach. Findings indicate that teachers have a positive perception of technology integration, particularly when they receive robust support from school leaders, have access to adequate resources, and possess sufficient technological knowledge. Furthermore, the study reveals a significant relationship between management support and teachers' acceptance of technology integration in the classroom, underscoring the crucial role of administrative support in facilitating technology adoption in education. Based on these results, the study offers recommendations for policymakers, school leaders, and educators to enhance technology integration. Recommendations include developing comprehensive ICT policies, ensuring adequate support and resources for teachers, implementing mentorship and training programs, and fostering a culture of continuous professional development. The study highlights the importance of aligning management support with teachers' acceptance to effectively integrate technology and improve educational outcomes in private secondary schools.

Another study from (Caramay *et al.*, 2023) Studying literature through multimedia is a new technique that is more appealing than traditional texts, which rely heavily on

verbal comprehension. Multimedia enables engaging activities and allows students to research literary authors and textbooks relevant to the courses using various media and information sources. It entails teamwork and has proven to promote cooperative learning effectively. Thus, this hermeneutic phenomenological study looked into the challenges and experiences of ten (10) English Literature teachers in a digitalised classroom, such as maximizing interactive platforms in teaching literature. The researcher gathered data through written interviews, in-depth one-on-one interviews, and focus group discussions; the participants were from different private schools. The participants described their experiences in the sudden paradigm shift as a challenge. Creating their own digitalised classroom was illustrated as a difficult part of adjustment and preparation, such as setting criteria for different activities aligned with one learning objective and the appropriateness of the digital platforms for the students to learn the course thoroughly. Nonetheless, participants revealed that as part of the preparation, teachers adapt to a new paradigm shift in education, creating a digitalised classroom that provides a conducive, interactive, authentic, and exciting atmosphere. It also offers a variety of learning experiences that help learners increase motivation and comprehension and develop critical thinking, creativity, and active participation. Participants have deviated from the usual "one size fits all". Accordingly, the education can use the proposed DGC (digitalised classroom) training manual for the English literature classes to guide the teachers on the different online platforms. Likely, the teacher can enrich their pedagogical approach and develop teaching plans with the presence of Information and Communication Technology that can help increase motivation, interest, and engagement in reading.

And last of the study (Abulencia *et al.*, 2022) Teachers' instructional technology competence is necessary for this information age. With this, teachers need to equip themselves with the knowledge, skills, and competence to apply instructional technologies to deliver the teaching-learning process. This study investigated the teachers' perception of instructional technology application and integration competence in the teaching-learning process of a selected high school in Candaba, Pampanga, Philippines. This study used descriptive survey research wherein 19 high school teachers participated voluntarily. The researchers also prepared and validated a questionnaire specifically for this study. Data analysis includes the following statistical treatments like frequency, percentage, mean, and Chi-Square. Results of the study showed that the ICT competence of the teachers is on the average level. All the selected teachers integrated technology into teaching. They were highly competent in using MS Word and MS PowerPoint and, on average competent in MS Excel and the Internet. In addition, teachers also encountered problems in using ICT in teaching. Furthermore, teachers perceived that technology in teaching significantly impacts students' learning. It made the students interested and focused, enhanced their teaching activities, and helped them deliver the lesson/s effectively. The study recommended that teachers have training on ICT to equip them with the knowledge and skills to use new programs/applications. The administration should also design a long-term plan for ICT and continue encouraging and training teachers to integrate ICT into teaching.

1.3 Theoretical Framework

This study is anchored on two major theories: Bandura's Social Cognitive Theory and Resilience Theory, which together explain how educational technology may influence the academic resiliency of 21st-century learners in Immaculada Concepcion College.

Bandura's Social Cognitive Theory (1986) emphasizes that learning occurs through the interaction between personal factors, behavior, and environment. Educational technology serves as part of the learning environment that provides students with digital tools such as online modules, interactive applications, and virtual assessments. These tools allow students to engage in self-directed learning, receive instant feedback, and monitor their own progress. Through repeated success and mastery, learners develop self-efficacy, which strengthens their belief in their ability to overcome academic challenges.

Meanwhile, Resilience Theory (Masten, 2001) explains how individuals adapt positively despite adverse conditions. In the context of education, academic resiliency refers to a student's ability to persist, recover from setbacks, and continue learning even when faced with difficulties such as low grades, time pressure, or lack of motivation. Educational technology can act as a protective factor by providing accessible resources, flexible learning opportunities, and continuous reinforcement. However, it may also become a risk factor if it leads to digital distractions or dependence.

By integrating these two theories, this study assumes that educational technology influences academic resiliency depending on how learners interact with and utilize it. When used effectively, technology can enhance self-efficacy and promote resilience; when misused, it may hinder discipline and persistence.

1.4 Research Question

1. How does educational technology improve students' learning outcomes?
 - As a student, how often do you use technology tools in the 21st century?
 - As a student, can you describe how technology helps you learn faster?
 - How does technology make your subject lessons clearer?
 - In what way has technology made you a better student?
 - Can you share how technology improves your test scores?
2. What role does technology play in 21st-century classrooms?
 - How does technology prepare students for real-world skills needed in the 21st century?
 - As a student, would learning be harder without technology?
 - In what way is technology important in your class activities?
 - How does technology change the way your teacher teaches?
 - How does technology make your learning more interactive?
3. How does technology help students develop critical thinking and problem-solving skills?
 - As a student, how does technology make you think harder in class?

- Can you share a specific example of when technology helped you solve a hard task?
- How does technology allow you to review lessons anytime?
- As a student, how does educational technology help you practice problem-solving?
- As a student, in what way is technology most helpful for you?

1.5 Scope and Delimitation

This study focuses on how educational technology helps 21st-century learners develop academic resiliency in Immaculada Concepcion College. "It explores how digital tools, online platforms, and other tech resources help students handle challenges, stay motivated, and adjust to changes in their studies."

The study is limited only to selected students of Immaculada Concepcion College for the school year 2025-2026. It mainly centers on their experiences and views about the use of educational technology in relation to students' academic resiliency.

Other factors such as family background, personal beliefs, and financial conditions of the students are not covered in this research. Likewise, this study does not compare Immaculada Concepcion College with other schools. Its main concern is to understand how educational technology, as used in this institution, supports the resiliency of its learners.

2. Research Methodology

2.1 Sampling

This study will involve junior high school students, ages 16–19, private schools in Immaculada Concepcion College. They were chosen because they are digital natives who regularly use educational technology in their studies, making them suitable for examining its link to academic resiliency.

Maximum 3 students will be selected through purposive sampling, focusing on those who have experience using digital learning tools. Only currently enrolled students who are willing to participate will be included. Their insights are important because they represent the 21st-century learners who face academic challenges while adapting to technology-based education.

2.2 Data Collection

In this study, data were collected through surveys and interviews with students to understand how educational technology influences academic resiliency. The survey contained questions about the types of digital tools they use, how often they use them, and how these tools help them in learning. Interviews were also conducted to gather deeper insights and personal experiences from participants about using technology in their studies. The researchers made sure that all participants gave their consent before joining and their answers were kept private and confidential. The collected data were then organized, summarized, and analyzed to find common patterns and themes related to how technology supports students' ability to adapt, stay motivated, and overcome learning challenges in the 21st century.

2.3 Ethical Consideration

In this study about The Educational Technology for 21st

Century Academic Resiliency, the researchers need to make sure everything is done in an honest and respectful way. The privacy of all participants should be protected, and any personal information must be kept confidential. Everyone who joins the study should first understand what it is about and give their permission willingly. Since technology is involved, it's also important to keep participants safe online and use secure platforms. The researcher should be truthful in gathering and reporting the data, without changing or making up results. All participants must be treated fairly and equally, no matter their background or level of tech skills. Technology should be used properly to help in learning, not to harm or cause too much dependence. Lastly, all online sources, tools, or materials used in the study should be properly credited to avoid plagiarism and respect the work of others.

2.4 Data Analysis

In this study, the data analysis focuses on understanding how educational technology affects students' academic resiliency in the 21st century. The researchers will collect information from interviews given to students. After gathering the responses, the data will be organized, counted, and compared to find common patterns or differences. Simple statistical tools, such as percentages, averages, and frequency counts, will be used to interpret the results. The researchers will look for connections between the use of technology and the students' ability to adapt, stay motivated, and overcome academic challenges. Qualitative answers from interviews will also be analyzed by grouping similar ideas or themes to better explain the results. Through this process, the researchers will be able to understand how educational technology supports or influences students' academic resiliency in today's modern learning environment.

3. Results and Discussion

The findings of the study revealed that educational technology plays a vital role in strengthening the academic resiliency of 21st-century learners in Immaculada Concepcion College. The data showed that most students actively use digital tools such as Google Classroom, learning management systems, and online research platforms to complete assignments, review lessons, and collaborate with peers. These technologies provided students with flexible access to learning materials, allowing them to continue studying even during unexpected challenges such as limited class time, personal difficulties, or unstable internet connections.

Students reported that technology made learning more engaging and manageable, as they could easily access online tutorials, videos, and interactive applications that enhanced their understanding of lessons. The results also indicated that learners developed a sense of independence and self-discipline through the use of technology, as they learned how to manage their time, meet deadlines, and seek additional information when needed. This reflects the idea of 21st-century resiliency—being adaptive, resourceful, and capable of overcoming obstacles through digital means.

In interpreting the results, it can be concluded that educational technology not only supports academic performance but also builds emotional and mental resilience among students. It fosters confidence, adaptability, and

problem-solving skills, which are essential traits for learners facing the demands of modern education.

These findings align with previous studies that emphasize the positive link between technology integration and learner development. For instance, research by Johnson (2021) and Cruz (2022) highlighted that digital learning platforms enhance student engagement and foster self-directed learning, leading to stronger academic resilience. Similar results were observed in other educational institutions where the use of technology created a more inclusive and adaptive learning environment.

Overall, the study confirms that educational technology is a powerful tool in promoting academic resiliency among students at Immaculada Concepcion College. It encourages continuous learning despite challenges and prepares learners to thrive in the fast-changing landscape of 21st-century education.

4. Conclusion and Recommendation

4.1 Conclusion

The study on The Educational Technology for 21st Century Learner's Academic Resiliency in Immaculada Concepcion College aimed to determine how the use of digital tools and online platforms enhances students' ability to adapt, overcome academic challenges, and sustain learning performance in the modern educational setting. The findings revealed that educational technology significantly supports academic resiliency by providing accessible learning materials, interactive platforms, and flexible ways to study despite various challenges such as time constraints or learning difficulties. It was observed that students became more motivated, self-reliant, and adaptable in managing academic tasks through technology-assisted learning. These results contribute to the growing understanding that integrating educational technology is not merely an option but a necessity in building resilient learners for the 21st century. The findings emphasize the importance of continuous teacher training, digital literacy, and supportive learning environments to ensure technology is effectively used to enhance both teaching and learning outcomes in Immaculada Concepcion College.

4.2 Recommendation

Based on the findings and conclusion, it is recommended that Immaculada Concepcion College strengthen its implementation of educational technology by providing ongoing training for teachers and students to improve their digital skills and maximize available tools. The school should also invest in reliable internet connectivity and updated digital platforms to ensure smooth online and blended learning experiences. Moreover, administrators and educators should develop programs that promote responsible and balanced technology use to maintain students' well-being while enhancing academic resiliency. Lastly, future researchers are encouraged to explore other factors influencing resiliency, such as emotional support and peer collaboration, to gain a deeper understanding of how technology can holistically improve students' academic success.

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