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The Application of the 21st Century Skills of Learners in Tabaco City

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Abstract: This study determined the application of the 21st century skills of learners in Tabaco City Division. Specifically, it answered the following sub-problems: 1. What are the 21st century skills of learners? 2. What is the level of application of the 21st century skills of learners along technology integration; critical thinking and problem solving; collaboration and communication; adaptability and flexibility; and lifelong learning? 3. What are the effects of application of the 21st century skills along the above-mentioned variables? 4. What are the challenges met in developing the 21st century skills to the learners? 5. What plan of action may be proposed to address the challenges?

The researcher employed quantitative survey type of research. The respondents of the study are the 283 selected secondary school teachers in Tabaco City Division. Out of this number, 208 were from the Junior High School and seventy-five (75) were from Senior High School. The data collected along the application of the 21st century skills of learners were interpreted using frequency count and percentage. To determine the level of application of the 21st century skills, frequency count and weighted mean was utilized. The data on the challenges met were interpreted using frequency count and ranking.

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I. INTRODUCTION

Advancements in technology and society have significantly changed the world, creating new challenges for education systems. Traditional methods focused on memorization are no longer enough to prepare students for today's fast-changing, globalized world. As a result, educators and policymakers worldwide are now emphasizing the importance of 21st-century skills. These include critical thinking, problem-solving, digital literacy, collaboration, adaptability, and lifelong learning. These skills help individuals succeed in various environments, solve problems creatively, and contribute to innovation and sustainable development.

The focus is now on developing well-rounded skills that help individuals handle the demands of modern life. Key global competencies such as using technology effectively, thinking critically, solving problems, working well with others, adapting to change, and continuously learning are essential for success in today's interconnected world.

The United Nations' Sustainable Development Goal 4 (SDG 4) promotes inclusive, quality education and lifelong learning. It supports a transformative approach that equips learners with 21st-century skills to deal with global challenges. These competencies technology use, critical thinking, collaboration, adaptability, and lifelong learning prepare students not only for personal and career success but also to contribute to a more sustainable future. SDG 4 closely aligns with this study, showing how local education efforts can support global goals.

In the Philippines, developing 21st-century skills is seen as vital for preparing students to succeed in a fast-changing world. These skills support national goals for education reform and sustainable growth. The country acknowledges that students need these competencies to thrive both personally and professionally and to help drive national progress in a global economy.

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Tabaco City has made strides in promoting these skills, but more research is needed to understand how well students are applying them in school and real life. It is important to assess how students use technology, think critically, solve problems, work with others, adapt to changes, and commit to lifelong learning. This assessment will help determine how prepared students are for real-world challenges and how local education practices contribute to their overall development, in line with the goals of the Department of Education (DepEd).

The study looked at how the 21st century skills are being applied by the learners in their academic activities and real-life situations, assessing the extent to which they utilize technology, engage in critical thinking and problem-solving, collaborate and communicate effectively, adapt to new challenges, and commit to lifelong learning**.** And understand both the strengths and gaps in learners' application of these 21st-century skills and how these competencies contribute to their overall educational development and readiness for future challenges.

II. THEORETICAL FRAMEWORK

In educational research, grounding a study in established theoretical frameworks is essential for providing a structured perspective through which to interpret findings and their implications. The application of 21st-century skills among learners, particularly in Tabaco City, necessitates a comprehensive approach that considers the evolving nature of teaching and learning in today's rapidly changing educational environment. To understand how these skills can be effectively integrated into educational practices, this study draws upon several key theoretical frameworks.

These include Constructivist Learning Theory, Transformative Learning Theory, Social Learning Theory, and Katz's Skills Theory. Each of these theories offers valuable insights into the dynamics of learning and highlights the critical role of educational practices in fostering essential competencies, guiding this research as it explores the development and application of 21st-century skills among students in Tabaco City.

First, the Constructivist Learning Theory, developed by Jean Piaget and Lev Vygotsky in the 1920s to 1950s, posits that learners construct knowledge through experiences and reflections, emphasizing the importance of active engagement in the learning process. This theory is crucial for understanding how students in Tabaco City can develop critical thinking, collaboration, and problem-solving skills through hands-on activities and interactive learning environments.

Second is the Transformative Learning Theory proposed by Jack Mezirow in 1978, which highlights how learning can lead to shifts in perspective and behavior, making it particularly relevant for cultivating adaptability and lifelong learning mindsets among students. By exploring how students make meaning from their experiences, the study can assess the transformative impact of educational practices on their skill development.

Third, the Social Learning Theory articulated by Albert Bandura in 1977 emphasizes learning through observation and modeling, suggesting that peer interactions and teacher guidance play critical roles in developing communication and teamwork skills.

Anchoring the present study on the application of 21st-century skills in learners in Tabaco City within established theoretical frameworks is critical for several reasons. First, these theories provide a comprehensive understanding of how students learn and develop essential skills in a contemporary educational context. As the global landscape evolves, the skills required for success have shifted from rote memorization to critical thinking, collaboration, digital literacy, and adaptability. By employing these frameworks, the study seeks to examine how these competencies can be nurtured within the local educational system, ensuring that the curriculum aligns with the demands of the 21st century. The Constructivist Learning Theory is particularly relevant as it emphasizes the active role of learners in constructing their knowledge through experiences and interactions. This aligns with the modern educational paradigm that values student engagement and inquiry-based learning. In Tabaco City, understanding how constructivist principles can be applied in classrooms is essential for fostering environments where students can effectively develop critical thinking and problem-solving skills. By anchoring the study in this theory, it aims to highlight the importance of pedagogical practices that encourage student agency and hands-on learning, which are vital for preparing students for future challenges.

Furthermore, the Transformative Learning Theory adds depth by focusing on how experiences can lead to shifts in perspective and behavior. This is significant in the context of 21st-century skills, where adaptability and lifelong learning are paramount. The study aims to explore how educational experiences in Tabaco City can foster transformative learning, equipping students with the mindset to navigate an ever-changing world. By using this theory as a foundation, the research will be able to assess the extent to which educational practices can lead to meaningful change in learners' attitudes and skills, thus contributing to their overall development.

Katz's Skills Theory (1955) emphasizes that effective leadership is not inherently tied to personal traits but instead relies on a set of learned and developed competencies. Katz categorizes these skills into three primary types: technical skills, which pertain to the ability to perform specific tasks and utilize tools relevant to a particular domain; human skills, which involve the capacity to interact effectively with others,

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fostering communication, collaboration, and empathy; and conceptual skills, which focus on understanding and analyzing complex ideas, enabling strategic thinking and problem-solving. While technical skills are particularly vital at the operational level, human skills remain universally critical across all levels of leadership, and conceptual skills grow increasingly essential in positions of greater responsibility. These categories highlight the dynamic interplay between practical expertise, interpersonal abilities, and visionary thinking in achieving effectiveness.

The Skills Theory provides a robust framework for the present study as it aligns closely with the goals of 21st-century education, which demands a holistic approach to skill development among students and educators. Teachers, as key facilitators, must exhibit technical skills to leverage modern educational technologies and methodologies, human skills to foster inclusive, collaborative, and student-centered learning environments, and conceptual skills to innovate teaching strategies and adapt to evolving challenges in education. Anchoring the study to Katz's framework underscores the importance of equipping learners with a balance of technical, interpersonal, and strategic competencies essential for thriving in the complexities of a modern, interconnected workforce. This theoretical foundation not only reinforces the study's focus on preparing students for future demands but also situates educators as pivotal change agents in achieving these educational outcomes.

Social Learning Theory underscores the importance of observation, imitation, and modeling in the learning process. By focusing on how students learn from peers and educators, this theory provides insights into the role of social interactions in skill development. In Tabaco City, where collaborative learning environments can be instrumental in fostering communication and teamwork skills, anchoring the study in this theory allows for an exploration of how these interactions can be effectively harnessed to enhance the learning experience.

Integrating the study in these four theories is essential for providing a multifaceted understanding of the factors that influence the application of 21st-century skills among learners in Tabaco City. This theoretical framework not only guides the research design and methodology but also enriches the analysis of findings, ensuring that the study addresses the complexities of skill development in a holistic manner. By leveraging these established theories, the research aims to offer practical recommendations for educational practices that can enhance the competencies necessary for success in the modern world.

These four theories provide a comprehensive understanding of the factors influencing the application of 21st-century skills among learners in Tabaco City.

III. REVIEW ON LITERATURES AND STUDY

[1]According to Stehle (2019), 21st-century skills not only support students' success across all areas of formal education but are also crucial for adapting and thriving in an ever-changing world. One initiative promoting the development of these skills is the rise of inclusive STEM high schools (ISHSs), which aim to serve all students, regardless of their prior academic performance. These schools foster student research experiences by using inquiry-based curriculum models to support independent learning and encourage personal responsibility.

The primary objective of ISHSs is to cultivate student-centered learning that enhances essential 21st-century skills such as adaptability, communication, problem-solving, critical thinking, collaboration, and self-management. While some research suggests that not all ISHSs provide equal STEM opportunities, there is growing evidence that these schools can improve college and career readiness, particularly for students from underrepresented groups in STEM fields. As the number of ISHSs continues to grow, it is important to understand how these schools effectively engage students in developing 21st-century skills.

This discussion is highly relevant to the present study, as it underscores the importance of fostering 21st-century skills in students, especially in the context of STEM education. The emphasis on inclusive STEM high schools (ISHSs) aligns with the study's goal of investigating how educational initiatives can effectively develop these critical skills among learners. By focusing on inquiry-based models and student-centered learning, ISHSs provide a framework that could be applicable to other schools aiming to enhance students' adaptability, communication, problem-solving, critical thinking, collaboration, and self-management. As the study aims to explore the implementation of 21st-century skills in local educational settings, the findings from Stehle (2019) offer valuable insights into the methods that have shown promise in diverse and underrepresented student populations. Understanding how ISHSs foster these skills can inform strategies for improving skill development in a variety of educational contexts, contributing to the broader conversation about preparing students for the challenges and opportunities of the modern world.

According to Almazroa (2023) terms like competence, skills, and proficiency in a chosen area of study have long been considered key outcomes of the teaching-learning process. A more recent addition to this list is the concept of 21st-century skills. To understand why these skills are now prioritized, it is useful to first examine the skills that were the focus of education before the emergence of the 21st-century skills concept.

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Traditionally, the emphasis in education was placed on "generic skills," "core competencies," or "graduate attributes," which were seen as essential for students' future personal lives and their contributions to society.

While the goal of preparing future-ready citizens remains central to educational systems globally, changes in work requirements, technological advancements, and the evolving nature of life have made it necessary for stakeholders to more clearly define what "future-readiness" means. Previous studies have highlighted the need for curriculum and education system reforms in response to a rapidly changing and unstable socio-political and economic landscape. Educational stakeholders, including teachers, government bodies, researchers, and employers, have recognized the importance of students acquiring skills that will help them navigate the evolving world. Consequently, policy proposals have called for the inclusion of 21st-century skills in educational frameworks to better equip students for the future.

The concept of 21st-century skills is highly relevant to the present study, as it aligns with the goal of exploring how modern educational systems are preparing students for an ever-changing world. The shift from traditional education that focused primarily on generic skills to a more comprehensive approach that includes 21st-century skills reflects the evolving demands of society and the workforce. In this context, the study's focus on understanding how 21st-century skills is integrated into educational practices can provide valuable insights into how schools are adapting their curricula to meet these new demands.

As education systems worldwide continue to respond to technological advancements, shifting socio-political environments, and the need for greater adaptability in the workforce, this study contributes to the ongoing conversation about how best to equip students for the challenges ahead. Furthermore, by investigating the teaching practices and skill development strategies used in local contexts, the study can offer practical recommendations for improving the inclusion of 21st-century skills in education, thus preparing students not just for academic success, but for their future personal and professional lives.

From [3]Lemings' (2019) perspective, a 21st-century skills-based curriculum shifts the focus from mere content acquisition and rote memorization to the development of skills and abilities that are essential for thriving in today's world. This approach emphasizes student engagement and hands-on, interdisciplinary learning. The 21st-century classroom encourages creativity, collaboration, and problem-solving. Students are often involved in team-based projects where they learn to work together to solve problems, enhancing critical thinking and adaptability. Creativity is cultivated across various subjects, and hands-on learning opportunities allow students to apply textbook knowledge to real-world situations. Cultural competency is promoted by fostering diverse interactions and experiences. Communication skills, both written and oral, are emphasized to ensure that students can articulate their thoughts effectively. Furthermore, ethical decision-making, media literacy, leadership, critical thinking, and personal responsibility are integral parts of the curriculum, encouraging students to think deeply, evaluate information, and take ownership of their learning. These skills are essential for navigating an increasingly complex and dynamic world, ensuring students are prepared for future success in both personal and professional spheres.

The relevance of this approach to the present study lies in its alignment with the goal of preparing students for the challenges of the 21st century. The study aims to explore how 21st-century skills are integrated into educational practices, particularly in local contexts. By examining how hands-on learning, collaboration, creativity, and critical thinking are fostered in classrooms, the study can provide insights into the effectiveness of teaching strategies that focus on these competencies. Additionally, as the global landscape changes, understanding the impact of a curriculum that incorporates 21st-century skills will help educators refine their teaching methods and ensure that students are equipped with the necessary skills to succeed in a rapidly evolving world. This connection reinforces the importance of adapting educational systems to meet the demands of modern society, which is the core objective of the present study.

In His article, [4]Hummel (2024) emphasized the 21st-century skills consist of twelve essential abilities that students need to thrive in today's fast-paced, technology-driven world. These skills are divided into three categories: learning skills (critical thinking, creativity, collaboration, communication), literacy skills (information, media, and technology literacy), and life skills (flexibility, leadership, initiative, productivity, social skills). The focus is on equipping students with the tools to solve problems, think innovatively, collaborate effectively, and communicate clearly. Additionally, literacy skills are aimed at enabling students to discern accurate information in a digital age, while life skills foster personal and professional growth.

The relevance of these skills to the present study is crucial, as they represent the core competencies needed for students to succeed in both their academic and professional futures. By focusing on the development of these 21st-century skills, educators can ensure that students are not only prepared for the changing job market but also equipped to contribute to societal growth. The study's focus on how these skills are integrated into educational practices can shed light on effective teaching strategies that nurture critical thinking, creativity, and collaboration. Understanding the ways in which these skills are cultivated in the classroom will provide valuable insights into the broader impact of a curriculum designed to meet the challenges of the Information Age.

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According to [5]Kuloglu (2021), countries aiming to be more democratic, successful, and developed need to educate generations with the essential skills for the 21st century. To achieve this, both the learning environment and the teachers themselves must possess these skills. As conditions change, the education system and the roles of teachers within it also evolve. A nation's development can be significantly improved by fostering qualified human resources. In order to equip the new generation, the current education system must be restructured to meet the demands of both today and the future. With the transition from a teacher-centered approach to a student-centered one, teachers are now expected to guide and support students in developing their production readiness, curiosity, problem-solving abilities, and critical thinking. 21st-century skills are categorized into three main themes: learning and innovation, knowledge, technology and media skills, and life and career skills. In today's world, it is essential for everyone to develop these skills, which can only be achieved in a learning environment designed to nurture 21st-century knowledge and abilities. Furthermore, the development of these skills is crucial for students' future success, and methods that address these competencies should be encouraged. Students should be provided with opportunities to develop communication, collaboration, problem-solving, critical thinking, and productivity skills.

[6]Tyan (2020) emphasized that in this era of rapid development; the Malaysian education system has undergone significant changes and requires transformation to align with the goals of the National Education Philosophy. The implementation of 21st-century education aims to develop balanced human capital in physical, emotional, spiritual, intellectual, and social aspects. 21st-century learning focuses on student-centered approaches, applying skills across various content areas, and fostering holistic development. It differs from past education methods by emphasizing practical, real-world problem-solving and collaborative learning. The primary goals of 21st-century education are to produce skilled, productive individuals who can lead the nation. However, many educators face challenges in adopting these new teaching strategies due to limited exposure to the 21st-century learning concepts, which hinders their ability to diversify teaching methods in the classroom. As a result, the lack of understanding of the 21st-century learning framework has impacted the effectiveness of teaching and student engagement.

The transition to 21st-century learning in Malaysia presents both opportunities and challenges. While the focus on student-centered learning and the development of essential skills such as communication, collaboration, and critical thinking is crucial for producing capable and well-rounded students, many teachers still struggle to implement these changes effectively. This may be due to insufficient training or familiarity with the new pedagogies. The lack of exposure to modern teaching strategies may result in teachers relying on traditional methods, hindering the overall effectiveness of the education system. To overcome this, more comprehensive teacher training and professional development opportunities are necessary to ensure that educators are well-equipped to implement 21st-century learning in their classrooms. As teachers embrace these new methods, the potential for creating an interactive and dynamic learning environment will significantly enhance student outcomes and contribute to the development of a highly skilled and adaptable generation.

According to Ibrahim (2019) the increasingly competitive global environment has necessitated a transformation within the Malaysian educational system at all levels. Under the Government Transformation Programmed (GTP), numerous initiatives have been introduced to enhance key aspects of education, including teaching and learning, teacher recruitment and training, and the operations of the Ministry of Education (MOE). The Malaysian Education Blueprint emphasizes a shift away from traditional education models that focused primarily on content knowledge and cognitive skills, toward incorporating essential 21st-century elements such as leadership, ethics, and spirituality. The curriculum has been revised to foster skills in scientific thinking, creativity, critical thinking, and the development of moral values, reflecting a holistic approach to education that prepares students for the demands of the modern world. Furthermore, teaching and learning approaches have been restructured to incorporate more dynamic methods, such as questioning, constructivism, contextual learning, and mastery learning, which are designed to nurture well-rounded students equipped for success in the 21st century.

Teachers are recognized as key agents in this transformation and must possess the necessary qualities to meet the challenges of the evolving educational landscape. The role of the teacher has become increasingly complex, requiring not only strong foundations in educational theory and classroom management but also the ability to prepare students for a rapidly changing global economy. In this context, teachers must embrace continuous learning, leveraging technology to enhance teaching and learning, fostering critical thinking, and creating environments that encourage collaboration and self-directed learning. By adopting new methods and refining their approaches, teachers can play a crucial role in developing students' 21st-century skills. These changes are essential for ensuring that students are well-prepared to navigate an interconnected and fast-paced world, where creativity, problem-solving, and the ability to work collaboratively are paramount. As the education system evolves, so too must the teachers, who are integral to shaping the future workforce and leaders of the nation.

[8]Potter (2024) asserted that in a world increasingly shaped by technology, it is essential for students to evolve beyond passive usage and become informed creators and discerning consumers of digital tools. The core of 21st-century

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education lies in equipping individuals with the skills and competencies necessary to adapt to rapid and unpredictable changes in areas such as technology, communication, and global systems. These skills transcend traditional academic learning, fostering lifelong adaptability and preparing learners for the ever-changing demands of the workforce. As industries continue to face disruptions from emerging tools and methods, education must prioritize preparing students to navigate and initiate change, even as future career landscapes remain undefined. This approach presents educators with the challenge of equipping students for jobs and roles that may not yet exist, emphasizing readiness for an unpredictable future. The framework of 21st-century skills broadly includes learning and innovation abilities like problem-solving and creativity, interpersonal skills such as teamwork and ethical leadership, digital literacy for navigating today's technological landscape, and life skills encompassing adaptability, financial literacy, and civic awareness. Together, these competencies ensure students are prepared not only for academic and professional success but also for meaningful engagement in an increasingly complex world. The insights presented in the article hold significant relevance to the current research by emphasizing the importance of 21st-century skills in preparing students to navigate an evolving and unpredictable world. The study aligns with the article's assertion that education must move beyond traditional academic knowledge to foster adaptability, critical thinking, and the ability to manage rapid technological and societal changes. By integrating these skills into the learning framework, the current research seeks to explore effective strategies for equipping learners with competencies that enable them to thrive in both academic and professional settings.

The emphasis on learning and innovation skills, interpersonal competencies, digital literacy, and life skills as outlined in the article provides a robust foundation for examining how educators can enhance their teaching methodologies. The study resonates with the idea that preparing students for jobs and challenges that may not yet exist requires a focus on creativity, collaboration, and problem-solving. Furthermore, the integration of digital tools and media literacy into classroom instruction, as discussed in the article, underscores the necessity for teachers to adopt and implement strategies that align with the technological demands of the modern era.

The present research also engages with the article's perspective on the role of education in fostering adaptability and lifelong learning. By investigating practical approaches to embedding 21st-century skills into educational practices, the study contributes to the broader discourse on how schools can better prepare students to become informed creators and proactive agents of change. Ultimately, the discussion highlights a shared commitment to shaping future-ready learners capable of meeting the demands of an interconnected and ever-evolving global environment.

According to Care (2017) Over the past several decades, the demand for formal education to encompass the development of generic skills alongside traditional academic subjects has significantly increased. This shift emphasizes the inclusion of competencies related to ways of thinking, working, using tools, and living effectively in a rapidly changing society. Skills such as communication, problem-solving, collaboration, and critical thinking are increasingly recognized worldwide as essential for students' success. However, a major challenge lies in determining effective methods to support and teach these skills within schools and classrooms.

In the absence of universally established, evidence-based approaches to teaching these competencies, countries are exploring diverse models to integrate them into their education systems. For instance, Singapore's "Swiss Roll" approach adopts a value-centric framework that integrates 21st-century competencies into the core curriculum. This framework includes civic literacy, global awareness, cross-cultural skills, critical and inventive thinking, communication, collaboration, and social and emotional competencies. Teachers are guided by syllabi provided by the Ministry of Education, which offer principles for implementing varied teaching approaches to enhance learning. Similarly, Australia's 2010 national curriculum identified seven general capabilities, which teachers are encouraged to embed throughout their instruction, supported by resources from the Australian Curriculum Assessment and Reporting Authority.

He added in Costa Rica, recognizing the need for the education system to adapt to evolving skill demands, the National Development Plan for 2015-2018 and a curriculum introduced in 2018 emphasized the development of key 21st-century skills. These include socioemotional skills, communication, critical thinking, citizenship, and problem-solving. Kenya is also making strides by developing a competency-based curriculum designed to integrate seven competencies across all subjects to ensure a comprehensive approach to skill development.

To address this gap, it is necessary to develop developmental roadmaps that clarify how these competencies evolve. Such roadmaps would outline what the demonstration of specific skills looks like at various levels and provide strategies for eliciting or stimulating performance. These guidelines are essential for integrating the development of 21st-century skills into existing subject-based curricula and reform efforts, enabling educators to foster these competencies effectively within their classrooms.

The insights from this article provide significant relevance to the current study by underscoring the global shift in educational priorities toward integrating 21st-century skills into formal curricula. The emphasis on skills such as communication, problem-solving, and critical thinking aligns

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closely with the present study's focus on equipping students with competencies necessary for navigating modern societal and workforce demands. The approaches adopted by countries like Singapore, Australia, Costa Rica, and Kenya demonstrate diverse strategies for embedding these skills into education systems, highlighting the need for structured frameworks and roadmaps to guide implementation. This reinforces the current study's argument for the development of clear, evidence-based methodologies that educators can use to incorporate 21st-century competencies effectively. The discussion also emphasizes the importance of understanding skill progression and aligning teaching practices with developmental milestones, which is critical for achieving meaningful integration in subject-specific and broader curricular contexts. These connections affirm the study's purpose in exploring practical and scalable solutions to enhance skill development in contemporary education.

The [10]UNESCO (2020) outlines the 21st century skills as a comprehensive set of abilities and attributes essential for individuals to thrive in a rapidly evolving global landscape. This framework emphasizes the importance of equipping learners not only with knowledge but also with a diverse range of competencies that enhance their ability to think critically, work collaboratively, and adapt to new challenges. Among these skills, creativity and innovation stand out as vital, as they empower students to generate new ideas and approach problems in novel ways, fostering an environment that encourages exploration and risk-taking in learning. Critical thinking, problem-solving, and decision-making are interconnected skills that enable individuals to analyze situations, evaluate options, and make informed choices, essential for navigating the complexities of modern life. Educators can cultivate these competencies by encouraging inquiry-based learning, where students engage with complex problems, gather and assess information, and propose viable solutions.

IV. METHODOLOGY

The research method employed in this study is quantitative data collection and analysis techniques. This approach allows for a comprehensive investigation of application of the 21st century skills of learners in Tabaco City Division's in public secondary schools. Descriptive research according to Polit and Hungler (2002)[1], aims primarily at describing a phenomenon rather than explaining it. Its purpose is to observe and document aspects of a situation as it naturally occurs and sometimes to serve as a starting point for hypothesis generation or theory development.

Likewise, Calderon (2008)[2] mentioned that descriptive research involves the systematic collection and presentation of data to give a clear picture of the research subject, respondents or population. A structured survey questionnaire is designed to collect quantitative data on teachers' application of 21st century skills of learners. The survey includes the 21st century skills of learners, the level of application of 21st century skills along technology integration, critical thinking and problem solving, collaboration and communication, adaptability and flexibility and lifelong learning, its effects to learners, and identified challenges met in developing 21st century skills of learners. Surveys were administered to teachers to determine the application of 21st century skills of learners based on their instructional practices' experiences and observations.

V. FINDINGS, CONCLUSIONS AND RECOMMENDATION

A. Findings

The findings of the study were as follows:

- Among the 21st century skills, *adaptability and flexibility* obtained the highest frequency of 255 or 90.11 percent. This is followed by *critical thinking and problem solving* with 253 or 89.40; *lifelong learning* with 252 or 89.05 percent; *technology integration* with 251 or 88.69 percent; *collaboration and communication* with 249 or 87.99 percent.

- *The Level of Application of the 21st Century Skills Along Technology Integration*.

- *The level of application of the 21st century skills along technology integration.* Two (2) of the indicators are adjectivally described as *always* based on the computed weighted mean. These are *collaborated with colleagues to share best practices for integrating technology in pedagogy* with 4.34; and *integrates technology tools and resources to enhance student engagement and learning* with 4.29. However, the weighted mean of the three (3) remaining indicators are interpreted as *often*. These indicators are as follows: *explores innovative ways to incorporate technology to support diverse learning styles and preferences* with 4.17; *updates digital skills to stay current with advancements in educational technology* with 4.13; and *uses digital platforms and educational software to create interactive and dynamic learning experiences* with 3.91. The ratings average is 4.17 which is also described as *often*.
- *The level of application of the 21st century skills along critical thinking and problem solving*. The indicators along this 21st century skills are rated as follows: encourages students to think critically by posting thought-provoking questions and presenting real-life challenges with 4.69; *guides students in analyzing information, evaluating evidence, and developing logical arguments* and *provides constructive feedback to students to enhance their problem-solving skills and decision-making abilities*, both with 4.60; *creates opportunities for students to apply problem solving strategies independently and*

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collaboratively with 4.56; and *designs activities that promote creativity, innovation, and resilience in addressing complex problems* with 4.46. The ratings average is 4.58, they are all adjectivally described as *always*.

- *The level of application of the 21st century skills along collaboration and communication.* Among the indicators, *encourages students to express their ideas confidently and respectfully in diverse group settings* obtained the highest rating of 4.73. This is followed by communicates effectively with students, parents, and colleagues to ensure clarity and mutual *understanding* and *facilitates teamwork and peer collaboration to achieve shared learning goals*, both are rated 4.67; *fosters collaborative classroom environment where students engage in meaningful discussions and cooperative learning activities* with 4.66; and *leverages communication technologies to enhance parents-teacher communication and student feedback* with 4.47. An average of 4.64 is obtained from the ratings. *Always* is used to described the said numerical values.
- *The level of application of the 21st century skills along adaptability and flexibility*. The indicator, *adjust instructional plans and pacing to accommodate diverse student interest and motivations* obtained the highest rating of 4.62. Next to this are *adapts teaching strategies based on students' individual needs, learning styles, and abilities*; *responds to unexpected changes and challenges in the classroom environment*; and *embraces new teaching methods and approaches diverse student interests and motivations*, they are all rated with 4.60. The remaining indicator, *seeks feedback from students and colleagues to continuously improve and refine teaching techniques* is rated 4.52. They obtained an average of 4.59, *always* is used to described the said ratings.
- *The level of application of the 21st century skills along lifelong learning*. The computed weighted mean of all the indicators is interpreted as *always*. The ratings are as follows: *prioritizes professional development opportunities to expand knowledge and expertise in education* with 4.45; *engages in reflective practices to identify areas for growth and improvement in teaching* with 4.43; *collaborates with other educators and participates in educational communities to share and acquire new insights and strategies* with 4.34; *actively seeks out resources, workshop; and training programs to enhance teaching skills* and *pursues advance certifications and credentials to further develop pedagogical competencies*, both with 4.28. The value of the average weighted mean is 4.36. They are interpreted adjectivally as *always*.
- *Summary on the level of application of the 21st century skills*. Based on the average weighted mean, *collaboration and communication* obtained the highest rating of 4.64. This is followed by *adaptability and flexibility* with 4.59; *critical thinking and problem solving* with 4.58; *lifelong learning* with 4.36. These ratings are interpreted as *always*. In addition, *technology integration* is only rated with 4.17 and interpreted as *often*. The overall average weighted mean is 4.47 which is interpreted as *always*.

➢ The identified effects along technology integration are: *facilitates interactive and engaging learning experiences through technology* with a frequency of 248 or 87.63 percent; *enhances students' digital literacy and proficiency* with 204 or 72.08 percent; and *encourages innovative use of digital tools to solve problems* with 191 or 67.49 percent. In critical thinking and problem solving, the effects are *fosters students' abilities to analyze information and think critically* with a frequency of 248 or 87.63 percent; *encourages students to approach challenges with creativity and resourcefulness* with 246 or 86.93 percent; and *provides opportunities for students to practice problem-solving skills in real-world contexts* with 243 or 85.87 percent.

However, on collaboration and communication, the effects are *promoting teamwork and collaboration among students* that provides a frequency of 257 or 90.81 percent; *develop students' communication skills, including verbal and written expression* with 251 or 88.69 percent; and *encourages respectful dialogue to new learning environments and situations* with 232 or 81.98 percent. Along adaptability and flexibility, *encourages flexibility in thinking and willingness to explore different perspectives* is one of the effects that obtained a frequency of 247 or 87.28 percent; *helps students adapt to new learning environments and situations* with 244 or 86.22 percent; and *prepares students to navigate uncertainties and embrace change* with 224 or 79.15 percent.

Moreover, along lifelong learning, the identified effects are *equipping students with skills and attitudes needed for lifelong personal and professional development* with a frequency of 257 or 90.81 percent; *models continuous learning and growth mindset for students* with 236 or 83.39 percent; and *instills a sense of curiosity and eagerness to learn beyond the classroom* with 188 or 66.43 percent.

➢ The identified challenges are ranked based on the frequency obtained. Along technology integration, *limited access to technology resources for teaching and learning* has a frequency of 206 which is the first (1st) in rank; *inconvenience in engaging students with digital tools and flatforms* with 148 which is second (2nd); and *lack of teacher proficiency in utilizing educational technology effectively* with 109 which is third (3rd).

The challenges on critical thinking and problem solving are *insufficient opportunities for students to practice critical thinking and problem-solving skills* that has a frequency of 122, the first (1st) in rank; *a bit challenging in assessing and providing feedback on students' critical thinking abilities* with 118, the second (2nd); and *difficulty in designing activities that*

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promotes higher-order thinking skill with 106, the third (3rd) in rank.

In addition, along collaboration and communication, *communication barriers among students from diverse backgrounds* is the first (1st) in rank with a frequency of 118; *restricted opportunities for collaborative projects and teamwork* are the second (2nd) with 108; and *problem in fostering effective communication skills in students*, the third (3rd) with ninety-nine (99). However, in adaptability and flexibility, *rigid curriculum and instructional approaches that hinder adaptability* is considered the first (1st) in rank with 14 as frequency; *complexity in accommodating diverse learning needs and preferences* with 132, the second (2nd); and *inadequate support for teachers to adapt teaching methods to changing educational trends* with 131, the third (3rd) in rank.

Further, along lifelong learning, *limited resources and time for teachers to enhance their pedagogical competencies* obtained a frequency of 179 which is the first (1st) in rank; *brief consideration on professional development and continuous learning among educators* with 113 which is second (2nd); and *struggle in promoting a culture of lifelong learning and growth mindset in schools* with 107 which is third (3rd).

- The researcher proposed a plan of action to address the challenges encountered by the teachers on the application of the 21st century skills of learners.

B. Conclusions

The following conclusions were drawn:

- The 21st skills of learners utilized by the teachers were *technology integration*; *critical thinking and problem solving*; *collaboration and communication*; *adaptability and flexibility*; and *lifelong learning.*

- *Always* was used to describe the level of application of the 21st century skills of learners along collaboration and communication; adaptability and flexibility; critical thinking and problem solving; and lifelong learning. However, along technology integration it was interpreted as *often*.

- The common effects of application of the 21st century skills of learners were *facilitates interactive and engaging learning experiences through technology* along technology integration; *fosters students' abilities to analyze information and think critically* along critical thinking and problem solving; *promotes teamwork and collaboration among students* along collaboration and communication; *encourages flexibility in thinking and willingness to explore different perspectives* along adaptability and flexibility; and *equips students with skills and attitudes needed for lifelong personal and professional development* along lifelong learning.

- The identified challenges were *limited access to technology resources for teaching and learning*; *insufficient opportunities for students to practice critical thinking and problem-solving skills*; *communication barriers among students from diverse backgrounds*; *rigid curriculum and instructional approaches that hinder adaptability*; and *limited resources and time for teachers to enhance their pedagogical competencies.*

- A plan of action was presented by the researcher to address the challenges encountered by the teachers on the application of the 21st century skills of learners.

C. Recommendations

Based on the findings and conclusions, the following recommendations are offered:

- More attention be given to instructional design that is interactive and engaging which adopts digital methods.
- Appropriate used of Learning Management Systems (LMS) to organize content which Incorporates multimedia resources (videos, podcasts, infographics) in daily lessons to sustain their high performance in literacy areas, and to further improve their performance level along critical thinking and problem solving; collaboration and communication.
- Provide continuous professional development and resources for teachers to enhance their teaching practices and adapt to new challenges.
- The challenges encountered by the teachers on the application of the 21st century skills of learners be addressed to improve their teaching competence and the learning skills of the students.
- The plan of action presented by the researcher be implemented by the secondary schools to guide the teachers on the application of the 21st century skills of learners.

AREAS FOR FURTHER STUDY

The following areas are recommended for further research:

- The Relationship Between Teachers Pedagogical Competencies and Students Academic Performance
- Teachers Participation to the Enhancement of 21st Century Skills of Learners
- The Strategies of Teachers in Developing the 21st Century Skills of High School Students

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