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DESIGN THINKING AND ICT INTEGRATION ITS EFFECT TO 21ST CENTURY SKILLS AMONG THE BTLED-HE STUDENTS OF KOLEHIYO NG PANTUKAN



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In Partial Fulfillment of the Requirement for the Degree
Bachelor of Technology Livelihood Education
major in Home Economics

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KOLEHIYO NG PANTUKAN
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Approval Sheet

This Action Research titled “**DESIGN THINKING AND ICT INTEGRATION ITS EFFECT TO 21ST CENTURY SKILLS AMONG THE BTLED-HE STUDENTS OF KOLEHIYO NG PANTUKAN**” is submitted by **EMMANUEL R. PAPA JR, JAN KAYE S. ESCONDE, JUMER KIN C. MANGARON** in partial fulfillment of the requirements for the degree, **Bachelor of Technology and Livelihood Education major in Home Economics** is hereby ***approved and accepted.***

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Abstract

Information and Communication Technology (ICT) and Design Thinking. Integration in the classroom is often viewed as a panacea for improving BTLED-H.E students of Kolehiyo ng Pantukan challenges in terms of their ICT Major. This study aimed to investigate the level of the Students of BTLED-H.E in terms of Technology and Software Applications being used to support digital and Learning Skills preservation within academic libraries in Kolehiyo ng Pantukan. The study thus looked into theories, Herbert Simon's Design Thinking Theory (1969), ICT integration, such as the OECD's ICT Literacy Concept (2006), and UNESCO's Components of 21st Century Skills (1980), used in preserving digital resources to enhance the success of implementing digital preservation systems in academic libraries in Kolehiyo ng Pantukan. The respondents of this study consisted of two hundred forty-nine (249) BTLED-H.E students and used Survey Questionnaire. The finding revealed that most respondents know how to access technologies and software applications and practice their skills to understand and enhance their knowledge of technology. The institution needs to encourage the students to show their skills and give them facilities and resources to help them preserve and avoid technological obsolescence.

Keywords: Design Thinking and ICT Integration Its Effect to 21st Century Skills among the BTLED Home Economics students of Kolehiyo ng Pantukan.

Dedication

This study is a fruit of assiduous works and arduous sacrifices. Through the researchers' efforts, this study is heartily and genuinely dedicated to the people who become the researchers' inspiration and motivation. To the teachers who have difficulties with this modular distance learning, especially the junior high school advisers, we are incredibly grateful and honored if this study will help and guide you towards improving your advisory. To the future participants and beneficiaries of our research, the researchers look forward to supporting and guiding you in improving your performance in this modular distance learning.

The Authors

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The Authors

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CHAPTER I

INTRODUCTION

Developing 21st-century abilities in students is a significant focus for many K–12 educators. The use of information and communications technology (ICT) in education is growing. Because it may be utilized as a teaching tool for the 21st Century Learning Competence, it is becoming increasingly critical. Design Thinking can be used to organize the qualities that a playful interface should have to promote this educational process and, more importantly, to meet the needs of a setting that wants to make the most use of its technological resources. (Bonet, 2021).

In the Philippines, ICT development and Design thinking is multiplying. ICT is the driving factor for the growth of various sectors of life in many countries. The influence of this design thinking and technology in learning is also significant for

improving learning performance. Many studies have shown the success of using ICT Integration and Design thinking in learning to improve learning performance in various educational aspects. These studies show positive impacts at the class level, community, and a larger area. But it is undeniable that there is still controversy among teachers about using ICT, especially mobile technology, in schools. On the other hand, teachers' Design Thinking will also determine how ICT can be used optimally in learning at school (Sulisworo & Ahdiani, 2017).

Theoretical frameworks that identify and define 21st-century talents have been established by 21st Century Skills (ATC21S). Even though the skills are familiar, multilateral organizations' current interest in them has led to a renewed emphasis on assessing them with the same exacting standards as conventional learning areas. Additionally, nations worldwide are expanding their learning objectives to incorporate 21st-century skills like problem-solving, critical thinking, and cooperation and traditional academic abilities like literacy and numeracy. (Care, Anderson, & Kim, 2016).

In San Isidro, Davao Oriental, the elements and impediments affect the adoption of Design Thinking and ICT in Filipino public primary schools. The nation's educational system is significantly transforming from a K–10 system to the 21st Century Competence model. (Castillo, 2017).

This issue encouraged us to conduct research that determined how design thinking and ICT integration related to the 21st Century skills of BTLED Home Economics students in Kolehiyo ng Pantukan.

The need for more research on this topic is addressed by the effects of Design Thinking and ICT Integration on students studying BTLED Home Economics at Kolehiyo ng Pantukan's 21st Century Skills. For students to be prepared for college and the workforce today, learning must go beyond knowledge of basic subjects and heavily incorporate design thinking abilities and ICT integration. It is crucial to get ready for the demands of 21st-century skills because it provides students with valuable tools and techniques that encourage critical

thinking and logical reasoning (Mugot & Sumbalan, 2019). Yet, due to antiquated methodology and teaching strategies, rote learning is a joint component of 21st Century Competence (Diefenthaler et al., 2017).

This study aims to ascertain the effects of Design Thinking and ICT Integration in the 21st Century Skills among the BTLED Home Economics students of Kolehiyo ng Pantukan.

Problem Statement

This research aims to ascertain whether there is a substantial relationship between Design Thinking and ICT Integration in the 21st Century Skills among the BTLED Home Economics students of Kolehiyo ng Pantukan.

In particular, this study aims to respond to the following queries:

1. What is the level of design thinking of the students in terms of:
 - 1.1 Inspiration;
 - 1.2 Ideation; and
 - 1.3 Implementation?

2. What is the estimated level of ICT Integrated skills of the students in terms of:
 - 2.1 Access;
 - 2.2 Manage;

2.3 Integrate;

2.4 Evaluate; and

2.5 Create?

3. What is the estimated level of 21st Century skills of the students in terms of:

3.1 Learning skills;

3.2 Life skills; and

3.3 Literacy skills?

4. Is there a significant relationship between design thinking and the 21st-century skills of the students?

5. Is there a significant relationship between ICT Integration and the 21st-century skills of the students?

Null Hypothesis

This hypothesis was tested at a 0.05 level of significance:

HO1: There is no significant relationship in Design Thinking of BTLED Home Economics students in Kolehiyo ng Pantukan when analyzed according to year level.

HO2: There is no significant relationship in the ICT Integration of BTLED Home Economics students in Kolehiyo ng Pantukan when analyzed according to year level.

Review of Related Literature

Readings and related studies are presented in this section. This supports the researcher's study on "Design Thinking and ICT Integration Its effect to 21st Century skills among the BTLED- H.E student in Kolehiyo ng Pantukan". However, these studies reported on the paper come up from the internet to support the investigation.

Design Thinking

Tuttle (2021) claims that the origin of design thinking was the development of innovative new products and technologies. Nonetheless, this methodology is now widely applied in both the corporate and governmental sectors of all countries for professional and individual projects. Design thinking, according to Liedtka (2018), has drawn considerable attention in the business press and has been hailed as a cutting-edge approach to solving problems that are well suited to the frequently cited difficulties that business organizations encounter when trying to foster more innovative thinking and achieve growth. However, it has yet to get much attention from business researchers, either in the way of empirical study or in terms of assessing its conceptual validity, connection to the academic literature on organizational decision processes, or foundation in the psychology of human cognitive functions.

Design thinking is the quickest organizational path to creativity and innovation. High performance, changing the way that business, education and creativity interact. The design goal in the past was to increase the appeal of an existing product as a final phase in the product development process. Nowadays, however, designers want to involve inspiration, ideation and implementation processes that improve learner's design thinking skills (Serrat, 2017).

The core of design thinking is placing individuals in circumstances that drive them to think and act like designers. professional designers, encouraging risk-taking, empathy, civic literacy, and cultural sensitivity (Sharples et al., 2016). Brenner (2016) also emphasized that Design thinking might be a mentality, a process, and a toolbox for approaching problem-solving. Design thinking was developed at the Stanford Design School and popularized by the design firm IDEO. Stefaniak (2020) defines design thinking as "a process that includes the compassionate design of solutions and iterations of ideation and creativity while engaging in problem-solving" (Dam & Siang, 2020).

Moreover, A set of methods and attitudes called "design thinking" are applied to solving issues of any size. It is a dynamic and iterative strategy that meets the needs of the end user. Instead of using "deductive reasoning," which is the logic of what should be or is, Design Thinking makes extensive use of "abductive logic," which is the logic of what might be. This emphasizes the significance of compiling a comprehensive list of potential solutions gathered from sources both inside and outside the field of emphasis, which will result in a well-tested, user-focused solution (Gottlieb et al., 2016).

Inspiration. The design thinking framework's initial step is concerned with defining actual problems. Understanding the project concept (motivation), analyzing users' needs (ideation), and choosing a composition for their digital work (implementation) are the three aspects of the significant activity during this phase (Lin et al., 2020). The brief, as defined by Sandu (2021), might range from a straightforward notion to refining methods or procedures. We work hard to guarantee that new designs reflect our image or vision because inspiration provides us the drive to do so. We generate our finest work when we are motivated. Stimulation helps us with thinking, outlining, and implementing fresh concepts.

Moreover, The core of all the news phases is the inspiration phase, during which the person engaging in brainstorming enables them to solicit feedback about problems. The person should have a clear understanding of the design that needs to be addressed by the end of this phase. This phase, which is regarded as a pivot point where the many processes of looking for another perspective and use it as inspiration. (Elmansy, 2017).

Additionally, Design thinking's "Inspiration phase" may be crucial because it establishes the framework for the following two processes. In other words, the caliber of work done in the Inspiration phase provides the raw material to work with in the Ideation phase. The Inspiration phase entails framing the problem and its scope, gathering meaningful data from customers and their pains, and synthesizing and interpreting the collected data for actionable steps in the "Ideation phase." As a result, if "trash in, garbage out" (Torabi, 2020).

Furthermore, Inspiration is a highly variable psychological state of mind. When something affects a person's soul, or when an idea or impulse "breathes in," they feel inspired. We experience an upsurge in energy and motivation. We anticipate fresh opportunities and are receptive to other people's viewpoints. The characteristics of inspiration include feelings of connection, openness, clarity, and vigor (Sviridova, 2018).

Ideation. The third part of the four-phase process in design thinking is ideation, which is also sometimes referred to as "ideate." Leading figures and members of the Design thinking caucus use this method to challenge presumptions and generate concepts for novel solutions. Students must develop, discuss, and critically evaluate ideas as potential solutions to a problem during this phase. Pupils are instructed and coached to consider and articulate concepts that may aid in the ideation process. Students are given various exercises to develop their capacity for critical thought, and eventually, their speaking skills to provide solutions to issues for the sake of creativity (Buphate & Esteban, 2022).

Also, The ideation process involves creating concepts and solutions through activities such as brainwriting, sketching, prototyping, brainstorming, and worst-case scenarios, among a wide variety of other ideation techniques. Ideation is another name for the third step of the Design Thinking process. Even though many people have indeed taken part in "brainstorming" sessions in the past, it might be challenging to facilitate a practical ideation session. This post will teach you some methods and rules to help you encourage and get ready for successful, efficient, creative, and enjoyable brainstorming sessions (Dam & Slang, 2021).

Implementation. We should have about a dozen concepts as a result of the Ideation phase when we go into the Implementation phase, and we will need to choose one of them by consulting the actual clients. As previously mentioned, design thinking is known as a customer-driven strategy due to two factors: the extensive examination and comprehension of consumer issues during the Inspiration phase, as well as how these customers interact with the solutions put forth during the Implementation phase (Torabi, 2020).

Moreover, The creation of the finished goods or services depends on implementation. Prototyping is vital in this area. An innovative product can be developed by conducting testing on a small, carefully chosen sample of people (Singh, 2022). According to Henriksen et al. (2017)'s research, applying Design Thinking techniques increases innovation and knowledge depth. Improves the evaluation of the ideas into form or action, moves the ideas from start to finish, and implements the ideas into a finished product. The effectiveness of classrooms is increased, according to a number of further study in education, when teachers utilize Design Thinking to produce lectures and learning materials for their pupils.

ICT Integration

It is difficult and complex to integrate ICT into teacher preparation programs and instructional methods. This becomes crucial for pre-service teachers because they need to have the skills necessary for their future teaching practices. The purpose of this study is to ascertain pre-service teachers' perceptions of how ICT is incorporated into teacher education and how it affects their teaching practices.

A stratified two-stage probability sampling one design was used (Aslan & Zhu, 2015).

Also, The use of ICT in education can improve teaching and learning in a variety of ways. The effectiveness of ICT integration in educational contexts, however, depends on its objectives and how well the teachers and students use it. While ICT in education has tremendous promise to improve teaching and learning processes, there are several challenges involved in making that potential a reality. Long-term, carefully thought-out plans are necessary for real improvements, whether at the instruction level, curriculum, or classroom management, to successfully incorporate ICT in 21st-century education. After a few training sessions, these modifications are irreversible. During the course of several academic years, change is observed gradually, necessitating substantial professional development and enough support for stakeholders to go from stage to stage (Rabah, 2015).

Moreover, Information and communication technologies (ICT) have fundamentally altered our way of life and created new possibilities across almost all facets of our civilization. The application of access, manage, integrate, evaluate and create skills helps the learners acquire fundamental skills in ICT. Nonetheless, despite their enormous potential, integrating ICT into regular teaching practice requires effort (Flores et al., 2017). Information, communication, and technology (ICT) are a bridge in supporting learning for persons with special schooling needs, according to Aksal and Gazi (2015). It serves as a bridge between their way of living and the socialization they experience in school. ICT integration is crucial in

the field of special education. In order to ensure educational equality and empower all individuals to participate in society and use technology effectively, the majority of developing nations pay close attention to ICT practices in their education reports.

Furthermore, ICT integration improves student learning results while also greatly assisting in preparing them for the challenges of globalization in the twenty-first century by enhancing their ability to generate and analyze knowledge using higher-order thinking. Its usefulness in the classroom and the characteristics that make ICT integration in schools possible receive serious and significant acknowledgment throughout the world and are extensively researched (Koehler, 2015).

Access. Access to various technologies would shorten the time required for manual evaluation and serve as a powerful tool for managing the learning process. The use of ICT in higher education institutions is a significant barometer of a nation's commitment to the principles of the fourth industrial revolution (Xing & Marwala, 2017). According to Aesaert (2015), ICT access refers to the chances that parents give their kids to acquire ICT skills by giving them the required technological infrastructure.

Moreover, access skills are the aptitudes that let consumers use technology sensibly. These include fundamental computer abilities like using email and web browsers, as well as opening, editing, and saving files. Others are the ability to access online library services, internet-based learning platforms, downloadable

ebooks, mobile learning tools and applications, and maintain social connections through social media like facebook and locate and effectively retrieve information from library websites and databases (Edeh et. al., 2022).

Furthermore, the research reveals a beneficial influence on academic achievement for underprivileged pupils who are offered ubiquitous access to appropriate digital technology at home over some time. Nevertheless, when given greater access to digital technology, advantaged children who already have access to it at home show little to no—if any—improvement in their academic performance (Cochrane & Janette, 2020).

Manage. Information should be arranged to make it easier for you or others to find later. For example, email should be categorized into the proper folders based on a critical review of the email contents. Employee information should be arranged in an organizational chart. Database returns should be sorted to make clear clusters of related information (Katz Et al., 2018). Valencia et al. (2016) list a few aspects of ICT integration, such as acquiring management skills for platforms, interactive tools, search engines, information search robots, social networking sites, and more.

Velázquez, Aguiar, and Aguiar (2019), On the other hand, discussed ICT integration-related factors such as managerial skills and motivation, highlighting the fact that these are crucial characteristics that allow advanced students to achieve education quality in the new ICT-based learning method. Moreover, Yu, Lin, and Liao (2017) argued that numerous studies have demonstrated how

organizational variables and attitudes toward technology also affect students' ability to manage ICTs. ICT is being used more and more in education. It plays a crucial role in promoting and boosting student learning. It's complicated and challenging to incorporate ICTs into instructional practices, as Almerich, Orellana, Suárez, and Dáz (2016) have emphasized.

Integrate. The internet and mobile communication technologies have combined to create new communication networks and routines that have permeated daily life, resulting in a change in media. In order to effectively use ICT and information in the new environment, digital skills must be developed and integrated (Peicheva, Milenkova, 2017)

Also, ICT, which is mainly utilized for informational purposes, has become crucial for pupils. We now require world citizens who are competitive and up to pace with international norms. In order to bring about beneficial changes, this advantage could be supplied by incorporating technology into education for extended periods of time during teacher training programs (Aydin & Zhu, 2015).

Moreover, In order to facilitate and improve student learning, ICT integration in education is essential. ICT integration by teachers into their teaching practices is a complex and challenging topic, as Aslan and Zhu (2015) have noted. Investigating the factors that allow or prevent instructors from using ICT for instruction is therefore required.

ICT integration was therefore deemed necessary because it improves and optimizes learning outcomes in our teaching-learning process (Srijamdee, 2020).

Evaluate. It is based on a holistic, constructivist, integrative, rational, and systemic posture, according to Melo (2018), and the integration of ICT is knowing how to evaluate and integrate new trends in technological advancements and how to get students to achieve further knowledge using ICT in the classroom based on skills. Uslu and Usluel (2020) noted that evaluation skills are crucial for planning the strategy from planning and implementation to measurement and evaluation when integrating ICT into the learning process.

Also, It has been proven that students' experiences and insights from their evaluation of ICT integration have a favorable impact on their ICT skills. Students need to be literate in ICT in order to use it successfully for learning (Çam & Saltan, 2019). ethanol cineethanol ethanol andethanol Gonz Castro Calgary, and and and and and and and and (Zhao, Yao, & Kong, 2016). ICT is welcomed by both teachers and students as a fresh approach to supporting cutting-edge, productive learning activities to raise academic attainment.

Create. Producing skills can improve learning outcomes to integrate different senses; establish new collaboration using online production, computer, and networking technologies; incorporate differentiation and variety; and empower students to tailor their learning experience. In order to help students create their own knowledge, ICT skills should be presented in the classroom (Soparat & Klaysom, 2015).

Also, any nation's progress is significantly impacted by information and communication technology (ICT). Someone qualified in this sector is rapidly

presented with excellent chances. Hence, a country must generate inhabitants who are ICT-literate especially on their creative skills so that they can create the infrastructure necessary to exist in this digital age of civilization (Crisolo, 2018).

21st Century Skills

Adequate teaching tools are one that educators must provide for learning. Higher education that trains students for careers requiring specific applied skills is known as vocational education. The use of instructional media that are suitable for the needs still needs to support the learning process in vocational education. A scholarly approach and experience with various instructional design frameworks are necessary when developing teaching aids for vocational education. Graduates of vocational education must possess work skills, and one of its goals is to foster the development of 21st-century abilities through the use of experiential learning methods (Utami et al., 2018).

Also, There is a growing international consensus regarding the significance of including 21st Century skills in educational curricula (Ontario Ministry of Education, 2016). Teachers must encourage and promote their students' production readiness, curiosity, problem-solving abilities, and critical thinking when it comes to 21st-century skills. Three key topics are used to categorize 21st-century skills: learning and innovation, information, technology, and media skills, and life and career skills (Partnership for 21st century, 2015). Everyone today needs to possess specific modern skills (Hamarat, 2019). This is only achievable

in a learning and teaching environment based on information and abilities from the twenty-first century (Korkmaz, 2019).

In addition, Because of scientific advancements, technological improvements, new ways of thinking, and many viewpoints that people have encountered, the 21st century is more than just a chronological period. Living in the twenty-first century is regarded as participating in a global transformation including concepts like science, development, production, innovation, and technology. This global transformation describes a scenario in which people produce knowledge quickly and daily living complexity increases. Education is for more than just school. People now need to modernize, stay up with the times, and excel in academic and professional fields. Adapting society to the breakthroughs in science, technology, and education is feasible by teaching individuals suitably. The curriculum's inclusion of 21st-century learning abilities is beneficial and essential for preparing students. for their future life (Alismail & McGuire, 2015).

Moreover, To be able to get such high regard, a person must be able to evolve with the times, select from the vast amount of information available, analyze it, apply what they have learned to their everyday lives, and be productive. To spread news to daily activities, people need to develop higher-order cognitive abilities and competences. According to the research, these abilities and competences are known as "21st Century Learning Skills" (Anagün et al., 2016).

Furthermore, More than just having enough knowledge or focusing solely on one's talents are essential components of 21st-century learning skills. The

development of a person's talents, such as questioning, thinking, understanding, and problem-solving, as well as the reflection of this development on the performance of the person in their academic and social lives, are all examples of 21st-century learning skills. In this situation, it can be argued that developing 21st-century learning capabilities—which include people's higher-order thinking skills, aptitudes, and performances—has a crucial impact on raising pupils who can keep up with age and foster social growth (Nür & Kozikolu, 2020).

Learning Skills. Individuals who are good at learning are independent problem solvers who can think critically; even without a teacher, they can come up with solutions for challenging circumstances. They identify problems and replace them with effective fixes. These are coworkers who reach compromises by cooperating. In order to achieve the best outcomes for the team, they are willing to give up their wants and needs. They are articulate speakers who have the courage to share their opinions with individuals from different backgrounds. , ss , They are innovative and creative thinkers beyond anything else. They are able to modify whatever is outdated to fit the new in order to adapt to changes (Nord Anglia Education, 2020).

Also, Acquiring skills is essential for careers and beyond, so children will study more effectively. These abilities, however diverse, do interact and relate to one another. They frequently take care of our requirements outside of school as well. Focus has been placed on topic understanding, social studies, technical skills, etc. in order to ensure that students are ultimately prepared for careers. These 21st-century learning principles serve as the foundation for the curricula at

future-ready schools. The aim is for students to develop the abilities necessary to meet the problems of contemporary society. By doing this, we can get kids ready for employment that will only exist for a while (Tumapon, 2022).

Moreover, A fundamentally different attitude is necessary for the world of 21st-century learning skills. Students need to think critically, communicate effectively, work with diverse peers, solve complex problems, adopt a global mindset, and engage with information and communications technologies, to name just a few requirements, in order to participate effectively in the increasingly complex societies and a globalized economy that characterize today's world (Vivekanandan, 2019).

Furthermore, According to research on 21st-century learning skills, people must develop abilities including critical thinking, creativity, innovativeness, and information and communication technology (Bozkurt & Akr, 2016). This strategy is crucial for enhancing 21st-century skills like active learning, critical thinking, learning to learn, problem-solving, creativity, all-around thinking, cooperation, and communication, according to Yldrm and Selvi (2015).

Life Skills. In the early years, both at home and in preschool. During primary or secondary education, it can be too late to make an effective intervention; the secret to a fruitful intervention is "getting it right early." Although children's early development of life skills is heavily dependent on the quality of their early social interactions, early years educators are uniquely positioned to dramatically affect children's growth beyond the home environment (Barbour, 2019.)

In addition, The improved Life skills of students and teachers are favourably impacted by technology programs. Human development has always included the acquisition of information literacy, global awareness, critical thinking, and problem-solving skills. These abilities are essential for success in the local and international economies of today. The term "digital native" emphasizes that many individuals regard digital technology to be a part of reality in the twenty-first century as the postmillennial generation emerges as the world's dominant demographic and becomes inherently familiar with the technological culture in which they are born (Sauers & McLeod, 2018). Collaboration, ICT proficiency, higher-order thinking, and multicultural communication are only a few of the 21st-century life skills identified by Ganayem and Zidan (2018). This study's concentration is on these abilities since they are essential to modern life and because they are teachers' critical career and life skills.

Literacy Skills. In the twenty-first century, literacy is about creating and approving knowledge. Digital technologies have made it possible to disseminate knowledge of various kinds, replacing older media that were typically more tightly managed, such as encyclopedias and newspapers. Readers must be able to distinguish between fact and opinion due to the vast information flow of the digital era (OECD, 2021).

Also, The goal of Literacy Skills is to foster 21st-century skills, which are highly sought-after in the labor market today. Teachers who have received the appropriate training in information, media, and information and communication technology literacy must develop these abilities and make them accessible to high

school pupils. Accessing, using, managing, and assessing information are all parts of information literacy. Analyzing and producing media products are the main goals of media literacy (e.g., videos, audio, websites). Knowledge of information and communication technologies prepares users to use technology successfully (The Partnership for 21st Century Learning, 2015).

Furthermore, learning management systems, chat rooms, video forums, and tools for creating infographics are just a few examples of the many technological applications that benefit significantly from the excellent integration of many technology devices, including mobile, laptops, bright rooms, and literacy abilities. Using communication and information exchange to their fullest potential is the focus of many of these technologies and activities. Additional aspects of media literacy can aid students in developing their ability to evaluate the authenticity of the information they obtain from multimedia sources like social media applications and their capacity to evaluate the messages of dubious veracity that are prevalent in the media. Exercises to help graduate students choose between reliable and dependable sources could be included in the curriculum. The creation of media goods is the emphasis of the second 88 of media literacy. Products that are essential for teachers would benefit their students by using various products such as filmmaking, videos, podcasts, presentations, and other multimedia products (Alonso & Ramirez, 2018).

The following articles help the researcher to conduct the said research paper. It allows the researcher to understand the study that they showed.

Theoretical and Conceptual Framework

Herbert Simon's Design Thinking Theory (1969) says that Design Thinking is constantly tied to better the future. Building ideas is the basis of the creative process. In Design Thinking, there is no judgment because that would prevent the maximum amount of input (School & Thomas, 2017). The design thinking process consists of three (3) fundamental components: ideation, which is the generation, development, and testing of ideas; inspiration, which occurs in situations that stimulate the search for solutions; and implementation, which is the mapping of a path to a destination (Grift & Kroeze, 2016).

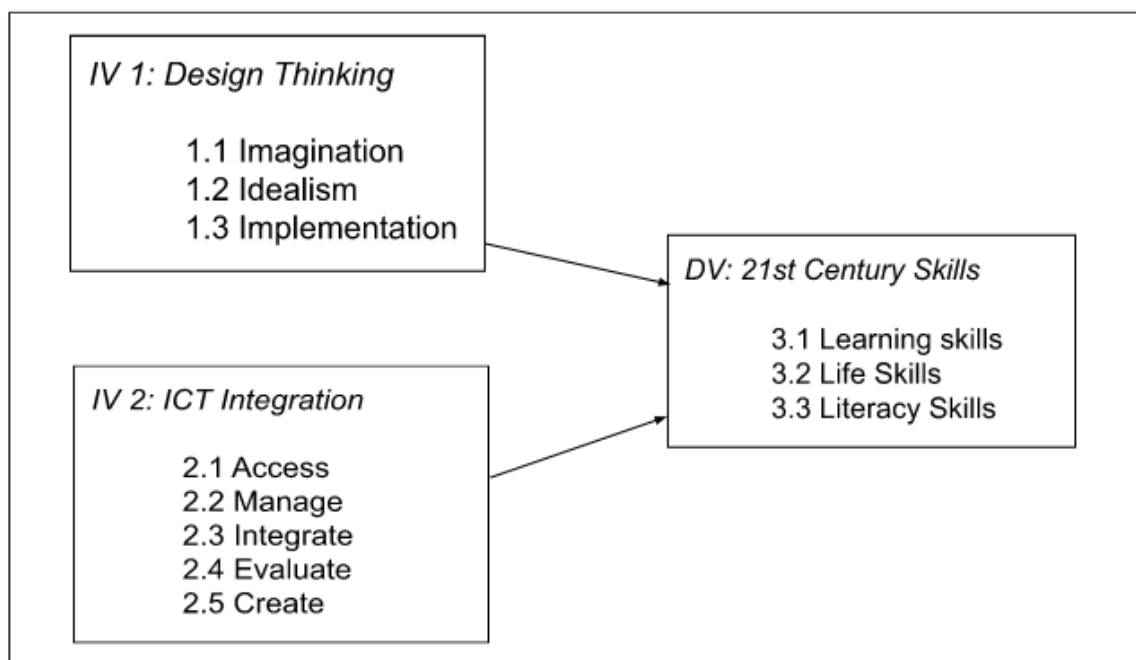
There have been many different defended settings for ICT integration, such as the OECD's ICT Literacy Concept (2006), which proposed five essential elements of ICT literacy: access, which refers to understanding and knowing how to gather and retrieve information; manage, which refers to using an existing organizational or classification scheme; and integrate, which refers to interpreting and representing information.

According to an adaptation of the UNESCO's Components of 21st Century Skills (1980), 21st-century skills broadly consist of three main skill sets, or the 3 Ls: literacy skills, life skills, and the ability to create and acquire new knowledge through reading, media, and digital resources. Learning skills are the skills necessary for the acquisition of new knowledge.

Design thinking is a well-established approach to ICT integration. Simon's Design Thinking Theory can be used as a lens, and some processes fit this study

well. Therefore, we carefully studied different design thinking processes, modified the ICT Literacy concept to make it applicable to the ICT Integration, and selected the most appropriate and relevant 21st Century skills suitable for our study.

Figure 1. Conceptual Framework of the Study



Significance of the Study

To gather empirical evidence on design thinking and ICT integration and its effect to 21st-century skills among the BTLED-HE student of kolehiyo ng pantukan, this study is seen to be beneficial to the following:

Students. This research will benefit the Students of Kolehiyo ng Pantukan because they will have helpful tips and skills in ICT. This will provide them with information on how to enhance the 21st Century skills of the students.

School. This research will also benefit the school by contributing more knowledge for the faculty and staff and making the administration more progressive because of their excellent service.

Future Researchers. This study will be beneficial to future researchers to be aware and knowledgeable of the learning capacity of the students, and it can be a help as a reference for more studies in the future.

Community. This study will provide information regarding Design Thinking and ICT Integration inside the community. The given data would guide them about 21st Century skills around the neighborhood. It is helpful to them, especially the people who are willing to know and enhance their skills.

Definition of Terms

Design thinking. Teams employ a non-linear, iterative process to comprehend people, question presumptions, reframe issues, and develop creative solutions for prototype and testing (Simon, 1969).

Integration of ICT. Understanding teachers' knowledge of technology integration for teaching is essential to providing the necessary support to help instructors grow their digital competence as digital tools gradually enter schools and classrooms (OECD, 2019).

21st-century competencies. Please discuss the information, practical abilities, professional skills, personal qualities, and routines essential for students to succeed today, especially as they transition to college, the workplace, and adulthood (Partnership for 21st Century Learning, 2015).

Chapter II

METHOD

The methods used in this study to determine the answers to the research questions are described in this chapter. This study used a quantitative strategy and an explanatory correlation design. The methodology that was chosen had two primary components. They participated in both the practice instrument test and the actual instrument test. The demographic and sample, research hypothesis, data collection, testing of the research equipment, and data analysis are all covered in this chapter.

Research Approach

In this investigation, the descriptive correlation method was employed. This technique examined the implications of two variables' relationships for cause and effect. It aimed to ascertain the strength of one or more connections. The strategy didn't require coercion or interference from the researchers other than that needed to administer the instruments necessary to collect the desired data.

It is a correlation since this study uses different indicators to show the relationship between the three variables, namely Design Thinking, ICT Integration, and 21st Century skills (Creswell, 2008).

Locale of the Study

The study will be conducted at Kolehiyo ng Pantukan, Barangay Kingking, Pantukan, Davao De Oro.

Research Subject

The study's respondents are the two hundred forty-nine (249) BTLED-HE students of Kolehiyo ng Pantukan from 1st to 4th year, respectively, enrolled in 2022-2023. This study uses complete enumeration for the respondents in Kolehiyo ng Pantukan. In comprehensive random sampling, each member of the population has an equal chance of being selected as a subject (Kenton, 2018).

Respondents

Table 1
Distribution of Respondents

BTLED Home Economics Students	Population Size
First Year	70
Second Year	55
Third Year	57
Fourth Year	67
Total	249

Table 1. Shows the distribution of respondents. There are 249 respondents. The focus of this study was the Design Thinking and ICT Integration its Effect to the 21st Century Skills among the BTLED-HE Students of Kolehiyo ng Pantukan.

Research Instruments

The researchers used the adapted survey questionnaire from Clio (2018), Measuring Design Thinking Mindset Questionnaire in Design Thinking; then from Padayachee (2017), ICT Integration Survey in ICT Integration; and Heretape (2018), Questionnaire for Teachers' Practices on the 21st Century Skills are used for 21st Century Skills as an instrument for data gathering using the Five-Point Likert Scale to create a survey questionnaire, each item in the questionnaire had five response options with the following weights 5- Highly Agree, 4- Agree, 3- Neutral, 2- Disagree, 1- Highly Disagree. The researchers only created three sets of questions, which were presented to the adviser and validated to ensure the validity of the questionnaires. Questionnaires were used to collect respondents' data to answer research questions (Jenn,2006.)

The students were given the questionnaires and asked to check their chosen responses. The students' responses were used to determine their levels of Design Thinking and ICT Integration Its Effect to the 21st Century Skills among the BTLED Home Economics students and their significant relationship. There were five questions per indicator, equivalent to 55 item questions.

For the questionnaire, the researchers employed a parameter limit. The descriptive equivalents are the following:

Parameter Limits	Description	Interpretation
4.50-5.00	Strongly Agree	This means that the level of ICT Integration is evident in all occasions.

3.5-4.49	Agree	This means that the level of ICT Integration is evident in most occasions.
2.50-3.49	Neutral	This means that the level of ICT Integration is evident in some occasions.
1.50-2.49	Disagree	This means that the level of ICT Integration is rarely experienced.
1.00-1.49	Strongly Disagree	This means that the level of ICT Integration is not evident.

Parameter Limits	Description	Interpretation
4.50-5.00	Strongly Agree	This means that the level of Design Thinking is evident in all occasions.
3.5-4.49	Agree	This means that the level of Design Thinking is evident in most occasions.
2.50-3.49	Neutral	This means that the level of Design Thinking is evident in some occasions.
1.50-2.49	Disagree	This means that the level of Design Thinking is rarely experienced.

1.00-1.49	Strongly Disagree	This means that the level of Design Thinking is not evident.
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For the dependent variable, the researchers employed a parameter limit.

The descriptive equivalents are the following:

Parameter Limits	Description	Interpretation
4.50-5.00	Strongly Agree	This means that the level of 21 st Century Skills is very high.
3.50-4.49	Agree	This means that the level of 21 st Century Skills is high.
2.50-3.49	Neutral	This means that the level of 21 st Century Skills is moderately high.
1.50-2.49	Disagree	This means that the level of 21 st Century Skills is low.
1.00-1.49	Strongly Disagree	This means that the level of 21 st Century Skills is very low.

Data Gathering Procedure

The researchers undertook the following steps to gather data:

Seeking Permission to Conduct the Study. After the validation of the survey questionnaire, the researchers will ask permission from the College President to conduct the study regarding Design thinking and Ict integration and its effect on 21st-century skills among the BTLED-HE students in Kolehiyo ng Pantukan. After the approval of the request, the researchers administer the questionnaire to the respondents, and also, the researcher will follow the safety precautions mandated by the COVID-19 IATF or Inter-Agency Task Force for the Management of Emerging Infectious Diseases Resolutions. They were wearing safety gear such as a face mask and applying alcohol and other sanitizers during the process.

Administration and Retrieval of the Questionnaire. The researchers personally distributed the questionnaire to the respondents inside the classroom, and specific instructions on answering the items were given first. After they were through answering, the researchers immediately retrieved the questionnaire.

Checking, Collating, and Processing of Data. After the researchers personally administered and retrieved the questionnaire, checking, collating, and tallying the data given to the statistician for computation, the researchers did an analysis and interpretation.

Statistical Treatment of Data

For more comprehensive computation and analysis of data, the following statistical treatments were used:

Mean. This is also called arithmetic average, defined as the sum of the values in the group divided by the number of values. This tool was used to

determine the Design thinking and Ict integration and its effect to 21st-century skills among the BTLED-HE students in Kolehiyo ng Pantukan.

Pearson r. This tool was used to determine the relationship between Design Thinking and ICT Integration and Its Effect to 21st Century Skills among the BTLED Home Economics students.

Probability p. This is the p-value presuming that the null hypothesis is true of generating outcomes that are at least as dramatic as the outcomes of a statistical hypothesis test. A p-value is used as an alternative to rejection points to provide the minor significance level at which the null hypothesis would be rejected. A smaller p-value means more substantial evidence in favor of the alternative view.

Ethical Considerations

The study's main ethical issues revolved around the importance of ethics in research, which served as the assurance that the respondent's ethics must apply to avoid any problem. There are moral principles because these are important to promote the aim of the research, such as knowledge, truth, and error avoidance.

Voluntary participation. The respondents can opt in or out of the study at any time. They were given a thorough explanation of the study's objectives, and all respondents' participation in the survey will be entirely voluntary—no respondent will ever be coerced in any way

Informed approval. Before deciding whether to participate, the respondents are aware of the study's objectives, advantages, risks, and funding.

Giving the subject the option to determine what would or would not happen to them, to the extent that they are capable, is necessary out of respect for individuals. This opportunity is offered when required, and norms for informed consent are met. Although the need for informed consent cannot be denied, there is disagreement over the nature and viability of such assistance.

Both confidentiality and privacy. The Data Privacy Act of 2012, officially known as Republic Act No. 10173, safeguards the confidentiality of data gathered on human research subjects and their privacy. Suitable data management research must consider the data used by third parties. The appropriate publication of data and outcomes, the use of personal identifiers, the use of previously collected data, and data exchange. Information may be used for reasons other than those for which it was initially gathered. Personal information must be handled honestly and legally. Data must only be collected for one or more clearly defined and legal reasons, and it cannot be taken in any way inconsistent with the original goal. Given the processing goal, personal information must be sufficient, pertinent, and appropriate. The researcher must put safeguards in place to protect data from unintentional loss, destruction, or damage and from unauthorized or unlawful processing.

Risks. The researcher will be guaranteed their well-being. The risk may inevitably occur with either physical, mental, or psychological experience and as a researcher. Given complete security and will maintain their trust by adhering to moral principles in conducting the survey.

Biosafety. All samples, information, and materials used and collected from this study would be appropriately disposed of and kept as possible. Our concern is the safety of the researcher, respondents, and the people during the process. Practicing proper sanitation and disposal of things would be critical. It must be organized and provide a clean environment.

Plagiarism. All the information and specific details used in this study give credit to the owner. It is respecting their works and efforts under the law and as humans as they become part of supporting our study.

Results communication. We will ensure our work is free of plagiarism or research misconduct and accurately represent the study's results.

Conflicting interests. The same methodology should be used in research among various participants or groups. A risky fundamental component of justice in research is equal treatment. Another example of the idea that people have a right to something when they don't deserve it or when they suffer unjustified pain is this. While choosing volunteers for their studies and weighing the benefits and risks associated with them, researchers must consider society as a whole.

Focus group Participants Identification. A researcher should choose respondents that have background knowledge about the study. All of the information that is gathered is confidential, and it will not be shared with anyone.

Deceit. The researcher of this study and the respondents must answer the questionnaire truthfully and not mislead information or distort the truth. Deceiving information is not our focus. Instead, it is our honor to present exact details to come

up with a reasonable conclusion for this study; whatever result must be based on the gathered data and information.

Observation. The researcher must observe adequately, especially in conducting a survey, to solve the needed problems.

Permission from Organizational/Location. To consider our research reliable, we must ask for approval to authorize a person to legally collect the data needed in this study.

Technology Issue. To avoid technical issues, especially in gathering information, researchers must guide the respondents to prevent technical problems.

Authorship. As the author of this study, we must be accountable for giving facts interpretation in the acquisition and interpretation of data.

Chapter III

RESULTS AND DISCUSSION

In this chapter, the researcher presents, analyzes and interprets the data gathered in textual and tabular forms.

Design Thinking And Ict Integration Its Effect To 21st Century Skills Among The Btled-H.E Students Of Kolehiyo Ng Pantukan.

Table 2 shows the level of Design Thinking of the students in Terms of Inspiration. The data presented shows that item number 5, *I am confident in my ability to; look for another perspective and use it as inspiration.* gathered the highest mean of 3.85; item number 4, *I am confident in my ability to; observe with a truly open mind, putting aside prior knowledge or preconceived notions.* gathered the second highest mean of 3.75; item number 1, *I am confident in my ability to; solicit feedback about problems,* collected at the mean of 3.72; followed by item number 2, *I am confident in my ability to; solicit inspiration from a variety of individuals.* gathered a mean of 3.64. Lastly In item number 3, *I am confident in my ability to; look beyond the obvious and seek inspiration in unusual places.* gathered a mean of 3.61. All the items got a descriptive equivalent of Agree.

The overall mean of Design Thinking in terms of Inspiration with a mean of 3.72 with a descriptive equivalent of Agree, indicating that the level of Design Thinking in terms of inspiration is evident in most occasions.

Table 3
Level of Design Thinking among BTLED-HE Students
in terms of Inspiration

ITEMS		DESCRIPTION
I am confident in my ability to:	MEAN	
1. solicit feedback about problems.	3.72	Agree
2. solicit inspiration from a variety of individuals	3.64	Agree
3. look beyond the obvious and seek inspiration in unusual places.	3.61	Agree
4. observe with a truly open mind, putting aside prior knowledge or preconceived notions.	3.75	Agree
5. look for another perspective and use it as inspiration.	3.85	Agree
OVERALL MEAN	3.72	Agree

This study demonstrates that the primary effort during this phase consists of three components: comprehending the project subject (inspiration), analyzing user needs (ideation), and choosing a theme for their digital work (implementation) (Lin et al., 2020).

Moreover, The core of all the news phases is the inspiration phase, during which the person engaging in brainstorming enables them to solicit feedback about problems. The person should have a clear understanding of the design that needs

to be addressed by the end of this phase. This phase, which is regarded as a pivot point where the many processes of looking for another perspective and use it as inspiration (Elmansy, 2017).

Level of Design Thinking among BTLED-HE Students in terms of Ideation

Table 3 shows the level of Design Thinking of the students in terms of Ideation. The data presented shows that item number 2, *I am confident in my ability to; define the problems that need to be addressed*, gathering the highest mean of 3.75; followed by item number 1, *I am confident in my ability to; generate lots of creative ideas and solutions*. gathered a mean of 3.71; item number 4, *I am confident in my ability to; Draw ideas to help you think creatively* gathered a mean of 3.62; then In item number 3, *I am confident in my ability to; create ideas for the problem on a piece of paper*. gathered a mean of 3.60. and lastly item number 5, *I am confident in my ability to; observe with a truly open mind, putting aside prior knowledge or preconceived notions*. gathered a mean of 3.59. All the items got a descriptive equivalent of Agree.

The overall mean of Design Thinking in terms of Ideation is 3.65 with a descriptive equivalent of Agree, indicating that the level of Design Thinking in terms of ideation is evident in most occasions.

Table 4
Level of Design Thinking among BTLED-HE Students
in terms of Ideation

ITEMS	MEAN	DESCRIPTION
I am confident in my ability to;		
1. generate lots of creative ideas and solutions.	3.71	Agree
2. define the problems that need to be addressed.	3.75	Agree
3. create ideas for the problem on a piece of paper.	3.60	Agree
4. draw ideas to help you think	3.62	Agree
5. Interpret the data collected.	3.59	Agree
OVERALL MEAN	3.65	Agree

The study demonstrates that ideation is the process of producing Participants can develop ideas and solutions using exercises like Worst Possible Idea, Sketching, Prototyping, Brainstorming, Brainwriting, and a number of other ideation tools. Dam and Siang (2002).

Moreover, A set of methods and attitudes called "design thinking" are applied to solving issues of any size such as generating lots of creative ideas and solutions, defining the problems that need to be addressed, and creating ideas for the problem. It is a dynamic and iterative strategy that meets the needs of the end

user. Instead of using "deductive reasoning," which is the logic of what should be or is, Design Thinking makes extensive use of "abductive logic," which is the logic of what might be. This emphasizes the significance of compiling a comprehensive list of potential solutions gathered from sources both inside and outside the field of emphasis, which will result in a well-tested, user-focused solution (Gottlieb et al., 2016).

Level of Design Thinking among BTLED-HE Students in terms of Implementation

Table 4 shows the students' Design Thinking level in Terms of Implementation. The data presented shows that item number 4, *I am confident in my ability to; evaluate the ideas into form or action.* gathered the highest mean of 3.71; followed by item number 1, *I am confident in my ability to; move the ideas from start to finish.* gathered the second highest mean of 3.70; then item number 5, *I am confident in my ability to; implement the ideas into a finished product.* gathered a mean of 3.69; followed by item number 2, *I am confident in my ability to; move the data collected from problem to solution.* gathered a mean of 3.64; and lastly in item number 3, *I am confident in my ability to; create ideas for the problem on paper.* gathered a mean of 3.62. All the items got a descriptive equivalent of Agree.

The overall mean of Design Thinking in terms of Implementation is 3.67 with a descriptive equivalent of Agree, indicating that the level of Design Thinking in implementation is evident in most occasions.

Table 5
Level of Design Thinking among BTLED-HE Students
in terms of Implementation

ITEMS	MEAN	DESCRIPTION
I am confident in my ability to:		
1. move the ideas from start to finish.	3.70	Agree
2. move the data collected from problem to solution.	3.64	Agree
3. move the ideas from testing to implementation.	3.62	Agree
4. evaluate the ideas into form or action.	3.71	Agree
5. implement the ideas into a finished product.	3.69	Agree
OVERALL MEAN	3.67	Agree

As previously said, there are two reasons why design thinking is regarded as a customer-driven strategy: the extensive analysis and grasp of consumer problems in the Inspiration phase and how these customers interact with the proposed solutions in the Implementation phase (Torabi, 2020).

According to Henriksen et al. (2017)'s research, applying Design Thinking techniques increases innovation and knowledge depth. Improves the evaluation of

the ideas into form or action, moves the ideas from start to finish, and implements the ideas into a finished product. The effectiveness of classrooms is increased, according to a number of further study in education, when teachers utilize Design Thinking to produce lectures and learning materials for their pupils.

Summary on Design Thinking among BTLED-HE Students of Kolehiyo ng Pantukan

Table 5 shows the overall mean of Design thinking. The data presented shows that Implementation gathered the highest mean of 3.67. Followed by Ideation that gathered a mean of 3.65. While Inspiration gathered the lowest mean of 3.72. All the items got a descriptive equivalent of Agree.

The overall mean in Design Thinking is 3.68 with a descriptive equivalent of Agree, indicating that the level of Design Thinking in terms of Inspiration, Ideation, and Implementation is evident in most occasions.

Table 6
Summary on Design Thinking among BTLED-HE Students
of Kolehiyo ng Pantukan

INDICATORS	MEAN	DESCRIPTION
Inspiration	3.72	Agree
Ideation	3.65	Agree

Implementation	3.67	Agree
OVERALL MEAN	3.68	Agree

This study shows that the essence of design thinking is to put participants into contexts that make them think and work like an expert designer, thereby fostering civic literacy, empathy, cultural awareness and risk taking (Sharples et al., 2016).

Design thinking is the quickest organizational path to creativity and innovation. High performance, changing the way that business, education and creativity interact. The design goal in the past was to increase the appeal of an existing product as a final phase in the product development process. Nowadays, however, designers want to involve inspiration, ideation and implementation processes that improve learner's design thinking skills (Serrat, 2017).

Level of ICT Integration among BTLED-HE Students in terms of Access

Table 6 shows the level of ICT Integration skills of the students in Terms of Access. The data presented shows that item number 5, *I know how to: access social media.* gathered the highest mean of 3.97; followed by item number 4, *I know how to: access mobile learning tools and applications.* gathered the second

highest mean of 3.80; then item number 2, *I know how to:access internet based learning platform.* gathered a mean of 3.73; and item number 1, *I know how to: access online library services.* gathered a mean of 3.70; Lastly in item number 3, *I know how to: access downloadable ebooks and electronic texts.* gathered the lowest mean of 3.65. All the items got a descriptive equivalent of Agree.

The overall mean of ICT Integration in terms of access is 3.77 with a descriptive equivalent of Agree, indicating that the level of ICT Integration in terms of access is evident in most occasions.

Table 7
Level of ICT Integration among BTLED-HE Students
in terms of Access

ITEMS	MEAN	DESCRIPTION
I know how to:		
1. access online library services.	3.70	Agree
2. access internet based learning platform.	3.73	Agree
3. access downloadable ebooks	3.65	Agree
4. access mobile learning tools and applications.	3.80	Agree
5. access social media	3.97	Agree
OVERALL MEAN	3.77	Agree

This study shows that including basic computer skills like opening, editing and saving files, using email, social media and internet browsers. Others are the ability to access online library services, internet based learning platforms, downloadable ebooks, mobile learning tools and applications, and maintain social connections through social media like facebook and locate and effectively retrieve information from library websites and databases (Edeh et. al., 2022).

In addition, the research reveals a beneficial influence on academic achievement for underprivileged pupils who are offered ubiquitous access to appropriate digital technology at home over some time. Nevertheless, when given greater access to digital technology, advantaged children who already have access to it at home show little to no—if any—improvement in their academic performance (Cochrane & Janette, 2020).

Level of ICT Integration among BTLED-HE Students in terms of Manage

Table 7 shows the level of ICT Integration skills of the students in terms of Manage. The data presented shows that item number 1, *I know how to: do file sharing.* gathered a mean of 3.75. item number 2, *I know how to:manage word processing programs.* gathered a mean of 3.69. In item number 3, *I know how to: manage collaborative project tools.* gathered a mean of 3.62. and item number 5, *I know how to: manage audio software.access social media.* gathered a of 3.62;

Lastly, item number 4, *I know how to: manage computer simulations.* gathered a mean of 3.57. Lastly All the items got a descriptive equivalent of Agree.

The overall mean of ICT Integration in terms of Manage is 3.65 with a descriptive equivalent of Agree, indicating that the level of ICT Integration in terms of Manage is evident in most occasions.

Table 8
Level of ICT Integration among BTLED-HE Students
in terms of Manage

ITEMS	MEAN	DESCRIPTION
I know how to:		
1. do file sharing.	3.75	Agree
2. manage word processing programs.	3.69	Agree
3. manage collaborative project tools.	3.62	Agree
4. manage computer simulations.	3.57	Agree
5. manage audio software.	3.62	Agree
OVERALL MEAN	3.65	Agree

Other areas of ICT integration covered in this study, which is backed by Valencia, Serna, Ochoa, Caicedo, Montes, and Chávez (2016), include learning how to manage word processing programs, search engines, collaborative project

tools, computer simulations, information search robots, platforms, interactive tools, and social networks, among other things indicates that the learner is ICT literate.

Moreover, Yu, Lin, and Liao (2017) argued that numerous studies have demonstrated how organizational variables and attitudes toward technology also affect students' ability to manage ICTs.

Level of ICT Integration among BTLED-HE Students in terms of Integrate

Table 8 shows the level of ICT Integration skills of the students in Terms of Integrate. The data presented shows that item number 1, *I am confident in my ability to: form virtual seminars/webinars.* gathered a mean of 3.82; followed by item number 5, *I am confident in my ability to: integrate online reporting.* gathered a mean of 3.81; item number 2, *I am confident in my ability to: create an internal online forum or newsgroup.* gathered a mean of 3.70; In item number 3, *I am confident in my ability to: include blogs.* gathered a mean of 3.69; and item number 4, *I am confident in my ability to: establish direct access.* gathered a mean of 3.66. All the items got a descriptive equivalent of Agree.

The overall mean of ICT Integration in terms of Integrate is 3.73 with a descriptive equivalent of Agree, indicating that the level of ICT Integration in terms of Integrate is evident in most occasions.

Table 9
Level of ICT Integration among BTLED-HE Students
in terms of Integrate

ITEMS	MEAN	DESCRIPTION
I am confident in my ability to:		
1. form virtual seminars/webinars.	3.82	Agree
2. create an internal online forum or newsgroup	3.70	Agree
3. include blogs.	3.69	Agree
4. establish direct access.	3.66	Agree
5. integrate online reporting.	3.81	Agree
OVERALL MEAN	3.73	Agree

Peicheva (2017) concurs with this study that the internet and mobile communication technologies are convergent, creating new communication networks and routines that have been ingrained in daily life. To effectively use ICT and information in the modern environment, one must develop and integrate digital skills.

Also, the ability to form virtual seminars/webinars, create an internal online forum or newsgroup, carefully thought-out plans are necessary for real improvements, include blogs, integrate online reporting and direct access whether at the instruction level, curriculum, or classroom management, to successfully incorporate ICT in 21st-century education. After a few training sessions, these

modifications are irreversible. During the course of several academic years, change is observed gradually, necessitating substantial professional development and enough support for stakeholders to go from stage to stage (Rabah, 2015).

Level of ICT Integration among BTLED-HE Students in terms of Evaluate

Table 9 shows the level of ICT Integration skills of the students in terms of Evaluate. The data presented shows that item number 3, *I am confident in my ability to: navigate on the internet through search engines.* gathered a mean of 3.73; followed by item number 1, *I am confident in my ability to: answer online examinations/tests.* gathered a mean of 3.72; item number 5, *I am confident in my ability to: gather information online.* gathered a mean of 3.67; item number 4, *I am confident in my ability to: project data through an online platform.* gathered a mean of 3.65; Lastly, item number 2, *I am confident in my ability to: perform educational computer games.* gathered a mean of 3.63. All the items got a descriptive equivalent of Agree.

The overall mean of ICT Integration in terms of Evaluate is 3.68 with a descriptive equivalent of Agree, indicating that the level of ICT Integration in terms of Evaluate is evident in most occasions.

Table 10
Level of ICT Integration among BTLED-HE Students
in terms of Evaluate

ITEMS	MEAN	DESCRIPTION
I am confident in my ability to:		
1. answer online examinations/tests.	3.72	Agree
2. perform educational computer games.	3.63	Agree
3. navigate on the internet through search engines.	3.73	Agree
4. project data through an online platform.	3.65	Agree
5. gather information online.	3.67	Agree
OVERALL MEAN	3.68	Agree

This study is supported by Çam & Saltan (2019), Evaluate skills has demonstrated that students' experiences and ideas gained during their evaluation in ICT integration positively affect their ICT competencies. In ICT literacy, students need to know how to use ICT effectively in education.

According to Melo (2018), the integration of ICT is knowing how to evaluate and integrate new trends in technological advancements, answer online examinations/tests, perform educational computer games, navigate on the internet through search engines, and how to get students to achieve further knowledge using ICT in the classroom based on skills.

Level of ICT Integration among BTLED-HE Students in terms of Create

Table 10 shows the level of ICT Integration skills of the students in terms of Create. The data presented shows that item number 1, *I am confident in my ability to: Video/record lessons.* gathered a mean of 3.84; followed by item number 3, *I am confident in my ability to: Use presentation software.* gathered a mean of 3.83; item number 2, *I am confident in my ability to: Use spreadsheet software.* gathered a mean of 3.74; item number 5, *I am confident using an online video sharing site.* gathered a mean of 3.66; lastly in item number 4, *I am confident in using video editing software.* gathered a mean of 3.62. All the items got a descriptive equivalent of Agree.

The overall mean of ICT Integration in terms of Create is 3.74 with a descriptive equivalent of Agree, indicating that the level of ICT Integration in Create is evident in most occasions.

Table 11
Level of ICT Integration among BTLED-HE Students
in terms of Create

ITEMS	MEAN	DESCRIPTION
I am confident in my ability to:		
1. Video/record lessons.	3.84	Agree
2. Use spreadsheet software.	3.74	Agree

3. Use presentation software.	3.83	Agree
4. Use video editing software.	3.62	Agree
5. Use an online video sharing site.	3.66	Agree
OVERALL MEAN	3.74	Agree

This is supported by Soparat & Klaysom (2015) creating skills can improve learning outcomes to integrate different senses; video/record lessons; use spreadsheet, presentation and video editing software; create new collaboration with online production, computer and networking tools; implement the differentiation and diversity; and empower students to personalize their learning process. Therefore, learning using ICT skills should be introduced in the classroom to support learners to create their knowledge.

In addition, any nation's progress is significantly impacted by information and communication technology (ICT). Someone qualified in this sector is rapidly presented with excellent chances. Hence, a country must generate inhabitants who are ICT-literate especially on their creative skills so that they can create the infrastructure necessary to exist in this digital age of civilization (Crisolo, 2018).

Summary on ICT Integration among BTLED-HE Students of Kolehiyo ng Pantukan

Table 11 shows the overall mean of ICT Integration. The data presented shows that *Access* gathered the highest mean of 3.77. Followed by *Create* that gathered a mean of 3.74. Then *Integrate* gathered the mean of 3.73. Followed by

Evaluate that gathered the second lowest mean of 3.68. Lastly, *Manage* gathered the lowest mean of 3.65. All the items got a descriptive equivalent of Agree.

The overall mean of ICT Integration is 3.71 with a descriptive equivalent of Agree, indicating that the level of ICT Integration in terms of Access, Manage, Integrate, Evaluate and Create is evident in most occasions.

Table 12
Summary on ICT Integration among BTLED-HE Students
of Kolehiyo ng Pantukan

INDICATORS	MEAN	DESCRIPTION
Access	3.77	Agree
Manage	3.65	Agree
Integrate	3.73	Agree
Evaluate	3.68	Agree
Create	3.74	Agree
OVERALL MEAN	3.71	Agree

The main finding of this study, which is corroborated by Rabah (2015), is that while ICT in education has significant potential to improve teaching and

learning processes, doing so is a challenging and multifaceted task. Long-term, carefully planned plans are necessary for substantial improvements, whether at the instruction level, curriculum, or classroom management, to appropriately incorporate ICT in 21st century education. After a few training sessions, these modifications are irreversible.

Moreover, Information and communication technologies (ICT) have fundamentally altered our way of life and created new possibilities across almost all facets of our civilization. The application of access, manage, integrate, evaluate and create skills helps the learners acquire fundamental skills in ICT. Nonetheless, despite their enormous potential, integrating ICT into regular teaching practice requires effort (Flores et al., 2017).

Level of 21st Century Skills among BTLED-HE Students in terms of Learning Skills

Table 12 shows the level of 21st Century skills of the students in terms of Learning Skills. The data presented shows that item number 2, *I am confident in my ability to: Help my classmate solve problems and manage conflicts.* gathered the highest mean of 3.92; followed by item number 4, *I am confident in my ability to: Help resolve issues without asking the teacher for help.* gathered a mean of 3.89; in item number 3, *I am confident in my ability to: Be polite and kind to my peers.* gathered a mean of 3.83; item number 5, *I am confident in my ability to: Make detailed plans about the use of technology.* gathered a mean of 3.83; lastly

item number 1, *I am confident in my ability to: Interact with my classmates effectively.* gathered a mean of 3.74. All the items got a descriptive equivalent of Agree.

The overall mean of Learning Skills is 3.84 with a descriptive equivalent of Agree, indicating that the level of 21st century skills in terms of Learning skills is evident in most occasions.

Table 13
Level of 21st Century Skills among BTLED-HE Students
in terms of Learning Skills

ITEMS	MEAN	DESCRIPTION
I am confident in my ability to:		
1. Interact with my classmates effectively.	3.74	Agree
2. Help my classmate solve problems and manage conflicts.	3.92	Agree
3. Be polite and kind to my peers.	3.83	Agree
4. Help resolve issues without asking the teacher for help.	3.89	Agree
5. Make detailed plans about the use of technology.	3.83	Agree
OVERALL MEAN	3.84	Agree

This study is supported by Tumapon (2022) Learning has been raised to a higher level in order to guarantee that students are ultimately equipped with career preparedness, focusing on subject-matter expertise, social studies, technological prowess, etc. These 21st-century learning principles serve as the foundation for the curricula at future-ready schools.

Moreover, A fundamentally different attitude is necessary for the world of 21st-century learning skills. Students need to think critically, interact with their classmates effectively, work with diverse peers, help resolve issues without asking the teacher for help, adopt a global mindset, and make detailed plans about the use of technology or engage with information and communications technologies, to name just a few requirements, in order to participate effectively in the increasingly complex societies and a globalized economy that characterize today's world (Vivekanandan, 2019).

Level of 21st Century Skills among BTLED-HE Students in terms of Life Skills

Table 13 shows the level of 21st Century skills of the students in terms of Life Skills. The data presented shows that item number 4, *I am confident in my ability to: Respect cultural differences effectively with people from various social and cultural backgrounds.* gathered the highest mean of 3.86; followed by item number 5, *I am confident in my ability to: Reflect critically on past experiences to inform future progress.* gathered a mean of 3.78; item number 3, *I am confident in my ability to: Adopt any changes that may occur in the learning environment.* with

a mean of 3.75; item number 2, *I am confident in my ability to: Give value and respect to other opinions, ideas and beliefs.* gathered a mean of 3.73; and lastly item number 1, *I am confident in my ability to: Build a harmonious relationship with my classmates by knowing when to talk and to listen.* gathered a mean of 3.71. All the items got a descriptive equivalent of Agree.

The overall mean of Life Skills is 3.77 with a descriptive equivalent of Agree, indicating that the level of 21st Century skills in terms of Life Skills is evident in most occasions.

Table 14
Level of 21st Century Skills among BTLED-HE Students
in terms of Life Skills

ITEMS	MEAN	DESCRIPTION
I know how to:		
1. Build a harmonious relationship with my classmates by knowing when to talk and to listen.	3.71	Agree
2. Give value and respect to other opinions, ideas and beliefs..	3.73	Agree
3. Adopt any changes that may occur in the learning environment.	3.75	Agree
4. Respect cultural differences effectively with people from a range of social and cultural backgrounds.	3.86	Agree
5. Reflect critically on past experiences in order to inform future progress.	3.78	Agree
OVERALL MEAN	3.77	Agree

According to Sauers & McLeod (2018), problem-solving abilities, critical thinking, global awareness, with an ability to build a harmonious relationship with their peers, give value and respect to other opinions, ideas and beliefs, adopt any changes that may occur in the learning environment, respect cultural differences effectively with people from a range of social and cultural backgrounds and integrate information literacy have always been an element of learners development. Success in the local and international economies of today depends on having these talents.

Another study that resonates with the result of our study states that ICT proficiency, higher-order thinking, and multicultural communication are only a few of the 21st-century life skills. This study's concentration is on these abilities since they are essential to modern life and because they are teachers' critical career and life skills (Ganayem and Zidan, 2018).

Level of 21st Century Skills among BTLED-HE Students in terms of Literacy Skills

Table 15 shows the level of 21st Century skills of the students in terms of Life Skills. The data presented shows that item number 5, *I am confident in my ability to: Help my classmates to appreciate literature and other creative expressions of information.* gathered the highest mean of 3.80; followed by item number 1, *I am confident in my ability to: Participate in accessing information in an effective manner which is related to academics.* gathered a mean of 3.74; and

item number 3, *I am confident in my ability to: Participate in collaborative learning to generate valuable information.* gathered a mean of 3.74; then item number 2, *I am confident in my ability to: Evaluate the resources and the available information.* gathered a mean of 3.65; lastly item number 4, *I am confident in my ability to: Find online resources to expand my learnings.* gathered a mean of 3.65. All the items got a descriptive equivalent of Agree.

The overall mean in terms of 21st Century Skills in terms of Literacy Skills is 3.72 with a descriptive equivalent of Agree, indicating that the level of ICT Integration in terms of access is evident in most occasions.

Table 15
Level of 21st Century Skills among BTLED-HE Students
in terms of Literacy Skills

ITEMS	MEAN	DESCRIPTION
I am confident in my ability to:		
1. Participate in accessing information in an effective manner which is related to academics.	3.74	Agree
2. Evaluate the resources and the available information.	3.65	Agree
3. Participate in collaborative learning to generate valuable information.	3.74	Agree
4. Find resources on the internet to expand my learnings.	3.65	Agree
5. Help my classmates to appreciate literature and other creative expressions of information.	3.80	Agree

OVERALL MEAN	3.72	Agree
---------------------	-------------	--------------

According to the 2015 study funded by The Partnership for 21st Century Learning, literacy skills include the capacity to access, use, manage, and analyze data. Analyzing and producing media products are the main goals of media literacy such as accessing information in an effective manner which is related to academics, evaluating the resources and the available information, finding resources on the internet to expand their learnings, and helping their classmates to appreciate literature and other creative expressions of information. Information and communication technology literacy offers training for successful technology use, which is highly valued in the modern workforce.

In addition, learning management systems, chat rooms, video forums, and tools for creating infographics are just a few examples of the many technological applications that benefit significantly from the excellent integration of many technology devices, including mobile, laptops, bright rooms, and literacy abilities. Using communication and information exchange to their fullest potential is the focus of many of these technologies and activities to support their literacy skills (Alonso & Ramirez, 2018).

Summary on 21st Century Skills among BTLED-HE Students of Kolehiyo ng Pantukan

Table 16 shows the overall mean of 21st Century Skills. The data presented shows that *Learning skills* gathered the highest mean of 3.84. Followed by *Life skills* that gathered a mean of 3.77. While *Literacy skills* gathered the lowest mean of 3.72. All the items got a descriptive equivalent of Agree.

The overall mean of 21st Century skills is 3.78 with a descriptive equivalent of Agree, indicating that the level of 21st Century skills in terms of learning, life, and Literacy skills is evident in most occasions.

Table 16
Summary on 21st Century Skills among BTLED-HE Students
of Kolehiyo ng Pantukan

INDICATORS	MEAN	DESCRIPTION
Learning Skills	3.84	Agree
Life Skills	3.77	Agree
Literacy Skills	3.72	Agree
OVERALL MEAN	3.78	Agree

Partnership for the 21st Century (2015) provided funding support for this study. Teachers are required to foster in their children a culture of critical thinking, production readiness, curiosity, and problem-solving. Knowledge, media and technology skills, life and career skills, and learning and innovation skills are the three main areas of 21st-century skills.

In addition, To be able to get such high regard, a person must be able to evolve with the times, select from the vast amount of information available, analyze it, apply what they have learned to their everyday lives, and be productive by applying these acquired learning skills, life skills and literacy skills. To spread news to daily activities, people need to develop higher-order cognitive abilities and competences. According to the research, these abilities and competences are known as "21st Century Learning Skills" (Anagün et al., 2016).

Relationship Between Design Thinking and 21st Century Skills among the BTLED-HE Students in Kolehiyo ng Pantukan

Table 17 displays the relationship between Design Thinking and 21st Century Skills among the BTLED-HE Students of Kolehiyo ng Pantukan. The correlation between the indicators of independent variable and dependent variable, the following results are obtained:

The result of r value is 0.846 which indicates high correlation. The result of P -value is 0.01, less than the significance $\alpha = 0.05$. Therefore, the hypothesis is rejected. It

means there is a significant relationship between Design Thinking and 21st Century Skills among the BTLED-HE Students of Kolehiyo ng Pantukan.

The coefficient of determination, denoted R^2 or r^2 and pronounced "R squared", is the proportion of the variance in the dependent variable that is predictable from the independent variable. In other words, 71.6% of the variation of 21st Century skills is attributed to the ICT Integration and the remaining 28.4% are chance variation: these are other ICT Integration that affects the 21st Century Skills among BTLED-H.E Students.

Table 17

Relationship Between Design Thinking and 21st Century Skills among the BTLED-HE Students in Kolehiyo ng Pantukan

VARIABLES	r-value	Interpretation	Value $\alpha= 0.05$	Decision on Ho	Conclusion
Design Thinking					
21st Century Skills					

	0.846	High Positive Correlation	0.01	Rejected	Significant
Coefficient of Determination					0.716

A Renewed Vision supported this for Education in Ontario (2015) stated that experiencing Design Thinking in the 21st century considering the capabilities of individuals, there is no significant difference between design thinking and 21st century skills, it indicates that it can enhance the self management skills which include decision-making ability, generate ideas and access skills, skills of adaptation to the learning environment and to their peers, and the ability to deal with supervision so the students will not be affected negatively.

**Relationship Between ICT Integration
 and 21st Century Skills among the BTLED-HE
 Students in Kolehiyo ng Pantukan**

Table 18 displays the relationship between ICT Integration and 21st Century Skills among the BTLED-HE Students of Kolehiyo ng Pantukan. The correlation between the indicators of independent variable and dependent variable, the following results are obtained:

The result of r value is 0.917 which indicates high correlation. The result of P-value is 0.01, less than the significance $\alpha = 0.05$. Therefore, the hypothesis is

rejected. It means a significant relationship exists between ICT Integration and 21st Century Skills among the BTLED-HE Students of Kolehiyo ng Pantukan.

The coefficient of determination, denoted R^2 or r^2 and pronounced "R squared", is the proportion of the variance in the dependent variable that is predictable from the independent variable. In other words, 84.1% of the variation of 21st Century skills is attributed to the Design Thinking and the remaining 15.9% are chance variation: these are other Design Thinking that affects the 21st Century Skills among BTLED-H.E Students.

Table 18

Relationship Between ICT Integration and 21st Century Skills among the BTLED-HE Students in Kolehiyo ng Pantukan

VARIABLES	r-value	Interpretation	Value $\alpha=$ 0.05	Decision on Ho	Conclusion
ICT Integration					

21st Century Skills	0.917	high correlation	0.01	Rejected	Significant
Coefficient of Determination					0.841

This was supported by A Renewed Vision for Education in Ontario (2015) stated that experiencing ICT Integration in the 21st century considering the capabilities of individuals, there is no difference between ICT integration and 21st century skills, it does not just increase their capability to face challenges, even struggles, and enhances their learning experiences, highlighting the learning style of the students will not be affected negatively.

Chapter IV

SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter represents the summary of findings, drawn conclusions, and the recommendations based on the result of the study.

Summary of Findings

1. The level of Design Thinking in terms of inspiration has a mean of 3.72 with a descriptive equivalent of agree, ideation got a mean of 3.65 with a descriptive equivalent of agree and implementation has a mean of 3.67 with a descriptive equivalent of agree; all of those indicators got an overall mean of 3.68 with a descriptive equivalent of agree.
2. The level of ICT Integration has an overall mean of 3.71 with a descriptive equivalent of agree. Access got a mean of 3.77 with a descriptive equivalent of agree; Manage got a mean of 3.65 with a descriptive equivalent of agree; Integrate got a mean of 3.73 with a descriptive equivalent of agree; Evaluate got a mean of 3.68 with a descriptive equivalent of agree; and Create got a mean of 3.74 with a descriptive equivalent of agree.
3. The level of 21st Century Skills in terms of Learning skills has a mean of 3.84 with a descriptive equivalent of agree, Life skills got a mean of 3.77 with a descriptive equivalent of agree and Literacy skills has a mean of 3.72 with a descriptive equivalent of agree; all of those indicators got an overall mean of 3.78 with a descriptive equivalent of agree.
4. There is a significant relationship between Design Thinking and 21st Century Skills among the BTLED-HE students of Kolehiyo ng Pantukan. The computed P-value is 0.01 and it is lower than 0.05 level of significance. The Null hypothesis is rejected.

5. There is a significant relationship between ICT Integration and 21st Century skills among BTLED-HE students of Kolehiyo ng Pantukan. The computed P-value is 0.01 and it is greater than 0.05 level of significance. The Null hypothesis is rejected.

Conclusions

In the light of the findings, the following conclusions are drawn:

1. The level of design thinking is evident in all occasions.
2. The level of ICT Integration is evident in all occasions.
3. The level of 21st century skills is evident in all occasions.
4. There is a significant relationship between design thinking and 21st century skills among the BTLED-HE students of Kolehiyo ng Pantukan.
5. There is a significant relationship between ICT integration and 21st century skills among the BTLED-HE students of Kolehiyo ng Pantukan.

Recommendations

Based on the previous conclusions, the researchers arrived with the following recommendations:

1. The student must know their schedules and if a student is using gadgets for their leisure without a reasonable purpose, then the need to mitigate being deluded to gadgets must stop. The teachers may record their

class online for auditory learners who remember the discussion best by hearing rather than seeing it.

2. The teachers may encourage the students to think outside the box and create creative solutions in dealing with a problem.
3. The organization encourages students to learn more about 21st Century Skills and provides them with facilities and resources to hone their skills.
4. Other researchers are encouraged to do the same research but with different indicators in the independent variables to determine what other factors that have significant relationships greatly affect the student's satisfaction.
5. Further qualitative study for this research is recommended.

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February 08, 2023

FDR. DR. JOCELYN H. HUA, DFRIEDR

Thru: Ms. Rowena Lorejo, LPT, MPA

Registrar In Charge

Kolehiyo Ng Pantukan

Juan A. Sarenas Campus, Kingking, Pantukan

Dear Ma'am,

Greetings!

We, the undersigned, are 3rd year BTLED Home Economics students enrolled in Kolehiyo Ng Pantukan. We are undergoing a research entitled "DESIGN THINKING AND ICT INTEGRATION ITS EFFECT TO 21ST CENTURY SKILLS AMONG BTLE-HE STUDENTS OF KOLEHIYO NG PANTUKAN".

In line with this, may we ask the total population of male and female student's class from first year to fourth year of BTLED students in this academic year 2022-2023.

You are one of the vital keys in the pursuance of this study, thus expecting your positive response on this request. Thank you and more power.

Respectfully yours,

Papa Jr, Emmanuel R.
Esconde, Jan Kaye S.
Mangaron, Jumer Kin C.
Researchers

Noted:

MR. SANNY M. DARAMAN, LPT, MAHEEd
Research Adviser

DR. LYNARD BOBBY ASIRIT, LPT, PhD, CESE
Research Director

Approved by:
FDR. DR. JOCELYN H. HUA, DFRIEDR
College President

CONSENT

I have read and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this study.

Participant's signature _____ Date _____

Investigator's signature _____ Date _____



VALIDATION SHEET FOR RESEARCH QUESTIONNAIRE

TITLE	DESIGN THINKING AND ICT INTEGRATION ITS EFFECT TO 21ST CENTURY SKILLS AMONG THE BTLED-HE STUDENTS OF KOLEHIYO NG PANTUKAN
-------	---

Name of Evaluator:	Eufrosina P. Mines, EdD
Highest Degree:	Doctor of Education
<i>Kindly check the appropriate box for your rating.</i>	
Points Equivalent	5 - Excellent 4 - Very Good 3 - Good 2 - Fair 1 - Poor

ITEMS	5	4	3	2	1
<p>1. Clarity of Directions And Items</p> <p><i>The vocabulary level, language, structure, and conceptual level of questions suit the level of participants. The best directions and the items are written in a clear and understandable manner.</i></p>	/				
<p>2. Presentation and Organization of Items</p> <p><i>The items are presented and organized in a logical manner.</i></p>	/				
<p>3. Suitability of Items</p> <p><i>Each item is appropriate and represents the substance of the research. The questions are designed to determine the conditions, knowledge, perception and attitudes that are supposed to be measured.</i></p>	/				
<p>4. Adequateness of Items per Category or Indicator</p> <p><i>The items represent the coverage of research adequately. The number of questions per area category is representative enough of all the questions needed for research.</i></p>	/				
<p>5. Attainment of Purpose</p> <p><i>The instruments as well as a whole, fulfil the objectives for which it was constructed.</i></p>	/				
<p>6. Objectivity</p> <p><i>Each item questions only one specific answer or measures only one</i></p>	/				

<i>behavior and no aspect of the questionnaire is a suggestion of the researcher.</i>					
7. Scale and Evaluation Rating Scale (for survey questionnaires only) <i>The scale accepted is appropriate for the items</i>	/				
REMARKS: Good work. Research instrument may be administered to your respondents.					

EUFROSINA P. MINES, EDD

Signature over Printed Name

VALIDATION SHEET FOR RESEARCH QUESTIONNAIRE

TITLE	DESIGN THINKING AND ICT INTEGRATION ITS EFFECT TO 21ST CENTURY SKILLS AMONG THE BTLED-HE STUDENTS OF KOLEHIYO NG PANTUKAN
--------------	---

Name of Evaluator:	Lynard Bobby L. Asirit, PhD, CESE
Highest Degree:	PD StraMa
<i>Kindly check the appropriate box for your rating.</i>	
Points Equivalent	5 - Excellent 4 - Very Good 3 - Good 2 - Fair 1 - Poor



ITEMS	5	4	3	2	1
--------------	---	---	---	---	---

<p>1. Clarity of Directions And Items</p> <p><i>The vocabulary level, language, structure, and conceptual level of questions suit the level of participants. The best directions and the items are written in a clear and understandable manner.</i></p>	/			
<p>2. Presentation and Organization of Items</p> <p><i>The items are presented and organized in a logical manner.</i></p>	/			
<p>3. Suitability of Items</p> <p><i>Each item is appropriate and represents the substance of the research. The questions are designed to determine the conditions, knowledge, perception and attitudes that are supposed to be measured.</i></p>	/			
<p>4. Adequateness of Items per Category or Indicator</p> <p><i>The items represent the coverage of research adequately. The number of questions per area category is representative enough of all the questions needed for research.</i></p>	/			
<p>5. Attainment of Purpose</p> <p><i>The instruments as well as a whole, fulfil the objectives for which it was constructed.</i></p>	/			
<p>6. Objectivity</p> <p><i>Each item questions only one specific answer or measures only one behavior and no aspect of the questionnaire is a suggestion of the researcher.</i></p>	/			

<p>7. Scale and Evaluation Rating Scale (for survey questionnaires only)</p> <p><i>The scale accepted is appropriate for the items</i></p>	/				
<p>REMARKS: Approved!</p>					

LYNARD BOBBY L. ASIRIT, PhD, CESE

Signature over Printed Name

VALIDATION SHEET FO RESEARCH QUESTIONNAIRE

TITLE	<p>DESIGN THINKING AND ICT INTEGRATION ITS EFFECT TO 21ST CENTURY SKILLS AMONG THE BTLED-HE STUDENTS OF KOLEHIYO NG PANTUKAN</p>
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Name of Evaluator:	ALBEB Q. TARAY, MBA			
Highest Degree:	MBA			
<i>Kindly check the appropriate box for your rating.</i>				
Points Equivalent	5 - Excellent	4 - Very Good	3 - Good	2 - Fair
	1 - Poor			

ITEMS	5	4	3	2	1
<p>1. Clarity of Directions And Items</p> <p><i>The vocabulary level, language, structure, and conceptual level of</i></p>	/				

<p><i>questions suit the level of participants. The best directions and the items are written in a clear and understandable manner.</i></p>				
<p>2. Presentation and Organization of Items</p> <p><i>The items are presented and organized in a logical manner.</i></p>	/			
<p>3. Suitability of Items</p> <p><i>Each item is appropriate and represents the substance of the research. The questions are designed to determine the conditions, knowledge, perception and attitudes that are supposed to be measured.</i></p>	/			
<p>4. Adequateness of Items per Category or Indicator</p> <p><i>The items represent the coverage of research adequately. The number of questions per area category is representative enough of all the questions needed for research.</i></p>	/			
<p>5. Attainment of Purpose</p> <p><i>The instruments as well as a whole, fulfil the objectives for which it was constructed.</i></p>	/			
<p>6. Objectivity</p> <p><i>Each item questions only one specific answer or measures only one behavior and no aspect of the questionnaire is a suggestion of the researcher.</i></p>	/			
<p>7. Scale and Evaluation Rating Scale (for survey questionnaires only)</p>	/			

<i>The scale accepted is appropriate for the items</i>					
REMARKS: APPROVED.					

ALBEB Q. TARAY, MBA

Signature over Printed Name

RESEARCH INSTRUMENT

SURVEY QUESTIONNAIRE

KOLEHIYO NG PANTUKAN

Juan A. Sarenas Campus, Kingking Pantukan, Davao de Oro

Academic Year 2022-2023

DESIGN THINKING AND ICT INTEGRATION ITS EFFECT TO 21ST CENTURY SKILLS AMONG THE BTLED-HE STUDENTS OF KOLEHIYO NG PANTUKAN

Name: _____

Date: _____

Program: _____

Instruction: Please answer each question using a 5-point scale, to best reflect what you actually do or have done as a student. Then formation can be used to identify areas and potential change so be as open as you can.

Parameter Limits	Description	Interpretation
4.50-5.00	Strongly Agree	This means that the level of 21st Century Skills is evident in all occasions.

3.50-4.49	Agree	This means that the level of 21st Century Skills is evident in most occasions.
2.50-3.39	Neutral	This means that the level of 21st Century Skills is evident in some occasions.
1.50-2.49	Disagree	This means that the level of 21st Century Skills is rarely experienced.
1.00-1.49	Strongly Disagree	This means that the level of 21st Century Skills is not evident.



DESIGN THINKING					
INSPIRATION					
	5 Strongly Agree	4 Agree	3 Neutral	2 Disagree	1 Strongly Disagree
I am confident in my ability to:					
1. solicit feedback about problems.					
2. solicit inspiration from a variety of individuals.					

3. look beyond the obvious and seek inspiration in unusual places.					
4. observe with a truly open mind, putting aside prior knowledge or preconceived notions.					
5. look for another perspective and use it as inspiration.					
IDEATION					
	5 Strongly Agree	4 Agree	3 Neutral	2 Disagree	1 Strongly Disagree
I am confident in my ability to:					
1. generate lots of creative ideas and solutions.					
2. define the problems that need to be addressed.					
3. create ideas for the problem on a piece of paper.					
4. draw ideas to help you think creatively.					
5. Interpret the data collected.					
IMPLEMENTATION					
	5	4	3	2	1

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I am confident in my ability to:					
1. move the ideas from start to finish.					
2. move the data collected from problem to solution.					
3. move the ideas from testing to implementation.					
4. evaluate the ideas into form or action.					
5. implement the ideas into a finished product.					

ICT INTEGRATION

ACCESS

	5 Strongly Agree	4 Agree	3 Neutral	2 Disagree	1 Strongly Disagree
I know how to:					
1. access online library services.					
2. access internet based learning platform.					
3. access downloadable ebooks and electronic texts.					
4. access mobile learning tools and applications.					

5. access social media					
MANAGE					
	5 Strongly Agree	4 Agree	3 Neutral	2 Disagree	1 Strongly Disagree
I know how to:					
1. do file sharing.					
2. manage word processing programs.					
3. manage collaborative project tools.					
4. manage computer simulations.					
5. manage audio software.					
INTEGRATE					
	5 Strongly Agree	4 Agree	3 Neutral	2 Disagree	1 Disagree
I am confident in my ability to:					
1. form virtual seminars/webinars.					
2. create an internal online forum or newsgroup					
3. include blogs.					
4. establish direct access.					
5. integrate online reporting.					
EVALUATE					
	5 Strongly Agree	4 Agree	3 Neutral	2 Disagree	1 Disagree

I am confident in my ability to:					
1. answer online examinations/tests.					
2. perform educational computer games.					
3. navigate on the internet through search engines.					
4. project data through an online platform.					
5. gather information online.					
CREATE					
	5 Strongly Agree	4 Agree	3 Neutral	2 Disagree	1 Disagree
I am confident in my ability to:					
1. Video/record lessons.					
2. Use spreadsheet software.					
3. Use presentation software.					
4. Use video editing software.					
5. Use an online video sharing site.					

21ST CENTURY SKILLS					
LEARNING SKILLS					
	5	4	3	2	1

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I am confident in my ability to:					
1. Interact with my classmates effectively.					
2. Help my classmate solve problems and manage conflicts.					
3. Be polite and kind to my peers.					
4. Help resolve issues without asking the teacher for help.					
5. Make detailed plans about the use of technology.					
LIFE SKILLS					
	5 Strongly Agree	4 Agree	3 Neutral	2 Disagree	1 Strongly Disagree
I am confident in my ability to:					
1. Build a harmonious relationship with my classmates by knowing when to talk and to listen.					
2. Give value and respect to other opinions, ideas and beliefs.					
3. Adopt any changes that may occur in the learning environment.					
4. Respect cultural differences effectively with people from a range of social and cultural backgrounds.					

5. Reflect critically on past experiences in order to inform future progress.					
LITERACY SKILLS					
	5	4	3	2	1
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I am confident in my ability to:					
1. Participate in accessing information in an effective manner which is related to academics.					
2. Evaluate the resources and the available information.					
3. Participate in collaborative learning to generate valuable information.					
4. Find resources on the internet to expand my learnings.					
5. Help my classmates to appreciate literature and other creative expressions of information.					

Name of Respondents/Optional-Signature

CURRICULUM VITAE

EMMANUEL R. PAPA JR.

09463745551

Emmanuel_papa@knp.edu.ph

PERSONAL DATA

Age: 22 years old

Date of Birth: September 25, 2000

Gender: Male

Civil Status: Single

Address: Prk. Namnama Garcia 1, lot 25 brgy. Cuambogan Tagum City

Religion: Christian

EDUCATIONAL BACKGROUND

Elementary: Magugpo Pilot Central Elementary School

Mabini st. Tagum City

2012-2013

Secondary: Tagum National Trade School

Apokon Tagum City

2016-2017

Vocational: STI Tagum College

Mabini st. Tagum City

2018-2019

Tertiary: Kolehiyo ng Pantukan

Juan A. Sarenas Campus, Pantukan, Davao de Oro

Course: Bachelor of Technology and Livelihood Education major in
Home Economics (Third Year Level)

Ongoing