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Technology-aided Instruction and demonstration Lesson Methods in Teaching Cookery: A modified Lesson Plan Exemplar

Wella R. Arriesgado

University of the Visayas

E-mail: wella.arriesgado@deped.gov.ph

Anne R. Arriesgado

University of the Visayas

E-mail: arriesgadoanne218@gmail.com

Archie S. Gallego

Department of Education – Cebu Province, Philippines

E-mail: archie.gallego001@deped.gov.ph

Eugenia M. Solon

Felipe R. Verallo Memorial Foundation College

E-mail: eugeniasolon5@gmail.com

https://orcid.org/0000-0003-4591-6453

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Abstract

The study intends to address the gaps by finding out the possible reason behind the difficulties and the lack of skills to come up with a solution and conclude whether it is effective or not to use technology-aide methods in teaching cooking to junior and senior high school students.

The study emphasizes the necessity of addressing terminations of educational foundations, boundary boundaries, self-segregation, and social segregation. The study used simple random sampling, including students and teachers of Daanbantayan National High School situated at Malinao Road, Poblacion Daanbantayan, Cebu, Philippines. The study utilizes experimental comparative design through interviews and self-made questionnaires. After analyzing the data, the study found that the level of performance of the control group exposed to demonstration lessons and the level of performance of the experimental group exposed to technology-aided-utilization lessons were the same. In other words, students prefer learning and experimenting with technology-assisted instruction and demonstration lessons.

Keywords: technology-aided-utilization, experimental, teaching, lesson exemplar

1. Introduction

1.1 Rationale

The study is about the utilization of technology-aided instruction and demonstration lesson methods in teaching culinary arts. With this regard, the study is about confirming the relevance of this method for students such as senior high students who are into culinary subjects. Currently, there were changes to certain aspects in life because of globalization and so as the unexpected arrival of COVID 19 pandemic. Whereas, education has been greatly affected. With this, almost all of the educational institutions have been adapting to the utilization of technology in teaching. Since the medium for learning has changed due to the continuous changes of the system of education in line with the modernization of the world, students who are into courses that need face to face training are at risk. And so, through this study, it will be known if applying technology-aided as a new medium for teaching culinary is effective. Fortunately, students receive prompts from technology-aided instruction, which also enhances the teaching method employed by teachers. With 11 single-case and 9 group-design studies, technology-aided instruction and intervention meets the evidence-based practice criteria (Hedges & Autism Focused Intervention Resources & Modules [AFIRM] Team, 2018). The training has been successful with students in preschool (3-5 years) to secondary school students (15-22 years). Studies remembered for the 2014 EBP report definite how innovation supported guidance and mediation can be utilized really to address: social, communication, behavior, readiness for school, cognitive, motor, adaptive, vocational, and academic outcomes are all included. This study is all about the utilization of technology as a method in demonstration lessons in teaching cooking to junior and senior high school students.

Comfort has arisen as a vital figure for purchaser food decisions, as well as numerous social and ecological elements which have all added to a decrease in how much time spent in the kitchen (Jackson & Viehoff, 2016; Pula et al., 2014). Convenience meals can only be prepared with limited cooking skills; for instance, following written instructions to microwave or oven reheat a meal (Reicks et al., 2014). People are more likely to lose their ability to cook when meals can be prepared in a short amount of time without the need to practice more complicated cooking techniques and leave them feeling satisfied (Gately et al., 2014; McGowan et al., 2015). Policymakers and educators are looking for the most efficient approaches to teaching individuals and groups how to cook (Butt et al., 2016). Additionally, video technology has grown in popularity as a useful tool for reaching a wider audience and increasing learning, as the use of technology to investigate concepts and acquire knowledge has increased (King, 2017). Battles that learning advances are irredeemably underexplored and that educationalists ought to investigate the capability of learning innovations offering participatory and dynamic opportunities for growth to convey genuine upgrades in learning (Lavelle et al., 2016). Videoed cooking shows and those introduced on TV have would in general outwardly delineate the full cycle, bit by bit, and frequently with some verbally expressed data on, for instance, the obtaining of new neighborhood fixings or healthful realities concerning the dish being made (Garcia et al., 2014). Moreover, students may be able to spend more time in (virtual) environments that are suitable for teaching and learning practical skills through virtual reality

(VR). Virtual reality (VR) has the potential to double student achievement as a learning environment (Bodekaer, 2015). VR allows users to interact and explore an alternate world as though it were real. VR has become feasible in training as a scope of reasonable choices have opened up, in this manner permitting more noteworthy access for all understudies. Augmented simulation is characterized as a PC created computerized climate that can be capable and cooperated with as though that climate was genuine (Jerald, 2016). Immersive technologies like virtual reality (VR) and augmented reality (AR) can enhance "critical thinking, engagement, and motivation" (Curcio et al., 2016). In the VR workshop training test, VR claimed to be at least as effective as a safety demonstration in the workshop (Jin & Nakayama, 2013). A physical science reenactment being finished on a PC to a full body recreation and the outcomes showed the entire body movement prompted critical learning gains (Lindgren et al., 2016; Fuld, 2018). On the other hand, VR simulations may be too distracting and that while students in VR were more immersed, they learned less than students in other settings (Makransky et al., 2017). Furthermore, the use of 360-degree video can also transform learning from an abstract experience into one where participants felt "immersed and present in the environment" (Harrington et al., 2018). VR sickness sufferers should have access to a computer link so they can view content without a headset (Johnson, 2018). Despite the fact that this would enable users to view similar content, the lack of the VR headset's enhanced presence may leave users disappointed. Also, all teachers said they would like to use videos to make their programs better and give students who miss classes or need to go back to a lesson option (Thomas, 2015; Lau et al., 2018).

Anyone can benefit greatly from learning to cook because it broadens our understanding of different flavors and cuisines from around the world. You'll quickly realize that good food can be just as quick and easy to find as most junk food alternatives (Angelina, 2022). Cooking methods have evolved over time, and some are made even better with the help of technology. For instance, many restaurants offer sous vide dishes, a cooking method with a fascinating history (Chavy, 2015). The following ways were perceived as ways in which video technology helped with cooking instruction: 1) a better understanding of the cooking process; 2) ongoing consolation in the cooking system; (assisting in the development of new cooking skills and (4) making the cooking process more enjoyable (Surgenor et al., 2017). These demonstrate how low-skilled individuals with a desire to cook from scratch with fresh ingredients can benefit from video technology's ability to boost motivation and self-assurance as well as their cooking abilities. However, current thinking suggests that in order to fully engage and motivate students to further develop their skills, educators must not only replicate the steps and stages of a process but also take into account the audience's needs and learning preferences (Mintel, 2016). It is necessary to think about the changes that need to be made to the learning environment in order to best meet the needs of the intended target audience and inspire them to change or improve their behavior (Utter et al., 2016). Indeed, it is likewise important to consider what parts of video innovation advance learning. Battles that representation is particularly important in understanding key ideas and the visual nature and perceptible substance of video fills in as a significant learning device since the delivery of practical-based food education is being hampered by a lack of suitable cooking facilities and teacher shortages (Wishart, 2016;

Gorman et al., 2022). Students can pause and rewind their learning with video technology, which has been shown to improve social interaction, provide an individual learning environment, be a simple delivery system, and be highly portable (Beheshti et al., 2018). In a review looking at strategies for showing cooking abilities, center gatherings observed that video innovation was the best strategy for showing understudies cooking abilities. In any case, this study neglected to gauge how the understudies' apparent capacity to prepare dinners on their own worked accordingly (Kaesberg, 2019).

According to the reviews, it seems that the utilization of technology-aided instruction and demonstration lesson methods in teaching culinary arts has mixed opinions from different studies. Some of the studies said that its utilization is effective and that it brought a lot of benefits for the students or the learner's showing more convenience in learning. Yet, some indicated that this will give the students a tougher way to learn culinary arts as this kind of course requires a lot of practice and a lot of time to learn. These conclusions from the reviews mentioned above are a call for further research about the topic. The collected ideas are the basis of this study to gather more information about its utilization on either supporting or contrasting the different conclusions of the studies being cited. This topic will make this study more relevant for the reason that the result of this study may create a more solid stand about the utilization of the technology-aided instruction and demonstration lesson methods in teaching culinary arts whether it's about its effectiveness or not. The result of this study may be used by the teachers who are teaching culinary arts on how they could possibly give a more satisfactory teaching to their students as the skill to be learned in this kind of course is very much applicable not only in the working industry but to the daily living of the students in the future.

The study identified two gaps among the students in their cookery class. These students had difficulty preparing the food because they lacked the skill, and their results were subpar. For that reason, the study saw this research as a good basis for the teachers to become more effective in teaching culinary arts to their students. The result of this study will be an exemplar for the teachers on how and what way they could teach their students by making themselves to be at least in order to the possible recommendation of this study. Also, as identified above, the purpose of the study is the intend to address the gaps by finding out the possible reason behind the difficulties and the lack of skills to come up with a solution and conclude of whether how effect or ineffective it is to use technology-aide method in teaching cooking on the junior and senior high school students.

1.2 Theoretical Framework

This part narrows the scope of the investigation by focusing on key factors and their relationships. It also provides a researcher with a precise structure for collecting and interpreting pertinent data in a study proposal. A theoretical framework employs theory/theories and its constituent aspects as the 'working model' that drives the inquiry and analysis of a social phenomenon (Drew, 2023).

Throughout the educational process, technology-assisted instruction and intervention (TAII) tools can be used. It can be used to deliver reminders to pupils, to display scripts or visual

schedules for common procedures, to mimic video, to pick tasks, or to aid in student self-monitoring. In a nutshell, technology enhanced learning refers to any technology that improves the learning experience. The phrase can refer to both analog and digital technologies, but in recent years, we have seen digital TEL take over education in the form of various forms of educational software. Technology may be used to create meaningful projects that engage kids in critical thinking and problem solving. Technology can be utilized to restructure and rebuild the classroom to create an atmosphere that encourages the development of higher-order thinking skills (Kurt, 2010). Technology also fosters greater student collaboration. Collaboration is a highly valued skill. A powerful learning tools. Students collaborate to create projects or to learn from one another by reading the work of their classmates (Keser et al., 2012).

The study is anchored on the theoretical background of the study. It is with two theories, namely: cognitivism and constructivism.

1.3 Cognitivism

Cognitivism is a learning theory that focuses on how the brain receives, organizes, stores, and retrieves information. It was a theory founded by Noam Chomsky in the year 1959. Like a computer, you use your mind as an information processing device. Cognitivism therefore sees learning as an internal mental process, beyond observable behavior (Open Learn, 2020). Cognitive learning theories focus on students' ability to use mental strategies to direct their own learning. The purpose of this chapter is to (a) briefly examine the growth of cognitivism, (b) describe some of the relevant cognitive processes identified in cognitivism, and (c) outline some cognitive learning theories. and (d) explain its relevance to cognitivism. Explain cognitivism for didactic design practices. These areas provide instructional design students with theoretical knowledge that can be applied to learner situations with varying learning needs (Michela, 2022). Early research on cognition investigated the active acquisition of knowledge as opposed to the more passive learning approaches of behaviorism (Woolfolk, 2015). To design better programs for learners and teachers, because we use research that focuses on the brain and mental processes to obtain and utilize new information, especially about technology-assisted use in the classroom.

When a student learns information that contradicts what he or she already believed to be true, he or she should try to adapt without learning. The previous concept and create a new one to replace the correct one. First, the information we are exposed to enters our short-term memory. When what you learn becomes meaningful to you, or when you can successfully associate it with what you know, you are more likely to retain new information in your long-term memory. Our brain already has knowledge pathways, and the pathways become more powerful as we acquire and build new knowledge (Morales & Gray, 2021). Through this lens, technology provides information and learning resources that support the brain in efficiently storing and retrieving information, such as by using storage devices and multiple modalities (video, audio, etc.) helps (Kimmons, 2020). In terms of a student's cooking skills, cooking develops children's thinking, problem-solving and creativity. It also gives children the opportunity to use and apply

their existing knowledge by counting, measuring, in order, following instructions, and according to cause and effect (Child Development Centre [CDC], 2018).

1.4 Constructivism

Constructivism is one of the great ideas in education founded by Jean Piaget in the year 1980. Impact on teacher practice. Teaching and learning to teach is huge. If our efforts to reform education for all students are successful. Then you should focus on your students. To date, the focus on student-centered learning is arguably the most important (Golder, 2018). Constructivism is the theory that learners construct knowledge rather than simply passively assimilates information. As people experience the world and reflect on those experiences, they construct their own representations, integrating new information into their existing knowledge (schema) (Buffalo, 2020). The theory suggests that humans construct knowledge and meaning from their experiences. Moreover, the focus of education must shift from placing content to building student knowledge. If the focus of learning can shift from cramming to producing knowledge outcomes, students won't have to focus on memorizing or cramming exams. These knowledge products may take the form of essays, term reports, project reports, research papers, videos, posters, slides, portfolios, or other student-created products. Education requires a formal, theoretical, practical and self-regulating integration of knowledge. However, traditional curricula have dealt with these different types of knowledge. Separately. One of the major challenges of pedagogy is to develop curricula and teaching methods that truly integrate formal, theoretical knowledge with more informal, practical, self-regulating knowledge. When it comes to culinary skills, constructivist cooking activities can enhance young children's scientific attitudes and creativity (Park & Kim, 2023). On the other hand, technology tools play a key role in ensuring active learning. These tools contribute to the entire education system, students, teachers and processes. Constructivist approaches supported educational environments in terms of activating prior learning, sensitivity to individual differences, access to information sources, shaping experiences, supporting individual learning, and supporting lifelong learning. Also includes: Supporting on-demand learning, supporting collaborative learning, enabling process assessment, ensuring communication, active learning, enabling interaction, providing guidance, providing curriculum flexibility, supporting the use of high-level cognitive skills, activity-based learning and support to support skill development, set up a learning environment, and build a positive attitude towards support learning (Isik, 2018). Moreover, such tools facilitate learning. Sensitive to individual differences. Ensure transfer of situations that cannot be mapped using simulation. Learning environment to these environments. Create an accurate learning environment. Supports learning that is suitable for student preparation. encourage learning while having fun. On educational games and opportunities to develop different skills (Isik, 2014). The use of educational materials and materials in education enables students to participate more actively in the classroom, provides opportunities to learn through action and experience, and draws more attention to the desires, ideas and needs of students in education. You will be able to direct it. It also enriches the educational process by supporting teaching and facilitating learning. Gives concreteness to

information perception, reduces forgetfulness, encourages students, achieves vividness, and makes learning a natural environment (Celikkaya, 2017).

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When what you learn becomes meaningful to you, or when you can successfully associate it with what you know, you are more likely to retain new information in your long-term memory. Through this lens, technology provides information and learning resources that support the brain in efficiently storing and retrieving information, such as by using storage devices and multiple modalities (video, audio, etc.).

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1.5 Statement of the Problem

This study aims to determine the effectiveness of technology-aided and demonstration lesson methods in teaching culinary arts for junior high school classes for the School Year 2023 – 2024, as the basis for a proposed teaching lesson in cooking. At .05 level of significance, it is assumed that there is no significant difference of performance scores between; before and after exposure of Group A to demonstration lessons? before and after exposure of Group B to technology-aided utilization lessons? and Group A and Group B.

2. Related Literature

The study distinguished two gaps among the students in their cookery class. It appears to be that the use of technology-aided instruction and demonstration lesson methods in teaching culinary has blended assessments from various examinations. Where, a portion of the examinations said that its use is powerful and that it brought a ton of advantages for the understudies or the student's showing more comfort in learning. However, some showed that this will give the understudies a harder method for learning culinary expressions as this sort obviously is deprived for a ton of training and a ton of time to learn. These understudies experienced issues setting up the food since they missing the mark on expertise, and their outcomes were inferior. Thus, the review considered this examination to be a decent reason for the educators to turn out to be more powerful in showing culinary expressions to their students. Likewise, as distinguished over, the reason for the review is the plan to address the gaps by figuring out the conceivable explanation for the hardships and the absence of abilities to think of an answer and finish up of whether how impact or insufficient it is to involve technology-aide method in showing cooking on the junior and senior secondary school understudies. Besides, it appears to be that the use of technology-aided instruction and demonstration lesson methods in showing culinary expressions has blended feelings from various past examinations. The data to be collected through this study will be a new idea about the topic and would either support or contrast hypotheses or likewise create a new basis for further research. The thoughts that are to be gathered in this chapter will be the premise of this review to assemble more data about its use on one or the other supporting or differentiating the various finishes of the examinations being referred to. This is through leading this study. This point will make this concentrate more pertinent for the explanation that the consequence of this study might make a stronger stand about the usage of technology-aided instruction and demonstration lesson methods in showing culinary expressions whether it’s about its viability or not. The consequence of this study might be utilized by the educators who are showing culinary expressions on how they might actually give a better educating to their students as the expertise to be mastered in this sort obviously is a lot of material in the functioning business as well as to the day to day living of the students from now on.

2.1 Teaching Methodology and Technology

Through their teaching methods, culinary instructors are uniquely positioned to influence the food service industry's culture. It is trusted that with the invasion of superstar TV gourmet specialists, the interest for the quickness of inexpensive food, and takeoff as a general public from ranch-to-table over the last three to forty years, society's information on the best way to cook has changed (Everett, 2016). The way students engage with their education has also changed as a result of the rapidly evolving world of technology. Students are not content to sit in classrooms and memorize facts by heart. Students are accustomed to frequent and rapid stimulation (Berrett, 2012). In order to be successful in the hospitality or food service industry, a worker needs to be creative with their menus, up to date on new trends, aware of how guests perceive service and atmosphere, proficient in interpersonal communication, and capable of regaining lost customers (Hu, 2010). Culinary schools must examine their course offerings and programs to meet the needs of this rapidly changing industry in light of changes in agriculture, technology (food technology), food science, and culture (Muller, et al., 2009). Instructors are reinventing how they deliver course content due to the availability of free resources and online sharing, as well as students' tendency to seek resources online (Tiernan, 2015). Many learning objectives are better retained when presented in a format that allows students to view them repeatedly and on their own time (O'Flaherty & Phillips, 2015). With that, an educator should assess what material will best be introduced as a video and what varying media materials may as of now exist. Numerous video resources are already in place and can be viewed and uploaded for free. Every minute, 300 hours of video are uploaded to YouTube (Smith, 2015). However, there are advantages and disadvantages to utilizing online resources as classroom resources. "Think reflectively and judge skillfully, so as to decide what information is reliable and what actions should be taken during reasoning and problem solving" (Kong, 2014). This is where the teacher should give direction to the understudy through picking the video materials that will be seen in blend with the in-class structure.

Mostly, in accordance with the reviews above, the methods done to assess the efficacy of having technology as a medium for teaching cooking was Development of Instructional Tools, Setting, and Participant Safety, Equity, and Reciprocity were considered. And, upon the collection of data or data sources, Skills and knowledge, and Student Perceptions were focused. According to the review of the relevant literature, student interest and engagement are crucial to and beneficial to learning. Therefore, studies need to become interested in the students' perceptions of the poultry fabrication video demonstrations using Likert style questions in addition to the skills they were able to demonstrate. Incorporating video segments into regular curriculum has been successful in highlighting important learning objectives that can be delivered outside of the classroom and are individualized (Cruse, 2011). When used effectively, digital resources, tools, and equipment have been shown to increase learning speed and depth. To evaluate the impact of digital learning in schools, the authors provide a summary of research findings from studies with experimental and quasi-experimental designs that have been combined in meta-analyses (Higgins et al., 2012). Their search yielded 48 studies that synthesized empirical research on the impact of digital resources and tools on school-age

students' achievement. Additionally, it came to the conclusion that students had more time for active learning in the classroom when they used digital resources (Jewitt et al., 2011). In addition, the authors conducted a meta-analysis to reevaluate the findings of three previous meta-analyses regarding the influence of digital learning on literacy and language acquisition (Archer et al., 2014). Moreover, the author investigated the effects of using e-readers and e-books in the classroom among US students aged 9 to 10 years old. In daily teacher-led guided reading groups, the e-books were used in place of traditional print books (Hess, 2014). The authors looked into the effects of using two digital reading comprehension tools on elementary school students in Quebec, Canada, who were between the ages of 6 and 8 (Lysenko & Abrami, 2015). The authors described a study program with an interactive core curriculum and a digital teaching platform (Rosen & Beck-Hill, 2012).

According to the authors cited, the classroom teaching pedagogy significantly differed from that of more conventional classrooms. The digital resources, according to teachers who participated in the program, made it easier to plan and implement "differentiation." The authors evaluated the relationship between the intensity with which students used digital tools and resources and literacy scores using data from the 2009 Programme for International Student Assessment (PISA) and information on how students used digital technology at school and at home (both for school work and for entertainment) (Biagi & Loi, 2013). The creators found a positive and huge connection between gaming action and language fulfillment in 11 of the 23 nations examined. When relationships existed and were significant, the other measures tended to be negative. However, a meta-analysis of the effect of digital learning on school students found that it was generally beneficial (Li & Ma, 2010). Students between the ages of 13 and 14 in South Korea, for instance, who reported having a lot of fun learning more frequently used computers (House & Telese, 2011). Some students' confidence can also be boosted by digital resources and tools. Defeating students' nerves are normal worries in educating (Huang et al., 2014). Over 300 schools in England that used Espresso digital resources, those that had been using them for a longer period of time had significantly higher increases in the results of their numeracy tests at the end of primary school than schools that had only recently started using them (Passey & Higgins, 2011). Looking into the effects of incorporating self-explanation principles into a digital tool that helped 8 to 9-year-old students in Taiwan conceptually learn about light and shadow (Hsu et al., 2012). They discovered a statistically significant difference in retention test scores, despite the fact that the experimental and control groups' overall test scores were identical. In the United States, a study conducted by the authors cited looked at how, in comparison to students who conducted a more conventional inquiry-based investigation of the same concepts, students who used a digital game increased their understanding of electromagnetic concepts (Anderson & Barnett, 2013). The authors looked at the effects of teaching with computers (Güven & Sülün, 2012). The results of one controlled study on the use of laptops in classrooms for learning did not differ (Yang, 2013). The advanced assets could help students beyond 8 6 12 years old 6 a year behind their age bunch (Reed et al., 2013). Giving students access to digital resources via laptop was effective in closing the knowledge and understanding gap (Zheng et al., 2014). The authors demonstrated

how a small group of secondary students can improve their negotiation and teamwork abilities through the use of virtual interactive worlds (Devlin et al., 2013).

2.2 The Culinary Arts in School

Distinguishing the particular learning styles of Secondary School students in a Cookery class is fundamental for the successful conveyance of the K to 12 educational programs. Because this course focuses on the students' skill competencies, which are a crucial foundation for their academic performance, this project is helpful in the planning and management of the allocation of necessary facilities and equipment. The momentum research shows no verification that a mixed learning climate gives any to a lesser degree a valuable instructive encounter than customary homeroom settings. Nonetheless, understudies report that this sort of learning climate advances a more noteworthy comprehension of ideas in application and composing, and worked with further developed learning results (Bell & Federman, 2013). Learning styles are descriptions of how students learn new information (Chick, 2017). Learning inclination is a dream which isn't supported by mental science. Analysts guaranteed that directors might simply want to accuse the educators or help methodologies to deny understudy's shortcoming in the capacity to learn (Jarret, 2015). It's possible that many students received the resource and immediately began filling out the survey without even looking at it. Students may be motivated to improve their self-efficacy and cook more frequently at home when nutrition education and a cooking skill intervention are combined. In keeping with this, a number of other studies have used and suggested nutrition education as a useful complement to cooking interventions and as a means of increasing self-efficacy for healthy eating (Lynette et al., 2017; Strawson et al., 2013).

Understudies from the review had measurably critical enhancements in self-viability for cooking from pretest to post test. Self-efficacy for cooking has been linked to the provision of a cooking resource in other studies (Bernardo, 2017). Understudies' abilities in cooking are critical to get talked about as it assumes a significant part to the existence of the understudies in progressing to youth. The prevalence of unhealthy lifestyle behaviors among undergraduate students has been thoroughly examined (Henry et al., 2018). Students enter a period of developing behavior patterns that have an impact on their long-term health and risk for chronic disease as they move from adolescence to adulthood. Also, students' poor eating habits may be caused by a lack of exposure to cooking education, as cooking teaches students how to get the most out of the food they prepare. Students with more nutrition knowledge ate less fat and cholesterol, and students who got more than 35% of their calories from fat had lower mean nutrition knowledge scores than students who got less fat or cholesterol (Yahia et al., 2016). Yet, self-regulatory strategies and self-efficacy for increasing dairy consumption were found to increase among students who participated in a web-based intervention designed to improve knowledge (Poddar et al., 2010).

In accordance with the reviews cited above, it can be seen that students and teachers are making the cooking lessons as essential as they can. For the reason that, learning styles are portrayals of how understudies learn new data (Chick, 2017). Learning tendency is a fantasy which isn't

upheld by mental science. Analysts predicted that administrators might simply wish to accuse teachers or supporting methods of denying students' inability to learn (Jarret, 2015).

2.3 Demonstration lesson

Successful educational establishments have cultures that emphasize student success, emphasize student learning in their mission, set high standards, strive for continuous improvement, spend money on support services, emphasize diversity and difference, and prepare students for higher education (Leach, 2011). She suggests that operational engagement should be the goal of a more active learning environment because students are better able to achieve their objectives under these conditions. Students learn to manage themselves, make decisions, and become aware of their potential and purpose in the world through this model's emphasis on active citizenship. Also, it's important to know that not all of the lecture material will work well on video or even be available in video format. Some ideas and principles might be more easily conveyed in person.

Findings of a study looked at how academic performance was affected by the management system of public high schools, in Georgia demonstrated that the school management system is a good predictor of students' academic achievement, specifically that the following variables are among the best predictors: vote based techniques of class the executives, educational committee viability, well known logical gatherings, and instructors' majority rule way to deal with understudies (Tsereteli et al., 2011). Few students approach demonstration lessons through novel perspectives (Crockett, 2017). The Master of Science in Career and Technical Education, or MSCTE, is a program that has solidified this emerging realization by introducing novel ideas regarding not only comprehending how each student learns in the classroom as an individual but also comprehending, recognizing, and responding to the nuances of the learning process through the presentation of materials, theories, and concepts (Bolliger et al., 2010). Also, in some studies, outcomes demonstrated that both above-average and average high school students use sensing as their primary mode of instruction. Reflective learning is preferred by students whose performance is below average. This indicates that reflective students perform poorly. The author's explanation of reflective learning is refuted by this finding (Gray, 2013). Gray asserts that reflective learners do not merely memorize facts, formulas, or dates; rather, they consider what they have read, done, or learned, make connections to their own lives, and derive meaning from the material. This is in line with what the author had said (Kaveti, 2018). She revealed that reflective learning is an important quality of a good learner and that it improves concentration and focus. In addition, it was discovered that students' participation in the most important decisions affecting their education results in motivation, a sense of ownership, a greater propensity to adhere to the established rules, a personal drive to achieve individual and collective goals, and overall higher academic performance (Mati et al., 2016).

In general, it is demonstrated that students with sensing learning styles make up the largest group when grouped according to their predominant learning styles. About a portion of the size of the said bunch is made out of visual students which is pertinent for a style wherein

innovation is utilized as a mode for instructing. The groups of active learners, reflective learners, and global learners come next, each with a slightly smaller group size than the one before it. There are not many students in the following categories. There is a huge group size of the students who prefer to get trained in person when it comes to cooking because some see the subject as a difficult one to get learned through visuals alone and that they require for a hand-to-hand training. Yet, students' performance is not significantly impacted by training alone (Peter, 2012).

2.5 Technology-aided Utilization Method

Slow and average students performed well in school when they maximized their preferred learning methods (Beasley et al., 2017). The Felder-Silverman Learning Style Model, which was created by Richard Felder and Linda Silverman, as its foundation, allows him to depict a variety of learning styles and preferences in line with the study's goal of determining whether or not technology can be used to teach cooking (Nemenzo, 2019). The following are the dimensions of the aforementioned model Active or Reflective, Visual or Verbal, Sensing or Intuitive, Sequential or Global (Felder & Silverman, n.d.). Students conceptualize new information regardless of whether they received it verbally, visually, aurally, or in a combination of the aforementioned modalities (Paul, 2012). Those recollections are put away when the student tracks down its pertinence (Willingham, 2017). Willingham attested those recollections are not put away essentially on the grounds that they are seen by visual students, heard by hearable students, or contacted/felt by sensation students. Using technology to teach students about cooking, on the other hand, might help them learn more effectively. A lot of people are told that seeing, listening to a lesson, understanding, and so on are the best ways to learn. Educators have upheld instructing procedures that take advantage of the varieties in the manner individuals learn. However, it was argued that a student's learning style influences the learning environment (Guterl, 2013). Notwithstanding, visual learning style is also called spatial learning style (Spanella, 2017). Images and other forms of tangible representation of the concept learned are necessary for learners in this mode of instruction. In other words, visual learners are spatial learners. Based on Felder and Silverman's model, the study suggests that school administrators should help students learn through technology as a learning medium in the following ways: monetary help, educator preparation stages in the creation of learning mediation techniques, youngster agreeable school, paying attention to the voice of the students and other partners, and cookery learning materials is the essential autonomous variable. This study examined the effect of teaching style on students' motivation to study and found that teachers who take into account the uniqueness of each student, present the lesson in a variety of ways, and use materials that are familiar to them will receive complete approval from students. The purpose of the study was to determine how teachers' teaching methods affected students' interest in learning. It took place in a science class (Barberos et al., 2017). Kinesthetic and visual skills are developed by students in schools near impoverished areas. It was gone through at the College of Northern Iowa, US, for instance. The said understudies have exceptionally low ability to understand anyone on a profound level yet unexpectedly, can be great in full of

feeling learning methodologies. These students may prefer bi-modal or tri-modal learning methods (Cuhat, 2017).

Having the referenced model as system reason for the review surveyed, the aftereffect of the review uncovered that 49.02% of the great school understudies are normal as far as scholarly execution when the expressed vehicle of instructing is utilized. It likewise shows that 35.29% are sub optimal students while just 15.69% are in the better-than-expected degree of execution. This suggests that a seriously significant number of understudies are in the less-than-ideal levels which is very disturbing. However, only a small percentage of students are global, verbal, sequential, and reflective learners. However, according to some studies, using technology to teach students how to cook does not have a significant negative effect. Today's average student relies heavily on convenience foods because they lack the self-efficacy to prepare meals at home (Kaesberg, 2019). Using video technology to teach cooking is a useful method for improving individuals' cooking skills. Most undergraduate students are likely millennials who prefer to learn through technology. Video innovation specifically for showing has been found to work on friendly connection, give a singular learning climate, be a basic conveyance framework, be exceptionally versatile, and enable students to stop and rewind their learning (Beheshti et al., 2018). Focus groups in a study that compared teaching methods for cooking skills discovered that video technology was the most effective way to teach cooking skills to college students (Surgenor et al., 2017). Technology is deeply ingrained in the social and educational lives of the typical student today. Video innovation has been utilized on a few stages to show people with admittance to innovation how to finish jobs and abilities themselves. However, one drawback of the video technology tool is that reviewing the resource takes significantly longer than simply reading a recipe card. The week after week recordings endured around four to five minutes each. Video advertising research found that recordings under 60 seconds have the most elevated fulfillment rate (Pell, 2019).

Students can benefit from learning how to cook at home directly by doing so online. According to the National Health and Nutrition Examination Survey conducted between 2007 and 2008, 8% of Americans never made dinner at home, 43% made dinner two to five days per week, and 49% made dinner six to seven days per week (Virudachalam et al., 2013). More specifically, high school courses like home economics (family and consumer sciences) and food science are rarely taught or schools have chosen not to teach them (Deaton et al., 2018). These courses are designed to help students develop life skills. Under 3.5 million students enrolled in family and consumer science courses in the academic years 2010–2011 and 2011–2012, representing a 38% decline in enrollment over a decade (Werhan, 2013). Cooking at home can be a complicated activity that involves planning, purchasing, and preparing a meal in a specific order. Public health professionals believe that cooking from scratch from raw ingredients at home is healthier than eating fast food, takeout, or convenience foods (Begley, 2016). Additionally, cooking at home might be a more cost-effective option. The authors observed that incessant home cooking was related with lower per capita food consumptions ($330/month among low versus $270/month among high cooking bunch) (Tiwari et al., 2017).

2.6 Utilization of Technology-aided Method

Most of the analysis from the reviews showed a positive impact between students' learning and technology as a medium for teaching and that the learning heavily relies on the environment or the setting of learning. The widespread use of mobile devices and the seamless integration of technology into everyday activities like shopping, reading, and finding directions are examples of the profound impact that the digital revolution has had on daily life (Anderson, 2016; Smith & Anderson, 2016; Zickuhr & Raine, 2014). The use of computers, mobile devices, and the Internet is at an all-time high and is anticipated to continue growing as technology becomes more accessible, particularly to users in developing nations (Poushter, 2016). Additionally, a growing number of people (Anderson & Horrigan, 2016) are smartphone dependent, using smartphones exclusively for Internet access as opposed to more expensive devices like laptops and tablets. More noteworthy admittance to and interest for innovation has introduced remarkable open doors and difficulties for some ventures, some of which have flourished by really digitizing their tasks and administrations (e.g., money, media) and others that have battled to stay aware of the speed of mechanical advancement (e.g., schooling, medical care) (Gandhi et al., 2016). Incorporating innovation into educating and learning is definitely not another test for colleges. Administrators and teachers have been trying to figure out how to use technological innovations like email, teleconferencing, and video and audio recordings to supplement or replace traditional instructional delivery methods since the 1900s (Kaware & Sain, 2015; Westera, 2015). Conflicting tensions between faculty beliefs and abilities and institutional policy and practice create numerous organizational barriers to technology integration. For instance, college directors might see innovation as a device to draw in and hold understudies, while personnel might battle to decide how innovation matches with existing teaching methods (Lawrence & Lentle-Keenan, 2013; Lin et al., 2010). What's more, some workforce might be reluctant to utilize innovation because of absence of specialized information and additionally doubt about the adequacy of innovation to further develop understudy learning results (Ashrafzadeh & Sayadian, 2015). Universities that do not successfully incorporate technology into the learning environment miss out on opportunities to enhance student outcomes and meet the expectations of a student body that has become accustomed to the incorporation of technology into every aspect of life (Amirault, 2012; Cook & Sonnenberg, 2014). Besides, understudy commitment has gotten huge consideration throughout the course of recent a very long time because of movements towards understudy focused, constructivist educational techniques (Wright, 2011), mounting tensions to further develop instructing and learning results (Axelson & Flick, 2011). Experiential learning theory holds that learning takes place when students interact with their surroundings (Kolb, 2014). In general, the vast majority of studies focused on behavioral engagement and anticipated that social interaction-specific technologies like web conferencing, wikis, and social networking sites would produce more conclusive results. However, the fact that many studies used voluntary technologies resulted in lower-than-expected participation rates and missed opportunities for interaction (Armstrong & Thornton, 2012; Fagioli et al., 2015; Nakamaru, 2012). According to the reviews, teaching with technology is not particularly difficult. For instance, in certain examinations cooperation implied that an understudy pursued a Twitter

account, utilized the Twitter represent class, or saw the course-explicit Twitter page (Tiernan, 2015; Williams & Whiting, 2016; Hennessy et al., 2016). The educational purposes of the advances likewise changed extensively across studies, making it challenging to make examinations. For instance, Facebook was utilized in examinations to share learning materials, respond to questions from students regarding academic material or administrative issues, prepare for upcoming examinations and share study tips, and complete group work, and talk about the material in the course (Clements, 2015; Dyson et al., 2015; Rambe, 2012; Bowman & Akcaoglu, 2014; Hou et al., 2015; Staines & Lauchs, 2013; Camus et al., 2016).

The teaching methodology and technology in homerooms differ from regular study halls, with advanced tools making it easier to plan and execute "separation." The relationship between the power of computerized devices and resources and proficiency scores was assessed by the authors based on data from the 2009 Program for Global Understudy Evaluation (PISA) and data on how students used advanced technology at school and home (Biagi & Loi, 2013). They found a positive and immense association between gaming activity and language satisfaction in 11 of the 23 countries analyzed.

3. Materials and Methods

3.1 Design

This study used experimental comparative research design. An experimental study is a type of comparative study in which a sample of participants is identified, assigned to different conditions for a specified period of time, and compared for differences. The researcher wants to find out the difference in using technology-aided utilization methods and demonstration lessons between the grade 9 students during their cooking lesson. Researchers have to make a comparative study of skills earned by the learners across various methods. These include descriptive and basic explainer questions, relational comparisons, and comparative explainer questions (Esser and Vliegenthart, 2017).

Comparative or quasi-empirical method --- a method used to describe the similarities and differences of variables in two or more groups in a natural context, i.e., it resembles an experiment because it uses manipulation but no random assignment of individual objects. Instead, it uses existing groups (California State University Sacramento [CSUS], 2022). Moreover, for example, a comparative experiment comparing the effects of two diets of different nutritional values on the development of rats must ensure that the rats ate at the same time, regardless of the diet to which they were assigned (Verial, 2017). In addition, like a real experiment, a semi-trial design aims to establish a causal relationship between an independent variable and a dependent variable (Thomas, 2020). However, unlike an actual trial, a trial does not rely almost exclusively on randomization. Instead, subjects are assigned to groups based on non-random criteria.

3.2 Environment

The study was conducted at Daanbantayan National High School, a prestigious instructive establishment situated at Malinao Road, Poblacion Daanbantayan, Cebu, Philippines. The

school is strategically placed close to a Catholic Church, private and public clinics, cafés, public business sectors, Prince Hypermart, Jollibee, Watsons, 7/11 and obviously the Municipality of Daanbantayan is only a short leave. The school partakes in an essential area that guarantees simple access for both students and teachers. The school follows a complete educational program and offers training for students of various levels.

For the number of students, each grade level comprises different segments. As for grade 7, it has 10 sections and each has around 43-47 students. Grade 8 has 10 sections with an expected 45-50 students each section, grade 9 has 11 sections and each comprise of around 49-56 students thus with the grade 10 has 11 sections each with 47-55 students, grade 11 has 14 sections each comprise of around 49-58 students while grade 12 has 13 sections with around 48-58 students. Surmised complete number of students for this school year 2023-2024 is 3,600+ students excluding the transferees. For the number of teachers, the total TLE teachers are 19 and that excludes the senior high school teachers that have participated in the study. From the mentioned number of TLE teachers, 6 were the cookery teachers that are handling grades 7, 8, 9, and 10 students.

3.3 Participants

The participants of the study are composed of junior high school students and teachers specializing in culinary or cooking in Daanbantayan National High School regardless of sex, age, section, affiliation, socio economic status, belief, religion and intelligence. Junior high school students (non-restricted simple random sampling of samples and random assignment to group) and teachers who handle Home Economics (short interview);30 for the demonstration lesson and 30 for the technology-aided lesson. The study is conducted where each member of a population has capability to become part of the sample for a total of 60 participants.

3.4 Instruments

The researcher made a test-questionnaire to assess the learning of the students on the topic used in the experimental research. The test questionnaire is made up of 24 semi-structured interview guide questions. It shall be subjected to pilot testing to nonparticipants but equivalent representatives for the reliability of the test. Further, the instrument shall be submitted to the specialists in the field of actual training for approval to guarantee its reasonableness to address the examination questions being investigated. It was likewise pilot tried to guarantee the dependability of the polls before its organization; subsequently, the surveys were considered as great instruments and concluded for organization (Delas Peñas & Salundaguit, 2019). Lastly, a quick question shall be asked to the students about their preference and to the teachers about their perspective of the teaching strategy.

3.5 Data Gathering Procedure

Participants will be recruited through face-to-face media. The researcher collects the data based on the effectiveness of the use demonstration less and technology-aided method in teaching cooking. After establishing the validity and reliability, formulating, distribute and share the questions appropriate for the study and all doing necessary modification to the chosen

respondent, the researcher then analyzes on how these data collected reflects the effectiveness of the use of demonstration less and technology-aided method in teaching in cooking. And so, determine the effect of the outcomes or possible trends that could emerge in the future in accordance to the assessment done.

3.6 Pre-Data Gathering

The preliminary stage is particularly important since it provides readers or reviewers with a sneak peek into the study's methodologies, instruments, and exploratory findings, which can serve as evidence for the study and aid in the design of bigger scale investigations. In order to do this, the researcher will request authorization from the DepEd superintendent, who will then seek permission to administer the questionnaire to the respondents. This request will be supported by the district supervisor and the school principal. A formal request for approval will be submitted via letter to the superintendent, and a transmittal letter will be forwarded to the dean, kindly refer to the appendices.

3.6.1 Actual Data Gathering

It is imperative that the researcher pays attention to formality and professionalism when collecting data, since the way the information collected is used and what explanations can be derived from it depends on the methodology and analytical approach that the researcher adopts. Therefore, this should be planned accordingly to ensure that the study collected the highest quality data and that the data can be reinterpreted based on the outcome sought by the study.

3.6.2 Experimental Process

For the Control Group, the researcher conducted a pre-test for the respondents before exposure to the teaching method. Afterwhich, the respondents underwent a teaching method and then had a post test. Same goes for the experimental Group. The respondents had a pre-test before exposure to technology-aided teaching. Afterwhich, the respondents were exposed to technology-aided where they underwent teaching and learning with the technology as a medium. The students then had a post test. For the teachers, the researcher interviewed the teachers about the utilization of technology and the usage of demonstration methods in teaching to know their most preferable method in teaching and so as to know if it coincides with the result collected from the students.

While the researcher conducts the one-on-one interview to the teacher, the questionnaire and the Likert scale checklist is personally handed to the student and teacher respondents, with instructions on how to answer it. In addition, the researcher would recommend students to conduct a group of experimental courses together with their teachers to use the technology during their cooking classes. In many experiments it is important to conduct an experiment with the independent variable at a specific setting for comparison to the other experiments to be able to determine what is the best teaching strategy or method to be used in doing such technology-aide demonstration. In line with this, the study used an experimental process where one of the variables is manipulated to determine if it causes changes in another variable. For the reason that the study aims to know the comparison of utilizing technology and demonstration

methods in teaching and learning. To do that, the study used an experimental process to know the significance of both the variables to each other. This strategy depends on controlled research techniques and arbitrary tasks of study subjects. And, in this study, the researcher used variance comparison to determine if the after exposure of utilization of technology causes changes to the before exposure of it, so as to the demonstration method. Respondents were given the opportunity to provide their name under the Data Protection Act. We have asked for their consent and all data will be treated confidentially. In order to give the respondent enough time to answer, the instrument would be picked up the next day.

3.6.3 Post Data Gathering

Face-to-face media will be used to find participants. In the wake of passing judgment on significance and dependability, the researcher plan, circulate and impart research-suitable inquiries and roll out any fundamental improvements to choose respondents. The effectiveness of using a technology-aided method to demonstrate cooking lessons to junior high school students is the focus of the research, which also examines how this influences outcomes and potential future trends by utilizing the quantitative method. On the other hand, in an interview qualitative type of method, the researcher first defines the objectives to be questioned to the participants by listing the targets such as the technological method, experiences and perspectives of the students during the lesson. Secondly design an interview guide then do the fieldwork, encode and analyze then interpret the data gathered. After which, data will be kept confidential after the study is completed.

3.7 Data Analysis

The motive of data analysis in this study is to present accurate and reliable data. Avoid statistical errors as much as possible and find a way to deal with everyday challenges such as outliers, missing data, data changes, data mining or developing graphs. It's about deriving meaningful insights from raw data to support decision making, identify patterns and extract valuable information. This study involves frequency, t-test of equal frequency, t-test of unequal frequency

4. Results and Discussion

4.1 Results

Table 1 presents the descriptives of the performance scores of the control group's pre- and post-exposures to demonstration lesson and experimental group's performance score on their before and after exposure technology-aided-utilization in culinary arts.

Table 1. Descriptives of the Performance Scores

	N	Range	Min	max	Sum	mean	Std. Error	Stdev	Var.
Pretest Experimental	24	27	3	30	496	20.67	1.27	6.21	38.58
Pretest Control	24	27	3	30	479	19.96	1.63	7.98	63.69
Post Experimental	24	16	14	30	569	23.71	1.01	4.94	24.39
Post Control	24	26	3	29	489	20.38	1.52	7.44	55.29
Valid N (listwise)	24								

The table above shows the performance scores of the respondents. Whereas, during the Pretest Experimental, it got the variation of 38.58. On the Pretest Control (63.69), Post Experimental (24.39), Post Control (55.29). From the components of this variable, as presented above, the leading component is the Post Experimental (mean=23.71) having the sum of 569, it was followed by the Pretest Experimental (mean=20.67), Post Experimental (mean=20.38), and the Pretest Control (mean=19.96).

The Department of Education Region XII characterizes online distance advancing as an educational methodology in which the educator fills in as the facilitator and effectively connects with students by utilizing an assortment of innovation based educational materials that can be gotten to in any event, when instructors and students are geologically isolated. The web advances student educator and student to-student collaboration in this sort of methodology. It likewise empowers live coordinated meetings, which need students to have a dependable web association and collaborate with the educators and friends continuously. Through the use of a Learning Management System or other comparative innovation, students might get to learning materials, submit schoolwork, and take part in classes in a web-based distance arrangement (Llego, 2020).

Given the present difficulties, each scholastic organization really must have a nuanced point of view of its students' performances (Cano, 2022). Fortunately, as presented above, it shows that the Performance of the respondents is better after learning because of attaining new learnings and they are able to understand the things or usage during the lesson so they learn better.

Table 2. Experimental Group: Post and Pretest

	Mean	S^2	N	Hyp. Mean Diff	Df	t	Sig 2-tail	t Crit 2-tail
Post Experimental	23.71	24.39	24.00	0.00	46.00	1.88	0.07	2.01
Pretest Experimental	20.67	38.58	24.00					

The respondents' Post Experimental performance, using Table 1's scores as a guide has little effect on the Pretest Experimental. Due to the fact that, as previously mentioned, the sig. value

(.07) exceeds the significance level (.05). This means that there is no significant difference between the post and pretest experimental and that the null hypothesis is accepted.

Albeit all the more normally utilized for evaluation, tests can likewise work as strong learning gadgets. Test-taking can further develop memory, incrementally move learning in different circumstances, and improve the encoding of new data (Rowland, 2014; Pan & Rickard, 2018; Chan et al., 2018). Most examination on test-upgraded learning concerns the utilization of post testing, which is ordinarily known as recovery practice. A meta-investigation found that the commonplace size of an exchange impact following post testing, that is, the capacity to apply figuring out how to new settings, for example, to tackle application and induction questions, or to review data on a criterial test that utilizes an alternate configuration (Pan & Rickard, 2018). In this way, other than upgrading reviews, post testing can further develop the move of advancing also. Moreover, pretesting, which is otherwise called errorful age or pre questioning, includes taking practice tests before to-be-learned data is examined, instead of a short time later. For instance, an understudy could take a pretest on a course book part prior to understanding it. Inferable from an absence of earlier information, numerous blunders of commission or exclusion frequently happen during such pretest. In any case, when memory for the right responses is evaluated on an ensuing criterial test, pretesting for the most part brings about preferable execution over non-testing conditions wherein the right responses are essentially contemplated all along. Subsequently, pretesting followed by considering can help learning. Noticeable theoretical records of the pretesting impact center around the age of blunders as well as the ensuing investigation of right data (Kornell & Vaughn, 2016; Metcalfe, 2017). Performances of the students in these experiments are identified to further explain the relevance cited and as per the data presented, performances of the respondents in their Post and Pretest Experimental are not significant and that it is not correlated to each other. With that being said, students already have their prior knowledge of the teaching method, we can also say that it was easy for them to do the experiment because they were born in a digital era where it is easy for them to use technology and understand it as well.

Table 3. Control Group: Post and Pretest Result

	Mean	S^2	N	Hyp Mean Diff	df	t	Sig.2-tail	t Crit 2-tail
Post Control	20.38	55.29	24.00	0.00	46.00	0.19	0.85	2.01
Pretest Control	19.96	63.69	24.00					

The prior research proposes that an educator or understudy aiming to encourage test-upgraded learning, could beneficially utilize pretesting or post testing. In the ongoing writing, the overall viability of pretesting and post testing presently can't seem to be laid out. The table above shows the Sig. Value of the variance comparison of the performance of the respondents on their Post and Pretest Control. As indicated in the table, having the mean of the Post Control (mean-20.38) and Pretest Control (mean=19.96), the Sig. value (.85) is greater than the level of significance (.05). All the more as of late, the authors had eighth grade understudies take tests

previously or after homeroom science examples (McDaniel et al., 2011). Strikingly, interjected testing was not utilized. Post-illustration yet not pre-example testing improved execution on resulting unit and end of the year tests, which was deciphered as proof that pretesting is less powerful than post testing. Be that as it may, the pre-example tests happened after allotted readings had proactively been finished (following perusing, the typical exhibition on those tests was moderately high, at more than half), and as such those tests seemingly comprised post testing as opposed to pretesting. Further, quick right response input was given during testing. By certain records, the expansion of input to pretesting may lessen members' regard for hence introduced materials offered that the responses are now known, and on account of erroneous answering, may lessen inspiration to learn (Sana et al., 2020; Latimier et al., 2019). Then again, input might upgrade advancing by filling in as an additional review an open door (Hausman & Rhodes, 2018). Hence, albeit the consequences of McDaniel et al. recommend that pretesting might be incapable in a valid instructive setting, it isn't evident whether similar outcomes would be gotten assuming students had negligible previous information preceding pretesting and didn't get criticism. At last, in another review, the authors had members take introductory pretests or posttests with input during an internet-based science example and found that post testing outflanked pretesting on a 7-day deferred criterial test (Latimier et al., 2019). In any case, two of similar worries as in previously mentioned examinations, specifically the utilization of added testing and quick right response criticism, apply to that concentration also. In this case, as indicated above it presents that the Post Control is not significant to the Pretest Control and vice versa which means that the null hypothesis is accepted. As per the survey, the data collected from the teachers and the students present that having post and pretest control is necessary for assessing the utilization of technology and its efficacy to the teaching and learning process of the respondents. As indicated in the data above, the two may seem to be significant but the variables are not significant with the other.

Table 4. Group Significance Variance Comparison

Group	Mean	S^2	N	Hyp. Mean Diff.	df	T	Sig. 2-tail	t Crit 2-tail
Experimental Group Difference	3.04	18.39	24.00	0.00	28.00	2.84	0.01	2.05
Control Group Difference	0.42	2.08	24.00					

With additional nations and areas entering the time of massification of advanced education, more consideration is being paid to the showing nature of foundations. Great instruction is accepted to assist with developing understudies' significant level mental abilities that tip top understudies can precipitously utilize. In any case, understudies going to colleges today are at this point not just the scholarly first class; they share homerooms and study spaces with understudies who are of various situations (Larkin & Richardson, 2013). Thus, advanced

education organizations request paradigmatic and epistemic change achieved by extraordinary learning (Wilhelm et al., 2019; Noy et al., 2021). Past examinations have likewise contended that during the time spent educating and picking up, learning results ought to be the result of understudies' exercises and experiential cycles as opposed to instructors' guidance alone; understudies ought to develop information and importance initiatively (Seery et al., 2019; Buckley et al., 2020). Albeit the college showing model is step by step moving concentration from educators' instructing to understudies' realizing, there are as yet numerous impediments. Much experimental exploration stays at the institutional level and needs unambiguous examination of the qualities of the educational program.

In line with the claims cited above, the study also assessed the performance of the students in a group experimental (mean= 3.04) and group control(mean=0.42). In this table, it is shown that the Experimental Group Difference and the Control Group Difference are significant. It is seen in the data presented that the Sig. value (.01) is lesser than the level of significance (.05) which means that the null hypothesis is rejected. Therefore, there is a significant difference in the performance of the students when exposed to the two methods: Multimedia Assisted Instruction and Demonstration Method. This means that as per the respondents, the significance of both group differences is visible.

Experimental Group: Technology-Aided Lesson

Table 5. Experimental Group: Technology-Aided Lesson

#	Indicators:	Mean	SD	Interpretation
	The lesson is perfectly spent on time.	3.42	1.38	Preferred
	I am so satisfied in using of technology during our cooking lesson.	4.08	0.78	Preferred
	It is easy for me to take up the lesson and perform my activities.	3.50	0.98	Preferred
	I have gained a new skill in using technology and believed to use it in my daily life and future work.	3.92	1.06	Preferred
	I learned and listens in working with my teammates.	4.00	0.93	Preferred
6	I accept bad both good feedbacks from my teacher and team.	4.04	0.91	Preferred
7	I was able to cook even food each time.	3.54	1.14	Preferred
8	Helps foods to be prepared quicker.	4.00	0.83	Preferred
9	There's a lot of time to be creative and being so flexible in cooking session.	3.75	1.03	Preferred
10	Using technology is easy and the instruction of its use is understandable.	4.21	0.72	Highly Preferred
	Weighted Mean	3.85	1.01	Preferred

The preferences of the respondents regarding technology-assisted instruction are shown in table 5. Nine of the ten signs in the data above indicate that students prefer technology-assisted instruction. According to the one surviving indicator, students strongly favor technology-assisted learning because they find technology use to be simple and technology usage training to be clear. The indicator 10 stated that technology is simple to use and that instructions on how to utilize it are straightforward to understand. On the other hand, indication 1, which indicates that the lecture was completed exactly on time (mean=3.42). To sum up, Table 5 shows that students have a preference for lessons that incorporate technology.

Furthermore, the world has confronted an exceptional wellbeing emergency because of the Coronavirus infection. The worldwide wellbeing emergency significantly impacted the schooling system's establishments, requiring a shift from the customary up close and personal to online distance learning methodology (Dukes, 2020; Huang, 2020; Masoud & Bohra, 2020; Mahaffey, 2020; Van der Spoel et al., 2020). Indeed, even before the emergency, the world had proactively seen massive changes in the instructive scene because of innovation's steadily growing impact. One such pattern is the inescapable usage of online distance advancing across different instructive settings, whether formal and casual, scholastic and non-scholarly, and private and remote (Mehrvarz et al., 2021). The data shows that according to the respondents, utilization of technology in education provides convenience to both sides whereas, as per the data indicated above, they prefer using technology. However, the data also presents that the utilization of technology in both the teaching and learning processes is not the best medium for education. Yet, to conclude, the data shows that the utilization of the technology is recommended.

Control Group: Demonstration Method

Table 6.

Control Group: Demonstration Method

#	Indicators	Mean	SD	Interpretation
	It feels easier to do creative works in cooking because of my learnings through previous experiences.	4.04	0.95	Preferred
	A happy chef is good food provider.	3.83	0.82	Preferred
	A food cooked by older ones is more intimidating to taste.	4.33	0.70	Highly Preferred
	Good surroundings are huge help for my cooking	3.54	1.02	Preferred
	The more learning styles in cooking, the more creativity at work.	3.92	0.72	Preferred
	A good memory is a huge help in providing creative product.	3.00	1.56	Moderately preferred
	In cooking, practices are required.	3.46	0.88	Preferred
	Previous works are the best basis for a creative product.	3.42	0.78	Preferred
	Females do better cooking than males.	3.75	0.90	Preferred
	I felt so motivated in an atmosphere where I can increasingly do creative works in cooking.	3.83	1.01	Preferred
	Weighted Mean	3.71	1.01	Preferred

Table 6 presents the student respondents' preference for the Demonstration technique. According to the data displayed, the respondents preferred both technology-aided and demonstration. This means that there is a strong preference for one and a moderate preference for the other. Based on the presented data, indicator 6 states that having a strong memory is crucial for producing creative work (mean=3.00). The respondents' understanding of it was that it was somewhat preferred. The indicator 3 indicates that food prepared by older people is scarier to taste (mean=4.33). The respondents do, however, favor the demonstration method (mean=3.71) and technology-assisted lesson (mean=3.85).

The continuous worldwide pandemic Covid infection (Coronavirus) brought about by a recently found Covid and public lockdown had seriously influenced each country's monetary area and social disturbance. Social separating, self-segregation, line controls, and instructive foundation terminations are a portion of the featured outcomes. This pandemic significantly affected advanced education, bringing about tremendous changes that influenced understudies. The conclusion of organizations, schools, and other learning spaces has influenced over 94% of the world's understudy populace (Pokhrel & Chhetri, 2021). Likewise, social removing and prohibitive development approaches have essentially upset conventional instructive practices.

Cooking lessons basically shows students' expertise by putting together information established with respect to the standards of advancing by doing and experiential learning (Cankul, 2019). During training, the understudies get quick criticism on their order of the rehearsed abilities. Featured demonstration strategy empowers the understudy to foster compelling mastering abilities like great thinking, sharp perception, and dynamic receptiveness (Sugathapala & Chandrika, 2021). Early examination affirmed that showing is a viable showing apparatus for showing abilities-based information. The demonstration technique fabricates understudies' certainty, upgrades interactive abilities, and gives a more profound comprehension of methods than the customary instructor focused approach.

By taking everything into account, according to the data presented, it seems that the demonstration method is also preferred by the respondents of this study. The data shows that both the utilization of technology and demonstration method are providing convenience to the respondents yet it does not give a concrete claim of the comparison of the efficacy of both mediums for teaching and learning processes.

4.2 Pressure of the Teachers on Technology – Assisted Aided Lesson

Technology has enormous potential to improve professional growth in line with this perspective, which emphasizes pragmatism, detail, and consistency. Learning can be made more practical by, for example, distributing low-cost movies that demonstrate promising practice in authentic circumstances. Mobile technology enables a variety of school-based learning opportunities. We know that they are more effective than typical off-site workshops. Giving instructors access to extensive digital materials relevant to specific components of the school curriculum helps improve purposeful thinking on specific subject-related pedagogy. Technology can enhance coaching relationships and professional learning communities in cost-effective ways, allowing professional growth to take place within a framework of continuous and ongoing learning and continuous reflection. However, teachers are cautious to implement technology in the classroom because they are skeptical of its effectiveness. They are concerned that utilizing technology will not boost student learning and may even be a waste of time (Mendoza, 2022). Furthermore, teachers feel that computers will never be able to entirely replace human contact in the classroom. Give them reasons for investing in technology and what you hope to achieve with it. Being able to cooperate with and learn from other more experienced teachers is very important for freshly and recently qualified teachers - not only for their professional development, but also for their well-being.

The teacher-respondents of this study were asked several questions during the interview. For the questions about teaching using demonstration methods, most of the answers' point is that using the traditional teaching strategy effectively affects or highlights practical abilities and increases student engagement and interaction. With that, most of the respondents say that the demonstration method is more convenient and effective. According to them, since the material is presented practically in a demonstration method, learners will find it easy to apply and comprehend. In support of this, traditional face-to-face learning is described as an educational methodology in which both students and educators are genuinely present in the homeroom that

enables dynamic contribution, quick criticism, and socio-profound development (Paul & Jefferson, 2019). The educator regularly controls homeroom elements in a conventional demonstration methodology (Salcedo, 2010). However, the lesson may be unapplied, boring, and difficult to engage students due to their millennia inclination towards technology. Some teachers believe that given the millennial generation's propensity for technology, the lesson might be irrelevant, dull, and challenging to keep students' attention.

In terms of technology aided lessons, the respondents said that using interactive technology in the classroom makes learning more engaging and commonplace in today's technology advanced world by encouraging students' creativity and enthusiasm. They think that the advantage of technology is that they can quickly deliver lessons, handle multiple subjects, and get ready for six exams in just one click. However, the only least about having technology as a medium for teaching is the unstable internet connection. Also, the group of writing on the viability of online distance learning is broad and different (Driscoll et al., 2012). For instance, in the Philippines, the nature of online distance learning has been addressed in the wake of looking over educators and students from various parts of the country. The author reports that just 47% of students in web-based homerooms express trust in their learning, while just 42% of guardians express trust in their youngsters' schooling in a web-based learning arrangement (Bernardo, 2021). The prevalence concerns restricted web access, lacking learning assets, over-burden educational exercises, unfortunate friend correspondence, and equivocal learning materials.

Furthermore, the results of this study indicated that post and pretest has an impact on the assessment of the efficacy of both the mediums of teaching and learning. According to the data, from the components of this variable, as presented above, the leading component is the Post Experimental (mean=23.71) having the sum of 569, it was followed by the Pretest Experimental (mean=20.67), Post Experimental (mean=20.38), and the Pretest Control (mean=19.96). These results show that Postest is more preferred by the respondents as it got the highest mean by most of the variance comparisons presented in tables. While, the pretest, got the lowest mean regardless of the exposure of the technology aided and demonstration method.

Given the present difficulties, each scholastic establishment genuinely should have a nuanced viewpoint of its students' scholarly exhibition. Yet, overall, all of the 19 teacher respondents in this interview prefer more technology aided lessons because for them, technology-assisted lessons are recommended, are more convenient and adapts to a variety of student populations. Nevertheless, while demonstration methods and online distance learning modalities change in a few viewpoints, the authors commented that they both still share various qualities, including the requirement for students to go to classes, learn educational materials, and complete class projects (Paul & Jefferson, 2019). Likewise, instructors are answerable for creating subject educational programs, augmenting informative quality, answering students' requests, spurring students to learn, and reviewing schoolwork.

5. Conclusion

Ultimately, the students in their culinary arts class enjoy both demonstration and instruction aided by technology. The performance of the control group is similar to that of the experimental group, even though post-experimental testing performs better than pretesting. Students find technology-aided learning to be clear and applicable, even when demonstrative methods are preferred. The study emphasizes the importance of addressing boundary boundaries, social segregation, self-segregation, and terminations of instructional foundations in online distance learning as expounded by the constructivism theory where learners construct knowledge rather than simply passively assimilates information. Also, as per the cognitivism, like a computer, a person uses his or her mind as an information processing device. Cognitivism therefore sees learning as an internal mental process, beyond observable behavior. This means that students may learn on their own and that they have the ability to use mental strategies to direct their own learning. This is proven in the results where it indicated that pupils like learning about and experimenting with the use of technology in the classroom. However, because they believe demonstration tactics to be more engaging and inquiry-based, they also favor them. The study highlights the need for effective instructional materials and post-testing options in online distance learning.

6. Recommendations

Based on the findings, recommendations and fixes for the research problem are investigated in this phase.

Recommendation towards the practice of teaching. Teachers are suggested to listen and consider their student's interest and capability to use any of the methods of teaching. Making sure that the students are ready and is okay for flexibility in utilizing either the technology-aided or demonstration method. It is also recommended to have a complete set of facilities and materials in utilizing technology-aided learning. The study also suggested that the lesson exemplar to be used/ adaption and adoption of the lesson exemplar.

Recommendation towards policy. Allow the stakeholders who are faced with policy choices to adapt the result of this study to create policy with the problem about utilizing technology-aided to be able to receive comments and suggestions from them and show this evidence that can help to make the best decisions in choosing the right method to teach the students either demonstration or technology-aide or both which will be very beneficial for them in the future.

Recommendations for Future Researchers. Make every effort to familiarize yourself as much as you can with the research objective, the industry, and the jargon. Use this study as a source for background information related to this study.

References

Amirault, R. J. (2012). Distance learning in the 21st century university: key issues for leaders and faculty. *Quarterly Review of Distance Education, 13*(4), 253-265. Retrieved from https://eric.ed.gov/?id=EJ1005856

Anderson, J.L., & Barnett, M. (2013). Learning physics with digital game simulations in middle school science. *Journal of Science Education and Technology, 22,* 914-926. https://doi.org/10.1007/s10956-013-9438-8

Anderson, M. (2016). More Americans using smartphones for getting directions, streaming TV. *Pew Research Center*. Accessed from http://www.pewresearch.org/fact-tank/2016/01/29/us-smartphone-use/.

Anderson, M., & Horrigan, J. B. (2016). Smartphones help those without broadband get online, but don't necessary bridge the digital divide. *Pew Research Center.* Accessed from http://www.pewresearch.org/fact-tank/2016/10/03/smartphones-help-those-without-broadband-get-online-but-dont-necessarily-bridge-the-digital-divide/.

Angelina. (2022). The importance of cooking as a life skill. *Sushant University*. Accessed from https://sushantuniversity.edu.in/blog/the-importance-of-cooking-as-a-life-skill/#:~:text=Learning%20cooking%20as%20a%20skill,of%20the%20junk%20food%20alternatives.

Archer, K., Savage, R., Sidhu, S. S., Wood, E., Gottardo, A., & Chen, V. (2014). Examining the effectiveness of technology use in classrooms: a tertiary meta-analysis. *Computers & Education, 78,* 140-149. https://doi.org/10.1016/j.compedu.2014.06.001

Armstrong, A., & Thornton, N. (2012). Incorporating Brookfield's discussion techniques synchronously into asynchronous online courses. *Quarterly Review of Distance Education, 13(1), 1–9.* Accessed from https://members.aect.org/pdf/Proceedings/proceedings11/2011/11_02.pdf

Ashrafzadeh, A., & Sayadian, S. (2015). University instructors' concerns and perceptions of technology integration. *Computers in Human Behavior, 49,* 62-73. https://doi.org/10.1016/j.chb.2015.01.071.

Axelson, R. D., & Flick, A. (2011). Defining student engagement. *Change: The magazine of higher learning, 43*(1), 38-43. https://doi.org/10.1080/00091383.2011.533096

Barberos, M., Gozalo, A., & Padayogdog, E. (2017). The effect of the teacher's teaching style on students' motivation action research. *New York University Steinhardt.* Accessed from https://steinhardt.nyu.edu/departments/teaching-and-learning/research/practitioner-action-research/effect-teachers-teaching

Beasley, R., Pickard, A. C., & Nolan, A. J. (2017). A requirements' eye view of product development. *INCOSE International Symposium, 27*(1), 627-640. https://doi.org/10.1002/j.2334-5837.2017.00383.x

Begley, A. (2016). Are cooking skills essential to improving public health?. *Nutridate, 27(1), 3.* Accessed from http://libproxy.lib.ilstu.edu/login?url=https://search.ebscohost.com/=loginaspx?direct=true&db=f5h&AN=113619368&site=eds-live&scope=site

Beheshti, M., Taspolat, A., Kaya, O. S., & Sapanca, H. F. (2018). Characteristics of instructional videos. *World Journal on Educational Technology: Current Issues, 10*(1), 61-69. Accessed from https://files.eric.ed.gov/fulltext/EJ1170366.pdf

Bell, B. S., & Felderman, J. E. (2013). E-learning in postsecondary education. *The Future of Children, 23*(1), 165-185. https://doi.org/10.1353/foc.2013.0007

Bernardo, G. L., Jomori, M. M., Fernandes, A. C., Colussi, C. F., Condrasky, M. D., & Costa Proença, R. P. (2017). Nutrition and culinary in the kitchen program: a randomized controlled intervention to promote cooking skills and healthy eating in university students. *Nutrition Journal, 16*(83), 1-12. https://doi.org/10.1186/s12937-017-0305-y

Bernardo, J. (2021). Survey: majority of teachers doubt if distance learning effective. *ABS-CBN News*. Accessed from https://news.abscbn.com/news/02/17/21/survey-majority-of-teachers-doubt-if distancelearningeffective#:~:text=Jaehwa%20Bernardo%2C%20ABS%2DCBN%20News&text=MANILA%20%E2%80%93%20A%20majority%20of%20Filipino,a%20%E2%80%9Clooming%20learning%20crisis.%E2%80%9D

Berrett, D. (2012). How 'flipping' the classroom can improve the traditional lecture. *The Chronicle of Higher Education, 12, 1-14.* https://www.chronicle.com/article/how-flipping-the-classroom-can-improve-the-traditional-lecture/

Biagi, F., Loi, M., (2013). Measuring ICT use and learning outcomes: evidence from recent econometric studies. *European Journal of Education, 48,* 1. https://doi.org/10.1111/ejed.12016

Bodekaer, M. (2015, November 20). Reimagining education | Michael Bodekaer | TEDxCERN [Video]. Youtube. https://www.youtube.com/watch?v=IYpovgka-9Q

Bolliger, D. U., Supanakorn, S., & Boggs, C. (2010). Impact of podcasting on student motivation in the online learning environment. *Computers & Education, 55*(2), 714-722. https://doi.org/10.1016/j.compedu.2010.03.004

Bowman, N. D., & Akcaoglu, M. (2014). "I see smart people!": Using Facebook to supplement cognitive and affective learning in the university mass lecture. *The Internet and Higher Education, 23,* 1-8. https://doi.org/10.1016/j.iheduc.2014.05.003.

Buckley, J.; Seery, N.; Gumaelius, L.; Canty, D.; Doyle, A.; Pears, A. (2020). Framing the constructive alignment of design within technology subjects in general education. *International Journal of Technology and Design Education, 31,* 867–883. https://doi.org/10.1007/s10798-020-09585-y

Butt S.M., Navarro, K.F. & Shorab, M. (2016). Using mobile technology to improve nutritional information of diabetic patients. *New Advances in Information Systems and Technologies, 1*(1), 3-11. https://doi.org/10.1007/978-3-319-31307-8_1

California State University Sacramento (CSUS). (2022). Comparative method/quasi-experimental. Accessed from https://csus.libguides.com/res-meth/comp-meth-quasi

Camus, M., Hurt, N. E., Larson, L. R., & Prevost, L. (2016). Facebook as an online teaching tool: Effects on student participation, learning, and overall course performance. *College Teaching, 64*(2), 84-94. https://doi.org/10.1080/87567555.2015.1099093.

Cankül, D. (2019). Assessing the quality of gastronomy education: Turkey case. *Electronic Journal of Social Sciences, 18*(70), 986-1001. https://doi.org/10.17755/esosder.491083

Cano, J. S. (2022). Comparative analysis of senior high school learners' academic performance in traditional face-to-face and online distance learning modalities. *International Journal on Social and Education Sciences, 4*(4), 541-561. https://doi.org/10.46328/ijonses.369

Carroll, K., & Gray, L. (2013). Reflective learning: definition, style and theory. *Study.com*. Accessed from https://study.com/learn/lesson/reflective-learning-style-theory.html

Child Development Center (CDC) (2018). Develop cognitive skills through cooking. Retrieved from https://www.cdchk.org/parent-tips/develop-cognitive-skills-through-cooking/

Celikkaya, T. (2013). Sosyal bilgiler öğretiminde arac-gerec ve materyal kullaniminin onemi. *Sosyal Bilgiler Ogretiminde Egitim Teknolojileri ve Materyal Tasarımı, 36-66.* https://doi.org/10.14527/9786053646051.03

Chan, J. C., Meissner, C. A., & Davis, S. D. (2018). Retrieval potentiates new learning: A theoretical and meta-analytic review. *Psychological Bulletin, 144*(11), 1111-1146. https://doi.org/10.1037/bul0000166

Chavy, A. (2015). The effects of technology advancements in the culinary world. *LinkedIn*. Retrieved from https://www.linkedin.com/pulse/effects-technology-advancements-culinary-world-albin-chavy

Chick, N. (2017). Learning styles. *Vanderbilt University*. Accessed from https://cft.vanderbilt.edu/guides-sub-pages/learning-styles-preferences/

Clements, J. C. (2015). Using Facebook to enhance independent student engagement: A case study of first-year undergraduates. *Higher Education Studies, 5*(4), 131–146 https://doi.org/10.5539/hes.v5n4p131.

Cook, C. W., & Sonnenberg, C. (2014). Technology and online education: Models for change. *Contemporary Issues in Education Research, 7*(3), 171. https://doi.org/10.19030/cier.v7i3.8638

Crockett, L., (2017). What is a Global Digital Citizen and Why Does the World Need Them? *Future Focused Learning.* Accessed from: https://globaldigitalcitizen.org/reflective-learning-matters.

Cruse, E. (2011). Using educational video in the classroom: Theory, Research and Practice. Retrieved from http://safarimontage.com/pdfs/training/UsingEducationalVideoInTheClassroom.pdf

Cuhat, G. O., (2017). Learner factors in a high-poverty urban middle school. *The University of Pennsylvania*. Accessed from: http://www.urbanedjournal.org/archive/volume-9-issue-1-fall-2011/learner-factors-high-poverty-urban-middleschool.

Curcio, I. D. D., Dipace, A., & Norlund, A. (2016). Virtual realities and education. Research on Education and Media, 8, 60–68. https://doi.org/10.1515/rem-2016-0019

Deaton, S., Carter, V., & Daugherty, M. K. (2018). Getting back to the roots of family and consumer sciences education: FCS and STEM integration. *Journal of Family and Consumer Sciences, 110*(1), 55-58. https://doi.org/10.14307/JFCS110.1.55

Delas Peñas, J., & Salundaguit, D. F. (2019). Supervisory competencies of school heads in relation to teachers' performance. *JPAIR Institutional Research, 12*(1), 54–68. https://doi.org/10.7719/irj.v12i1.744

Devlin, A., Lally, V., Sclater, M., & Parussel, K. (2013). 'Inter-Life: a novel, three-dimensional, virtual learning environment for life transition skills learning'. *Interactive Learning Environments. 23(4). 405-424*. https://doi.org/10.1080/10494820.2013.768271

Drew, C. (2023). 31 Theoretical framework examples. *Helpful Professor*. https://helpfulprofessor.com/theoretical-framework-examples/

Driscoll, A., Jicha, K., Hunt, A. N., Tichavsky, L., & Thompson, G. (2012). Can online courses

deliver in-class results? A comparison of student performance and satisfaction in an

online versus a face-to-face introductory sociology course. *American Sociology Association, 40, 312–313.* https://doi.org/10.1177/0092055X12446624.

Dukes, A. (2020). Teaching an instrumental analysis laboratory course without instruments during the COVID-19 pandemic. *Journal of Chemical Education, 97*(9), 2967. https://doi.org/10.1021/acs.jchemed.0c00648.

Dyson, B., Vickers, K., Turtle, J., Cowan, S., & Tassone, A. (2015). Evaluating the use of Facebook to increase student engagement and understanding in lecture-based classes. *The International Journal of Higher Education and Educational Planning, 69*(2), 303-313. https://doi.org/10.1007/s10734-014-9776-3.

Esser, F., & Vliegenthart, R. (2017). Comparative Research Methods. *John Wiley & Sons, Inc.* https://doi.org/10.1002/9781118901731.iecrm0035

Everett, N. (2016). Blended learning in culinary arts: A case study in learning and perception. *University of Alaska Anchorage, 1-62.* Retrieved from http://hdl.handle.net/11122/6585

Fagioli, L., Rios-Aguilar, C., & Deil-Amen, R. (2015). Changing the context of student engagement: Using Facebook to increase community college student persistence *and success. Teachers College Record, 17,* 1-42. https://doi.org/10.1177/016146811511701201

Felder, R., & Silverman, L. (n.d). Felder-Silverman learning style model. T*he Peak Performance Center.* Retrieved from https://thepeakperformancecenter.com/educational-learning/learning/preferences/learning-styles/felder-silverman/

Fuld, S. (2018). Autism spectrum disorder: The impact of stressful and traumatic life events and implications for clinical practice. *Clinical Social Work Journal, 46,* 210-219. https://doi.org/10.1007/s10615-018-0649-6

Gandhi, P., Khanna, S., & Ramaswamy, S. (2016). Which industries are the most digital (and why?). *Harvard Business Review.* Retrieved from https://hbr.org/2016/04/a-chart-that-shows-which-industries-are-the-most-digital-and-why.

Garcia, A.L., Vargas, E., Lam, P.S., Shennan, D.B., Smith, F. & Parrett, A., (2014). Evaluation of a cooking skills programme in parents of young children–a longitudinal study. *Public health nutrition, 17*(5), 1013-1021. https://doi.org/10.1017/S1368980013000165

Gately, A., Caraher, M., & Lang, T. A. (2014). Qualitative, cross cultural examination of attitudes and behaviour in relation to cooking habits in France and Britain. *Appetite, 75*(1), 71-81. https://doi.org/10.1016/j.appet.2013.12.014

Golder, J. (2018). Constructivism: a paradigm for teaching and learning. *International Journal of Research and Analytical Reviews.* Retrieved from https://ijrar.org/papers/IJRAR1903214.pdf

Gorman, D., Hoermann, S., Lindeman, R.W., & Shahri, B. (2022). Using virtual reality to enhance food technology education. *International Journal of Technology Design Education, 32,* 1659-1677. https://doi.org/10.1007/s10798-021-09669-3

Guterl, S., (2013). Is teaching to a student's learning style a bogus idea? *Nature America, Inc. US.* Accessed from: https://www.scientificamerican.com/article/is-teaching-to-a-students-learning-style-a-bogus-idea/

Güven, G., Sülün, Y., (2012). The Effects of Computer-Enhanced Teaching on Academic Achievement in 8th Grade Science and Technology Course and Students' Attitudes towards the Course.' *Journal of Turkish Science Education (TUSED).* Accessed from https://www.semanticscholar.org/paper/The-Effects-of-Computer-Enhanced-Teaching-on-in-8-G%C3%BCven-S%C3%BCl%C3%BCn/028a129a08b1f662eab2520189bf611ee6e58be9

Harrington, C. M., Kavanagh, D. O., Wright Ballester, G., Wright Ballester, A., Dicker, P., Traynor, O., Hill, A., & Tierney, S. (2018). 360° Operative videos: A randomised cross-over study evaluating attentiveness and information retention. *Journal of Surgical Education, 75,* 9931000. https://doi.org/10.1016/j.jsurg.2017.10.010

Hausman, H., & Rhodes, M. G. (2018). When pretesting fails to enhance learning concepts from reading texts. *Journal of Experimental Psychology: Applied, 24*(3), 331-346. https://doi.org/10.1037/xap0000160

Hedges, S. & AFIRM Team (2018). Technology-aided Instruction and Intervention. *Chapel Hill, NC: National Professional Development Center on Autism Spectrum Disorders, FPG Child Development Center, University of North Carolina.* Retrieved from http://afirm.fpg.unc.edu/Technology-aided-instruction-and-intervention

Hennessy, C. M., Kirkpatrick, E., Smith, C. F., & Border, S. (2016). Social Media and Anatomy Education: Using Twitter to Enhance the Student Learning Experience in Anatomy. *Anatomical Sciences Education, 9*(6), 505–515. https://doi.org/10.1002/ase.1610.

Henry, B., Cormier, C., Hebert, E., Naquin, M., & Wood, R. (2018). Health and Health Care Issues Among Upper-level College students and relationships to age, race, Gender, And Living Arrangements. *College Student Journal, 52*(1), 7-20. Retrieved from http://libproxy.lib.ilstu.edu/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=edsbl&AN=RN616126359&site=eds-live&scope=site

Hess, S., (2014). Digital Media and Student Learning: Impact of Electronic Books on Motivation and Achievement. *New England Reading Association Journal*. Retrieved from https://www.semanticscholar.org/paper/Digital-Media-and-Student-Learning%3A-Impact-of-Books-Hess/d1256906e0adbc659c899c40dbcdfaae3946fde1

Higgins, S., Xiao, Z., Katsipataki, M., (2012). The Impact of Digital Technology on Learning: *A Summary for the Education Endowment Foundation*. Retrieved from https://eric.ed.gov/?id=ED612174

Hou, H., Wang, S., Lin, P., & Chang, K. (2015). Exploring the Learner's Knowledge Construction and Cognitive Patterns of Different Asynchronous Platforms: Comparison of an Online Discussion Forum and Facebook. *Innovations in Education and Teaching International, 52*(6), 610-620. https://doi.org/10.1080/14703297.2013.847381.

House, J.D. & Telese, J.A., (2011). Effects of Computer Activities and Classroom Lesson Strategies on Motivation for Mathematics Learning for Eighth-Grade Students in the United States and Korea, *International Journal of Instructional Media.* Retrieved from https://go.gale.com/ps/i.do?id=GALE%7CA273786670&sid=googleScholar&v=2.1&it=r&linkaccess=abs&issn=00921815&p=AONE&sw=w&userGroupName=anon%7E656b28bf

Hsu, C-Y., Tsa, C-C., & Wang, H-Y. (2012). Facilitating Third Graders' Acquisition of Scientific Concepts Through Digital Game-Based Learning: The Effects of Self-Explanation Principles. *Asia-Pacific Education Researcher*. Retrieved from

https://classroommanagementexpert.com/blog/connectivism-learning-theory-in-the-classroom/

Hu, M. L. (2010). Discovering Culinary Competency: An Innovative Approach. *Journal of Hospitality, Leisure, Sports and Tourism Education, 9*(1), 65-72. https://doi.org/10.3794/johlste.91.227

Huang, J. (2020). Successes and Challenges: Online Teaching and Learning of Chemistry in Higher Education in China in the Time of COVID-19. *Journal of Chemical Education, 97*(9), 10-28. http://dx.doi.org/10.1021/acs.jchemed.0c00671.

Huang, Y-M,. Huang, S-H., & Wu, T-T. (2014). Embedding diagnostic mechanisms in a digital game for learning mathematics. *Educational Technology Research and Development.* https://doi.org/10.1007/s11423-013-9315-4

Isik, A. D. (2014). Egitimde okul ve teknoloji. In Egitim Bilimine Giris, edited by Gunes, F., 158-180. Ankara: *Pegem Akademi Publishing.* https://doi.org/10.5897/ERR2018.3609

Isik, A. D. (2018). Use of Technology in Constructivist Approach. *Academic Journals.* https://doi.org/10.5897/ERR2018.3609

Jackson, P. & Viehoff, V. (2016). Reframing Convenience. *Appetite, 98*(1), 1-11. https://doi.org/10.1016/J.APPET.2015.11.032

Jarrett, C. (2015). All You Need to Know About the 'Learning Styles' Myth, in Two Minutes. *Wired Science. California, USA.* Accessed from: https://www.wired.com/2015/01/need-know-learning-styles-myth-two-minutes/.

Jerald, J. (2016). The VR book: Human-Centered Design for Virtual Reality. *Morgan Claypool.* Retrieved from https://www.morganclaypoolpublishers.com/catalog_Orig/samples/9781970001136_sample.pdf

Jewitt, C., Clark, W., & Gartska, H. C. (2011). The use of Learning Platforms to Organise Learning in English Primary and Secondary Schools. *Learning, Media and Technology.* https://doi.org/10.1080/17439884.2011.621955

Jin, G., & Nakayama, S. (2013). Experiential Learning Through Virtual Reality: Safety Instruction for Engineering Technology Students. *Journal of Engineering Technology, 30*(2), 16-23. Retrieved from

https://www.researchgate.net/publication/297278877_Experiential_Learning_through_Virtual_Reality_Safety_Instruction_for_Engineering_Technology_Students

Johnson, C. D. L. (2018). Using Virtual Reality and 360-degree Video in the Religious Studies Classroom: *An experiment. Teaching Theology and Religion*, *21*(3), 228-241. https://doi.org/10.1111/teth.12446

Kaesberg, Z. (2019). Effects of Video Technology on Cooking Self-efficacy". *Theses and Dissertations.* Retrieved from https://ir.library.illinoisstate.edu/etd/1192

Keser, H., Uzunboylu, H., & Ozdamli, F. (2011). The Trends in Technology Supported Collaborative Learning Studies in 21st Century. *World Journal on Educational Technology, 3*(2), 103-119. http://archives.un-pub.eu/index.php/wjet/article/viewArticle/256

Kaveti, V., (2018). Reflective Learning and its Benefits. *Comm Lab India, Global Learning Solutions.* Accessed from: https://blog.commlabindia.com/elearning-design/reflective-learning-benefits.

Kaware, S. S., & Sain, S. K. (2015). ICT Application in Education: An Overview. *International Journal of Multidisciplinary Approach & Studies, 2*(1), 25-32. Retrieve From http://ijmas.com/upcomingissue/04.01.2015.pdf

Kimmons, R. (2020). Technology Integration: Effectively Integrating Technology in Educational Settings in a Ottenbreit-Leftwich & R. Kimmons (Eds.), The K-12 Educational Technology Handbook. *BYU Open Textbook Network.* https://open.byu.edu/k12handbook/technology_integration

King K. P. (2017). Technology and Innovation in Adult Learning. *John Wiley & Sons.* Accessed from: https://www.wiley.com/en-us/Technology+and+Innovation+in+Adult+Learning-p-9781119051015

Kolb, D. A. (2014). Experiential Learning: Experience as the Source of Learning and Development (2nd ed.). *Upper Saddle River: Pearson Education, Inc.* Retrieve from https://www.researchgate.net/publication/315793484_Experiential_Learning_Experience_as_the_source_of_Learning_and_Development_Second_Edition

Kong, S. C. (2014). Developing Information Literacy and Critical Thinking Skills Through Domain Knowledge Learning in Digital Classrooms: An Experience of Practicing flipped Classroom strategy. *Computers & Education, 78,* 160-173. https://doi.org/10.1016/j.compedu.2014.05.009

Kornell, N., & Vaughn, K. E. (2016). How Retrieval Attempts Affect Learning: A review and synthesis. *In B. H. Ross (Ed.), Psychology of learning and motivation, 65,* 183-215. https://doi.org/10.1016/bs.plm.2016.03.003

Kurt, S. (2010). Technology use in Elementary Education in Turkey: A case study. *New Horizons in Education, 58(1), 65-76.* Retrieve from https://www.researchgate.net/publication/268380997_Technology_use_in_elementary_education_in_Turkey_A_case_study

Larkin, H., & Richardson, B. (2013). Creating High Challenge/high Support Academic Environments Through Constructive Alignment: Student Outcomes. *Teaching In higher Education, 18,* 192–204. https://doi.org/10.1080/13562517.2012.696541.

Latimier, A., Riegert, A., Peyre, H., Ly, S. T., Casati, R., & Ramus, F. (2019). Does Pre-testing Promote Better Retention than post-testing? *NPJ Science of Learning, 4*(1), 1-7. https://doi.org/10.1038/s41539-019-0053-1

Lau, K. W., Lee, Y., He, M. Y., & Ying, M. (2018). 360 Degree Immersive Videos: A Way to Improve Organizational Learning Practices. *Development and Learning in Organizations: An International Journal, 32*(6), 8-11. https://doi.org/10.1108/DLO-02-2018-0029

Lavelle, F., Spence, M., Hollywood, L., Mc Gowan, L., Surgenor, D., McCloat, A., Mooney, E., Caraher, M., Raats, M., & Dean, M. (2016). Learning Cooking Skills at Different Stages; A Cross-Sectional Study. *International Journal of Behavioural Nutrition and Physical Activity, 13*(1), 119-125. https://doi.org/10.1186/s12966-016-0446-y

Lawrence, B., & Lentle-Keenan, S. (2013). Teaching Beliefs and Practice, Institutional Context, and the Uptake of Web-based Technology. *Distance Education, 34*(1), 4-20. https://doi.org/10.1080/01587919.2013.770432

Leach, L., & Zepke, N. (2011). Engaging Students in Learning: A Review of A Conceptual Organizer. *Higher Education Research & Development, 30*(2), *193-204.* https://doi.org/10.1080/07294360.2010.509761

Li, Q., Ma X., (2010). A Meta-Analysis of the Effects of Computer Technology on School Students' Mathematics Learning. *Educational Psychology Review.* https://link.springer.com/article/10.1007/s10648-010-9125-8#:~:text=These%20findings%20indicated%20that%20shorter,of%20students%20(1.00%20SD).

Lin, C., Singer, R., & Ha, L. (2010). Why University Members use and Resist Technology? A Structure Enactment Perspective. *Journal of Computing in Higher Education*, *22*(1), 38–59. https://doi.org/10.1007/s12528-010-9028-1.

Lindgren, R., Tscholl, M., Wang, S., & Johnson, E. (2016). Enhancing Learning and Engagement Through Embodied Interaction Within a Mixed Reality Simulation. *Computers and Education*, *95,* 174–187. https://doi.org/10.1016/j.compedu.2016.01.001

Llego, M.A. (2020). DepEd learning delivery modalities for school year 2020-2021. Retrieved from https://www.teacherph.com/deped-learning-delivery-modalities/.

Lynette Mei, L. G., Agnes Xiao, Y. W., Gary, Y. A., & Audrey Siok, L. T. (2017). Effectiveness of Nutrition Education Accompanied by Cooking Demonstration. *British Food Journal, 119*(5), 1052-1066. https://doi.org/10.1108/BFJ-10-2016-0464

Lysenko, L. V., & Abrami, P. C., (2015). Promoting Reading Comprehension with the use of Technology. *Computers And Education*, *75,* 162-172. https://doi.org/10.1016/j.compedu.2014.01.010

Mahaffey, A. L. (2020). Chemistry in a Cup of Coffee: Adapting an Online Lab Module for Teaching Specific Heat Capacity of Beverages to Health Sciences Students During the COVID

Pandemic. *Biochemistry and Molecular Biology Education, 48*(5), 528-531. https://dx.doi.org/10.1002/bmb.21439.

Main, P. (2020). Embracing the Learning Theory: Constructivism. *Structural Learning*. Accessed from https://www.structural-learning.com/post/embracing-the-learning-theory-constructivism

Makransky, G., Terkildsen, T. S., & Mayer, R. E. (2017). Adding Immersive Virtual Reality to a Science Lab Simulation Causes More Presence but less Learning. *Learning and Instruction,* 60, 225–236. https://doi.org/10.1016/j.learninstruc.2017.12.007

Masoud, N., & Bohra, O. P. (2020). Challenges and Opportunities of Distance Learning During Covid-19 in UAE. *Academy of Accounting and Financial Studies Journal, 24,* 1-12. https://search.proquest.com/scholarly-journals/challenges-opportunities-distancelearningdurin g/docview/2469848713/se2?accountid=33511.

Mati, A., Gatumu, J. C., & Chandi, J. R., (2016). Students' Involvement in Decision Making and Their Academic Performance in Embu West Sub-County of Kenya. *Universal Journal of Educational Research, 4*(10), 2300-2304. https://doi.org/10.13189/ujer.2016.041008.

McGowan, L., Caraher, M., Raats, M., Lavelle, F., Hollywood, L., McDowell, D., Spence, M., McCloat, A., Mooney, E. and Dean, M., (2015). Domestic cooking and food skills: A review. *Critical Reviews in Food Science and Nutrition, 2*(23), 12-19. https://doi.org/10.1080/10408398.2015.1072495

McDaniel, M. A., Agarwal, P. K., Huelser, B. J., McDermott, K. B., & Roediger, III, H. L., (2011). Test-Enhanced Learning in a Middle School Science Classroom: The Effects of Quiz Frequency and Placement. *Journal of Educational Psychology, 103*(2), 399-414. https://doi.org/10.1037/a0021782

Mehrvarz, M., Heidari, E., Farrokhnia, M., & Noroozi, O. (2021). The Mediating Role of Digital Informal Learning in the Relationship Between Students' Digital Competence and Their Academic Performance. *Computers & Education*, *167,* 104-184. https://doi.org/10.1016/j.compedu.2021.104184.

Mendoza, A. (2022). 5 Reasons Why Teachers are Hesitant to Adapt Technology in the Classroom. Retrieved from https://medium.com/teachers-on-fire/reasons-teachers-are-hesitant-to-adopt-technology-in-th e-classroom-5ef9d48ed144#:~:text=Teachers%20are%20hesitant%20to%20adopt%20technol ogy%20in%20the%20classroom%20because,human%20interaction%20in%20the%20classro om.

Metcalfe, J. (2017). Learning From Errors. *Annual Review of Psychology*, *68, 465-489*. https://doi.org/10.1146/annurev-psych-010416-044022

Michela, E. (2022). Cognitivism. In R. Kimmons (Ed.), Education Research. *BYU Open Textbook Network.* Retrieved from https://open.byu.edu/education_research/cognitivismj

Mintel, U. K. (2016). Prepared meals. Retrieved from http://store. mintel.com/prepared-meals-uk-may-2013

Morales, A. & Gray, K. (2021). Cognitivism. Retrieved from https://study.com/learn/lesson/cognitivism-education-learning-theory.html#:~:text=Cognitivism%2C%20also%20known%20as%20cognitive,acquiring%20and%20using%20new%20information

Muller, F. K., Vanleeuwen, D., Mandabach, H. K., & Harrington, J. R. (2009). The effectiveness of culinary curricula: A case study**.** *International Journal of Contemporary Hospitality Management, 21*(2). https://doi.org/10.1108/09596110910935660

Nakamaru, S. (2012). Investment and Return: Wiki Engagement in a "Remedial" ESL Writing Course. *Journal of Research on Technology in Education*, *44*(4), 273-291. https://doi.org/10.1080/15391523.2012.10782591

Nemenzo, N. (2019). Learning styles of cookery senior high school students. Retrieved from https://www.researchgate.net/publication/336231368

Noy, S.; Capetola, T., & Patrick, R. (2021). The wheel of fortune as a novel support for constructive alignment and transformative sustainability learning in higher education. *International Journal of Sustainability in Higher Education, 22,* 854-869. https://doi.org/10.1108/IJSHE-08-2020-0289

O'Flaherty, J., & Phillips, C. (2015). The use of flipped classrooms in higher education: As coping review. T*he Internet and Higher Education, 25*, 85-95. https://doi.org/10.1016/j.iheduc.2015.02.002

OpenLearn (2020). Cognitivism. Retrieved from https://www.open.edu/openlearncreate/mod/page/view.php?id=147079

Pan, S. C., & Rickard, T. C. (2018). Transfer of test-enhanced learning: Meta-analytic review and synthesis. *Psychological Bulletin, 144*(7), 710-756. https://doi.org/10.1037/bul0000151

Park, G. & Kim, S. (2023). The effects of a constructivist approach to cooking activities on young children's scientific attitudes and creativity. *Korean Journal of Child Studies 32*(1). https://doi.org/10.5723/KJCS.2023.32.1.141

Passey, D., & Higgins, S. (2011). Learning platforms and learning outcomes—Insights from research. *Learning, Media and Technology, 36*(4), 329-333. https://doi.org/10.1080/17439884.2011.626783

Paul, J., & Jefferson, F. (2019). A comparative analysis of student performance in an online vs. face-to-face environmental science course from 2009 to 2016. *Frontiers in Computer Science, 1*. https://doi.org/10.3389/fcomp.2019.00007

Paul, M. A. (2012). Do students really have different learning styles? *KQED*. Accessed from: https://ww2.kqed.org/mindshift/2012/04/13/do-students-have-different-learning-styles/.

Pell, S. (2019). Benchmark Report. *Vidyard.* Retrieved from https://www.vidyard.com/pressreleases/2019-business-video-benchmarks/

Peter, M., (2012). Influence of teacher training on the performance of students in mixed secondary schools in GEM district, Kenya. Retrieved from: http://erepository.uonbi.ac.ke/bitstream/handle/11295/13049/Mahulo%20Peter_Influence%20of%20teacher%20training%20on%20the%20Performance%20of%20students%20in%20mixed%20secondary%20Schools%20in%20Gem%20district%2C%20Kenya.pdf?sequence=3&isAllowed=y.

Poddar, K. H., Hosig, K. W., Anderson, E. S., Nickolas-Richardson, S. M., & Duncan, S. E. (2010). Web-based nutrition education intervention improves self-efficacy and self-regulation related to increased dairy intake in college students. *Journal of the American Dietetic Association, 11*(110), 1723-1727. https://doi.org/10.1016/j.jada.2010.08.008

Pokhrel, S., & Chhetri, R. (2021). A Literature review on impact of COVID-19 pandemic on teaching and learning. *Higher Education for the Future, 8*(1), 133-141. https://doi.org/10.1177/2347631120983481.

Poushter, J. (2016). Smartphone ownership and internet usage continues to climb in emerging economies. *Pew Research Center.* Retrieved from http://www.pewglobal.org/2016/02/22/smartphone-ownership-and-internet-usage-continues-to-climb-in-emerging-economies/.

Pula, K., Parks, C.D. & Ross, C.F. (2014). Regulatory focus and food choice motives. Prevention orientation associated with mood, convenience, and familiarity. Appetite, 78, 15 22. https://doi.org/10.1016/j.appet.2014.02.015

Rambe, P. (2012). Activity theory and technology mediated interaction: Cognitive scaffolding using question-based consultation on "Facebook". *Australasian Journal of Educational Technology, 28*(8), 1333–1361. https://doi.org/10.14742/ajet.775.

Reed, P., Hughes, A., & Phillips, G., 2013. Rapid recovery in sub-optimal readers in Wales through a self-paced computer-based reading programme. *British Journal of Special Education, 40(4), 162-166*. https://doi.org/10.1111/1467-8578.12040

Reicks, M., Trofholz, A., Stang, J. and Laska, M. (2014). Impact of cooking and home preparation interventions among adults: Outcomes and implications for future programs. *Journal of Nutrition and Educational Behaviour, 46*(1), *1-54*. https://doi.org/10.1016/j.jneb.2014.02.001

Rosen, Y., & Beck-Hill D., (2012). Intertwining Digital Content and a One-to-One Laptop Environment in Teaching and Learning: Lessons from the Time to Know Program. *Journal of Research on Technology in Education.* https://doi.org/10.1080/15391523.2012.10782588

Rowland, C. A. (2014). The effect of testing versus restudy on retention: A meta-analytic review of the testing effect. *Psychological Bulletin, 140*(6), 1432-1463. https://doi.org/10.1037/a0037559

Salcedo, C. S. (2010). Comparative analysis of learning outcomes in face-to-face foreign language classes vs. language lab and online. *Journal of College Teaching & Learning, 7,* 43-54. https://doi.org/10.19030/tlc.v7i2.88

Sana, F., Forrin, N., Sharma, M., Dubljevic, T., Ho, P., Jalil, E., & Kim, J. A. (2020). Optimizing the efficacy of learning objectives through pretests. *CBE Life Sciences Education, 19*(3). https://doi.org/10.1187/cbe.19-11-0257

Seery, N.; Buckley, J.; Delahunty, T.; Canty, D. (2019). Integrating learners into the assessment process using adaptive comparative judgement with an ipsative approach to identifying competence based gains relative to student ability levels. *International Journal of Technology and Design Education, 29,* 701–715. https://doi.org/10.1007/s10798-018-9468-x

Smith, A., & Anderson, M. (2016). Online Shopping and E-Commerce. *Pew Research Center.* Retrieved from http://www.pewinternet.org/2016/12/19/online-shopping-and-e-commerce/

Smith, C. (2015). By the numbers: 120+ amazing YouTube statistics. *Digital Marketing Stats/Strategy/Gadgets*. Retrieved from http://expandedramblings.com/index.php/youtube-statistics/

Spanella, Theresa (2017). Visual Learning Style. *Stucy.com*. Accessed from http://study.com/academy/lesson/visual-learning-style-definition-characteristics.html.

Staines, Z., & Lauchs, M. (2013). Students' engagement with Facebook in a university undergraduate policing unit. *Australasian Journal of Educational Technology, 29(6), 792–805.* https://doi.org/10.14742/ajet.270.

Strawson, C., Bell, R., Downs, S., Farmer, A., Olstad, D., & Willows, N. (2013). Dietary patterns of female university students with nutrition education. *Dietitians of Canada, 74*(3), 138-142. https://doi.org/10.3148/74.3.2013.138

Sugathapala, R. D. U. P., & Chandrika, M. G. R. (2021). Student nurses' knowledge acquisition. On oral medication administration: comparison of lecture- demonstration vs. video demonstration. *Springer Nature*. https://doi.org/10.1186/s12912-020-00527-6

Surgenor, D., Hollywood, L., Furey, S., Lavelle, F., McGowan, L., Spence, M., Raats, M., McCloat, A., Mooney, E., Caraher M., & Dean,M. (2017). The impact of video technology on learning: A cooking skills experiment. *Appetite, 114,* 306-312. https://doi.org/10.1016/j.appet.2017.03.037

Thomas, L. (2020). Quasi-experimental design. Retrieved from https://www.scribbr.com/methodology/quasi-experimental-design/#:~:text=Like%20a%20true%20experiment%2C%20a,based%20on%20non%2Drandom%20criteria.

Thomas, N. (2015). How to use the system usability scale (SUS) to evaluate the usability of your website. *Usability Geek*. Retrieved from https://usabilitygeek.com/how-to-use-the-system-usability-scale-sus-to-evaluate-the-usability-of-your-website/

Tiernan, P. (2015). An inquiry into the current and future uses of digital video in university teaching. *Education and Information Technologies, 20*(1), 75-90. https://doi.org/10.1007/s10639-013-9266-8

Tiwari, A., Aggarwal, A., Tang, W., & Drewnowski, A. (2017). Cooking at home: A strategy to comply with U.S. dietary guidelines at no extra cost. *American journal of preventive medicine, 52*(5), 616–624. https://doi.org/10.1016/j.amepre.2017.01.01

Tsereteli, M., Martskvishvili, K., & Aptarashvili, I. (2011). The impact of public high school management on academic performance. *Problems of Education in the 21st Century, 32.* https://doi.org/10.33225/pec/11.32.121

Utter, J., Fay, A.P. & Denny, S. (2016). Child and youth cooking programs: more than good nutrition? *Journal of Hunger & Environmental Nutrition, 12*(4), 1-27. https://doi.org/10.1080/19320248.2015.1112758

Van der Spoel, I., Noroozi, O., Schuurink, E., & Van Ginkel, S. (2020): Teachers' online teaching expectations and experiences during the Covid19-pandemic in the Netherlands. *European Journal of Teacher Education, 43*(4), 623-638. https://doi.org/10.1080/02619768.2020.1821185.

Verial, D. (2017). What are comparative experiments? *Sciencing*. Retrieved from https://sciencing.com/what-are-comparative-experiments-12731287.html

Virudachalam, S., Long, J. A., Harhay, M. O., Polsky, D. E., & Feudtner, C. (2013). Prevalence and patterns of cooking dinner at home in the USA: National health and nutrition examination survey 2007-2008. *Public Health Nutrition 17*(5), 1022-1030. https://doi.org/10.1017/S1368980013002589

Werhan, R. C. (2013). Family and consumer sciences secondary school programs: National Survey shows continued demand for FCS teachers. J*ournal of Family & Consumer Sciences, 105,* 41-45. https://doi.org/10.14307/JFCS105.4.10

Westera, W. (2015). Reframing the role of educational media technologies. Q*uarterly Review of Distance Education, 16*(2), 19–32. Retrieved from https://core.ac.uk/download/pdf/55538834.pdf

Wilhelm, S.; Förster, R., & Zimmermann, A.B. (2019). Implementing competence orientation: Towards constructively aligned education for sustainable development in university-level teaching-and-learning. *Sustainability, 11*(7). https://doi.org/10.3390/su11071891

Williams, D., & Whiting, A. (2016). Exploring the relationship between student engagement, Twitter, and a learning management system: A study of undergraduate marketing students.

International Journal of Teaching & Learning in Higher Education, 28(3), 302-313. Retrieved from https://files.eric.ed.gov/fulltext/EJ1125099.pdf

Willingham, T. D. (2017). Do visual, auditory, and kinesthetic learners need visual, auditory, and kinesthetic instruction? *LD Online*. Accessed from: http://www.ldonline.org/article/12446/.

Wishart, J. (2016). Using the cameras on mobile phones, ipads and digital cameras to create animations in science teaching and learning. *Mobile Learning and STEM.* https://doi.org/10.4324/9781315745831-3

Woolfolk, A. (2013). *Educational psychology* (13th ed.). Pearson.

Wright, G. B. (2011). Student-centered learning in higher education. *International Journal of Teaching and Learning in Higher Education, 23*(3), 92-97. Retrieved from https://files.eric.ed.gov/fulltext/EJ938583.pdf

Yahia, N., Brown, C. A., Rapley, M., & Chung, M. (2016). Level of nutrition knowledge and its association with fat consumption among college students. *BMC Public Health, 16* (1), 1-10. https://doi.org/10.1186/s12889-016-3728-z

Yang, H. (2013). Livestock development in China: animal production, consumption and genetic resources. *Journal of Animal Breeding and Genetics, 130*(4), 249-251. https://doi.org/10.1111/jbg.12045

Zheng, B., Warschauer, M., Hwang, J. K., & Collins, P. (2014). Laptop Use, Interactive Science Software, and Science Learning Among At-Risk Students. *Journal of science education and technology, 23*(4), 591-603. https://doi.org/10.1007/s10956-014-9489-5

Zickuhr, K., & Raine, L. (2014). E-reading rises as device ownership jumps. *Pew Research Center*. Retrieved from http://www.pewinternet.org/2014/01/16/e-reading-rises-as-device-ownership-jumps/.