

Teacher's Procedures and Qualities to the Performance of ICT Students in Mary Help of Christians College

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Abstract

The study investigated the relationship between the procedures and qualities of the ICT Teacher and students' performance of Grade 10 in Mary Help of Christians College, Canlubang.

Specifically, it sought to answer the following questions: 1. What is the extent of the teacher's procedures in terms of discussion, demonstration, evaluation, and integration? 2. What is the level of teacher's qualities related to digital appropriateness, the quantity of activities, and the suitability of materials? 3. What is the level of students' performance in ICT? 4. Does the teacher's procedure have a significant effect on the students' performance in ICT? And 5. Do the teacher's qualities have a significant effect on the students' performance in ICT?

The descriptive method of research was employed which involved the collection of necessary data and information to test the hypothesis and to answer questions concerning the study. The research instrument that was used by the researcher to collect data from respondents of the study is a self-made Five-Likert scale questionnaire. The said questionnaire was distributed to respondents of the study in an online survey. The respondents of the study were composed of 85 Grade 10 students. Pearson Moment Correlation, Mean, Percentage, Frequencies, and Standard Deviation were used to analyze the data.

Based on the findings of the study, there was no significant relationship between the Teacher's Procedures and Qualities to the students' performance, but they possess positive direct relationships. In this case, the findings might be affected by factors such as the students' already acquired 21st-century skills that are evident in their level of performance. Nonetheless, this research added additional insight and understanding of the teacher's relationship and the students in the teaching and learning process.

The study recommends that the conclusions generative be investigated. With the given result, future researchers may look into a deeper understanding of the factors as to why, in the presented research, there were no significant relationships between variables. Conduct the same study at different grade levels to gather more diverse respondents with a more heterogeneous level of performance. Consider gathering, not just the students' responses but also using quantitative variables such as their scores in every assessment, behavior in the procedures, and/or even the teachers' perceptions. Conduct the study using a different methodology; the future researchers may consider conducting an experimental study comparing controlled and experimental groups to come up with a more in-depth result. Future researchers may also consider qualitatively analyzing data on the teacher's procedure and qualities vis-a-vis the student's performance to gain an in-depth understanding of the relation and phenomena that exist in the teaching and learning process.

Keywords: ICT Teacher, Discussion, Demonstration, Evaluation, Integration, Digital Appropriateness, Quantity of Activities, and Suitability of Materials

1. Main text

Introduction

When the pandemic spread around the world, notably in the Philippines, education became increasingly difficult to manage. As the primary source of education, teachers continue to face ongoing adjustment and other factors that have an impact on their teaching, particularly when they teach in a multitude of ways such as modular learning, distance learning, online learning, or blended learning.

The crisis and the response to it have exposed flaws, while also providing chances to reorganize school education into a new paradigm that is more durable and robust. People have come to accept that they are living in a situation of "new normal." Educators must employ a variety of integration tactics to adapt to the present scenario. The Department of Education (DepEd) also provides Self-Learning Modules (SLMs) with different learning delivery modalities to be available for diverse types of learners around the country. Printed copies of SLMs are supplied to schools in remote locations, including coastal areas, far-flung provinces, and villages that do not have access to the internet or electricity. SLMs can now be accessed online or offline for households that have gadgets and devices. According to Secretary Briones, SLMs will be incorporated into video courses, with a particular emphasis on K to 3 learners, who will require more auditory learning than students in other grade levels. Dr. Estela Carino, Regional Director of the Department of Education for Region II, explained that learners with special needs will be provided with video sessions as well as designated teachers who will guide them throughout their classes.

Most "new normal" teachers are now converting education into yet another form of technologization. In the words of Daniel (2020), many institutions had plans to increase the use of technology in teaching, but the emergence of Covid-19 has forced them to adopt adjustments in a matter of days rather than months or years, as they had planned.

Technology plays an important role in the teaching-learning process, which is especially important during a pandemic. The Philippine Education System has developed various learning modalities, such as Modular Distance Learning and Online Distance Learning, to maximize the educational process of the learners. Schools can choose from one or a combination of the following, depending on the COVID-19 restrictions and the context of the learners in the school or locality. Even though everyone wishes to pursue Online Distance Learning, a lack of resources such as the internet and a learning device prevents this from happening.

Learners who choose to participate in online distance learning must have access to the internet to participate in this mode of instruction. Teachers and students will meet remotely in this mode and complete their activities in either a synchronous or asynchronous manner. Technology plays a significant influence on the learning experience of students who choose this particular modality of instruction. Also the pedagogical procedure and qualities of the teaches in the teaching and learning process should suit the needs of the students to attain the desired competencies and skills. Thus this study aims to identify the relationship of the characteristics of the teacher and the academic performance of the students in skills-based subjects such as Information and Communications Technology (ICT).

Background of the Study

The pandemic has made it considerably more challenging to teach ICT in high school, which has made the task much more difficult. While the introduction of technology in the twenty-first century, highlighted by internet-ready phones and portable computers has transformed ICT training, the topic still needs advancements in instructional methods and materials.

The so-called "new normal" of living, or more accurately, the kind of education that would be provided, would cause the demand for technology to continue to rise. In the future, more high schools will use easily accessible, real-time, and asynchronous gadgets and apps to transfer all types of student learning from Information and Communications Technology courses.

Instructional innovation is required in ICT before the pandemic to facilitate interactive teaching. With the new normal, it will no longer be optional to include multimedia technology and raise a generation of youths who

are digitally adept.

The Department of Education (DepEd) (2021) says that 690,578,576 Self Learning Modules (SLM) have already been printed to make education available to every student in the country. The distribution of the aforementioned learning materials has also been successful, with a total of 465,225,636 SLMs being provided to students across the country during the first quarter of the academic year. Learning materials for Online Distance Learning students have already been created in time for the start of the academic year's first quarter, with 3,841,474 digitized SLMs, e-books, online video lessons, and other materials ready to be made available.

Since the abrupt shift in learning modality, the teaching-learning process has been forced to make significant adjustments. The researcher hopes to know whether the procedure of the teachers in delivering the lesson as well the qualities in applying the skills needed to teach the subject help students learn and acquire the necessary skills in the field of ICT. Furthermore, this research might increase the understanding of the obstacles that instructors face when attempting to implement meaningful digital pedagogy, as well as the specifics of the effective pedagogical experiences and encouragement for teachers to continue integrating this important form into their practice.

Theoretical Framework

A curriculum is a standards-based sequence of scheduled activities that allow students to practice and gain competency in material and applied to learn abilities over time. According to the Rhode Island Department of Elementary and Secondary Education (2021), the curriculum serves as the core guide for all educators in terms of what is needed for teaching and learning to ensure that every student has access to rigorous academic experiences in the classroom. The curriculum's structure, organization, and concerns are all designed to improve student learning and make instruction easier for teachers. The curriculum must include the goals, techniques, materials, and assessments that are necessary to successfully support instruction and learning. The curriculum should be flexible enough to accommodate changing needs.

The Department of Education (DepEd) developed the Most Essential Learning Competencies, or MELC, which they define as "what students require, deemed indispensable, in the teaching-learning process to develop skills that prepare learners for subsequent grade levels and, ultimately, for lifelong learning." On the other hand, desirable learning characteristics have been defined as those that may enrich education but are not required for the development of core skills." Additionally, they stated, "The MELCs will enable the Department to concentrate training on the most critical and important competencies that our learners must master, as we anticipate delivery issues."

As previously said, the pandemic has provided the education sector with a much-needed push to embrace technology and look beyond traditional classroom instruction to ensure universal access to high-quality education. More crucially, the higher education landscape is about to undergo a radical shift in the next years, as the uncertainty around the practicality and credibility of online courses has been resolved. Self-determination theory refers to an individual's ability to direct his or her own life and to identify and express demands (Saxena, 2020).

Saxena argues that since learning has shifted from a public arena (classrooms) to a more personal space (online), the educator's job has transformed as well. As demand for individualized learning and online courses continues to grow, teachers must study as much as, if not more than, their students to keep up with the growing need for future-proof courses. As teaching and learning grow more individualized, educators must consider new teaching methods on a case-by-case basis to meet the unique needs of each learner.

On the other hand, teachers must ensure that the quality of learning is maintained in the absence of face-to-face interactions, from lesson planning to class administration and assignment distribution. Our teachers' responsibility in molding the nation's brains is a sacrifice and an act of love, as it requires time, attention, and patience. They've increased by a factor of two, possibly three, or even more than this pandemic. Teachers have been looking for strategies to keep pupils engaged in their learning processes, refusing to

abandon their professions. Keeping an entire class focused has always been a struggle for instructors, particularly at the elementary level, but the "new normal" has added a new layer to the challenge. (Mayol, 2020).

In the Behaviorist theory of learning, Behaviorists including Skinner claim that learning is a change in observable behavior caused by external stimuli in the environment and it is the observable behavior that indicates whether or not the learner has learned something and not what is going on in the learner's head (Mohammed Ally, 2009). Explicitly, outcomes of lessons must be revealing to learners including the need and impact of learning materials; making lessons inquiry-based and discoverable. Learners must therefore be tested, assessed, and provided with feedback.

In Cognitive and information processing theory, the use of online may also not ignore the essence of the cognitive learning theory which involves the use of memory, motivation, and thinking, and that reflection plays an important part in learning (Schunk, 2009). Cognitivism sees learning as an internal process. Thus, the amount of information learned depends on the processing capacity of the learner, the amount of effort expended during the learning process, the depth of the processing, and the learner's existing knowledge structure. In the use of an online learning environment, there must be existing knowledge on how learners can surf the internet as well as being information technology (IT) compliant (Schunk, 2009).

On the other hand, constructivism is an important teaching theory that asserts that learning is an active procedure in which students participate in the process of building knowledge by attempting to clarify the events of the world environment (Technology in Education, n.d.). Constructivists believe that learning occurs only when there is active processing of information, and as a result, they ask students to create their motifs by connecting new knowledge to previously established motives (constructivism). It is as a result of this that they can continuously improve their post-cognitive abilities (Technology in Education, and; Kostaditidis, 2005). Unlike behaviorists, who assert that knowledge is independent of the mind and believe that the mind is an internal representation of the outside world, constructivists believe that knowledge is dependent on the mind. They believe that in this way, students are compelled to construct their own knowledge through personal experiences and real-world situations (Weegar & Pacis, 2012). The actions taken in the constructivist model improve the ability of those involved to solve their problems as well as their ability to conduct research and work in a group setting. Meanwhile, the educator serves as an assistant-supporter to the learning process and his students, encouraging them to come up with their ideas and conclusions and to communicate them effectively (Weegar & Pacis, 2012).

This study is anchored on the theories mentioned above since it also deals with the studies about the new normal education which may serve as the basis for the conduct of research. These theories were used as a basis in the development of a conceptual framework for the study since they provide ample information which may be used to get the necessary data needed for the success of this undertaking.

This study is premised to identify procedures and qualities in teaching ICT subject to evaluate the effectiveness of each procedure and quality in the teaching-learning process.

To give a better view of the research problem, it is presented in a paradigm form.

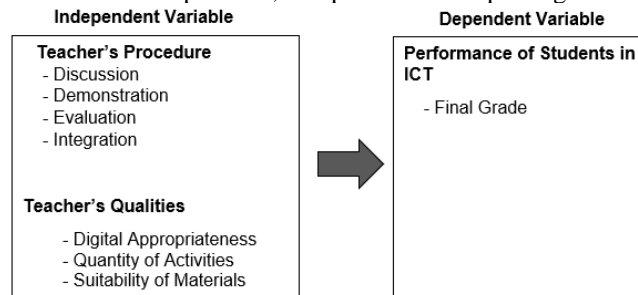


Figure 1. The Research Paradigm of the Study

Figure 1 reflects the conceptual model that shows the independent variable which consists of the different procedures of the teacher namely discussion, demonstration, evaluation, and integration. Also, the qualities of the teacher in delivering instruction such as digital appropriateness, quantity of activities, and suitability of materials. On the other hand, the dependent variable is concerned with the performance of the student in ICT, specifically their final grades.

Statement of the Problem

This study aimed to enhance the procedures and qualities of ICT teacher in Grade 10 using remote learning procedures and qualities. In relation to this, the researcher sought to answer the following questions:

1. What is the extent of the teacher's procedure with regards to:
 - 1.1. discussion;
 - 1.2. demonstration;
 - 1.3. evaluation; and
 - 1.4. integration?
2. What is the level of Teacher's qualities related to:
 - 2.1. digital appropriateness;
 - 2.2. quantity of activities; and
 - 2.3. suitability of materials?
3. What is the level of students' performance in ICT?
4. Does the teacher's procedure have a significant effect on the students' performance in ICT?
5. Do the teacher's qualities have a significant effect on students' performance in ICT?

Research Methodology

The descriptive survey method was utilized in this study to identify the effect between the procedure and qualities of the teacher in teaching ICT 10 and the performance of the students; it focuses on the procedure such as discussion, demonstration, evaluation, and integration; and qualities which include digital appropriateness, the quantity of activities, and suitability of materials.

According to Sevilla (2012), descriptive survey research is concerned with the circumstances of relationships that exist, the practices that are prevalent, the attitudes and processes that are taking place, the impacts that are being felt, and the trends that are emerging. The method of doing descriptive survey research entails more than just the collection and tabulation of data. It entails a certain amount of interpretation of the meaning or relevance of the things that are being discussed.

According to Wallen (2012), this method is intended to allow the researcher to obtain information on the current situation at the time of the study as well as to investigate the specific phenomena that are occurring at that time. Through this method, the researcher gathered data on the procedure and qualities of the teacher in teaching ICT. Since the investigation concerned with the procedure and qualities of the teacher in teaching ICT among Grade 10 students, the descriptive method of research was the most appropriate method to be used.

The respondents of the study consist of eighty-five (85) Grade 10 students of Mary Help of Christian College – Salesian Sisters Inc. Canlubang, Calamba City, Laguna.

Total population sampling was used in this study. It is a type of purposive sampling technique that involves investigating the entire population of this study with the same characteristics, in this case, all grade 10 students are involved. The instrument used in this study was a survey questionnaire checklist. The questionnaire was a research-made instrument devised to determine the relationship between the teacher's procedure and qualities to the performance of the students in ICT 10.

In the questionnaire, a five-point rating scale indicated below was used to determine the procedures and qualities of the teacher.

Scale	Numerical Value	Descriptive Value
5	4.21 – 5.00	Strong Agree
4	3.41 – 4.20	Agree
3	2.61 – 3.40	Neutral
2	1.81 – 2.60	Disagree
1	1.00 – 1.80	Strongly Disagree

In the construction of the questionnaire described above, an extensive review of various books, publications, and internet sites was used. An initial draft of the research tool was prepared and presented to professors and panel members for comments and suggestions. Validation was done to assess the representation of the items with those of others dealing with the same area of investigation. The assistance of the adviser was relevant to the contents of the questionnaire that was solicited.

The researcher sought permission from the School Principal to gather the needed data through a letter of request for this study. Upon approval, a meeting was set to orient the respondents before the actual administration of the questionnaire in order to orient them relative to the purpose of the study. The respondents were oriented on how to accomplish the entire set of survey questionnaires.

The distribution and retrieval of questionnaires were administered personally by the researcher. The researcher explained fully the direction as well as the purpose of the study before allowing the respondents to answer the questionnaires.

Later, the data gathered was given appropriate statistical treatment, analyzed, and interpreted. The responses were tabulated as the basis for the statistical treatment of the data. It was done in order to determine the relationship between the teacher’s procedures and qualities in teaching ICT 10 to the performance of the students. Confidentiality of information was assured to the respondents. The researcher used frequencies to analyze the ICT teacher’s procedures and qualities in the class. In order to identify the teacher’s procedures and qualities in remote learning, the students used the following categories:

Scale	Numerical Value	Descriptive Value	Verbal Interpretation
5	4.21 - 5.00	Strongly Agree	Very High
4	3.41 - 4.20	Agree	High
3	2.61 - 3.40	Neutral	Moderately High
2	1.81 - 2.60	Disagree	Low
1	1.00 - 1.80	Strongly Disagree	Very Low

The following description was utilized to determine the level of students’ performance in ICT:

Scale	Grading Scale	Descriptive Value
5	90 - 100	Advance
4	85 - 89	Proficient
3	80 - 84	Approaching Proficiency
2	75 - 79	Developing
1	Below 75	Beginning

The researcher used Mean and Standard Deviation to answer research questions 1 and 2 in terms of teacher’s procedures and qualities.

The researcher used Frequency, Percentage, Mean and Standard Deviation to answer the research question 3 to get the level of student’s performance in ICT.

The researcher used the Pearson Product Moment Correlation Coefficient to answer the research questions 4 and 5 which is the significant relationship between teacher's procedures and qualities towards students' performance in ICT.

Results and Discussion

Table 1 reveals the level of the Teacher's Procedures in terms of Discussion. It shows that the teacher uses discussion as a teaching strategy for the subject he teaches, with a mean of 4.65 and a standard deviation of 0.631. It also shows during the discussion, that the teacher encourages independence and creativity from every student, with a mean of 4.65 and a standard deviation of 0.592. The table indicates that the teacher facilitates and monitors appropriate interaction among students during the discussion, with a mean of 4.59 and a standard deviation of 0.563. It also shows that the teacher supports student-centered learning with a mean of 4.47 and a standard deviation of 0.700, is flexible in dealing with students' concerns and needs with a mean of 4.65 and a standard deviation of 0.631, incorporates questions that enhance critical thinking with a mean of 4.49 and a standard deviation of 0.701, and uses strategies to encourage active learning, interaction, participation, and collaboration among students with a mean of 4.68 and a standard deviation of 0.539.

Table 1. Level of Teacher's Procedures in terms of Discussion.

Statement	Mean (x)	SD	Remarks
<i>My teacher uses discussion as a teaching strategy for the subject he teaches.</i>	4.65	0.631	Strongly Agree
<i>During the discussion, my teacher encourages independence and creativity from every student.</i>	4.65	0.592	Strongly Agree
<i>My teacher facilitates and monitors appropriate interaction among students during the discussion.</i>	4.59	0.563	Strongly Agree
<i>My teacher supports student-centered learning.</i>	4.47	0.700	Strongly Agree
<i>My teacher is flexible in dealing with students' needs.</i>	4.65	0.631	Strongly Agree
<i>My teacher incorporates questions that enhance critical thinking skills and applications of essential skills.</i>	4.49	0.701	Strongly Agree
<i>My teacher uses strategies to encourage active learning, interaction, participation, and collaboration among students.</i>	4.68	0.539	Strongly Agree
	OM 4.60	SD 0.622	Very High

It can be gleaned from Table 1 that the level of Teacher's Procedures in terms of Discussion is 4.60, with "Very High" as verbal interpretation.

In the context of ICT of Grade 10 students, based on the students' perception, they were able to identify that their teacher incorporates discussion as a procedure in the subject delivery in ICT, and such procedure is evident in the teaching and learning process.

The findings in Table 1 can be supported by the notion that discussions provide students with a unique opportunity to refine their reasoning and collaboration skills while also strengthening their capacities

to participate meaningfully in communities of disciplined dialogue and inquiry (Brown et al., 1996; Resnick et al., 2010; Sun et al., 2015). According to Wintherspoon, Sykes, and Bell (2016), constructivist learning principles emphasize the relevance of discussion in fostering cognitive and metacognitive skills and gaining critical disciplinary practices. They also stated that meaningful classroom discussions do not occur until teachers build a supportive classroom.

Table 2. Level of Teacher's Procedures in terms of Demonstration

Statement	Mean (x)	SD	Remarks
<i>My teacher uses instructional videos from the internet that he integrates into our class.</i>	3.84	1.233	Strongly Agree
<i>My teacher uses and manipulates the different commands in zoom during our class.</i>	4.52	0.701	Strongly Agree
<i>My teacher uses digital learning materials that supplement our discussion during class (e.g., Kahoot, Quizzes, Padlet, Jamboard, etc.)</i>	4.72	0.503	Strongly Agree
<i>My teacher makes sure that materials are accessible to assist students experiencing technical difficulties (e.g., a recording of a synchronous session is given after the lesson).</i>	4.74	0.639	Strongly Agree
<i>My teacher provides a variety of visual, textual, kinesthetic, and auditory activities to enhance the teaching and learning process.</i>	4.55	0.699	Strongly Agree
<i>My teacher creates opportunities for interaction between students (breakout rooms, use of chat collaborative, and google docs).</i>	4.31	0.887	Strongly Agree
	OM 4.45	SD 0.777	High

Table 2 reveals the level of the Teacher's Procedures in terms of Demonstration. It shows that the teacher uses instructional videos from the internet, which were integrated into the class, with a mean of 9.84 and a standard deviation of 1.233; he was able to manipulate the different commands in zoom during class, with a mean of 4.52 and a standard deviation of 0.70. It also shows during the demonstration that the teacher uses digital learning materials that supplement the class (e.g., Kahoot, Quizzes, Padlet, Jamboard, etc.), with a mean of 4.72 and a standard deviation 0.503. The teacher makes sure that materials are accessible to assist students experiencing technical difficulties (e.g., a recording of a synchronous session is given after the lesson), with a mean of 4.74 and a standard deviation of 0.639. It also shows that the teacher provides a variety of visual, textual, kinesthetic, and auditory activities to enhance the teaching and learning process, with a mean of 4.55 and a standard deviation of 0.699, and creates opportunities for interaction between students (breakout rooms, use of chat collaborative, and google docs), with a mean of 4.31 and a standard deviation of 0.887.

It can be gleaned from Table 2 that the level of Teacher's Procedures in terms of Demonstration is 4.45 with "High" as verbal interpretation.

According to the findings of a study conducted by Lapupa (2020), a lesson's success depends on the type of teaching approach that the teacher uses to instruct the learners. Learning by demonstration has long been considered one of the most effective teaching strategies available. Learning by demonstration is a teaching style founded on the basic but fundamental idea that people learn best by doing. Moreover,

Giridharan and Raju (2016) conducted a study exploring the effects of teaching strategies and the teacher effect on academic achievement in engineering education. In their investigation, they employed two different teaching strategies, namely, demonstration and lecture strategies. After doing the research, it was discovered and determined that the demonstration approach was substantially more effective than the lecture method in providing the requisite academic performance. In this regard, the students perceived their ICT teacher as someone who demonstrates the subject content and integrates skilled navigation of devices to facilitate the students' learning.

Table 3. Level of Teacher's Procedures in terms of Evaluation

<i>Statement</i>	<i>Mean (x)</i>	<i>SD</i>	<i>Remarks</i>
<i>My teacher provides the class with generalized constructive and encouraging feedback on how to improve our performance in class.</i>	4.48	0.734	<i>Strongly Agree</i>
<i>My teacher gives types of assessments suitable for the distance learning environment.</i>	4.66	0.589	<i>Strongly Agree</i>
<i>My teacher provides immediate feedback after giving assessments.</i>	4.41	0.806	<i>Strongly Agree</i>
<i>My teacher assesses students both informally and formally within the online or remote classroom through games, quizzes, online tests, etc.</i>	4.34	0.839	<i>Strongly Agree</i>
<i>My teacher addresses potentially low-performing students through conferences and consultations.</i>	4.28	0.934	<i>Strongly Agree</i>
<i>My teacher informs the students of their accurate scores for the total assessment by giving score charts.</i>	4.38	0.816	<i>Strongly Agree</i>
<i>My teacher rates the students' outputs objectively based on the standard rubrics.</i>	4.81	0.545	<i>Strongly Agree</i>
	OM=4.48	SD=0.75	High

Table 3 reveals the level of the Teacher's Procedures in terms of Evaluation. It shows that the teacher provides the class with generalized constructive and encouraging feedback on how to improve their performance in class, with a mean of 4.48 and a standard deviation of 0.734, giving types of assessments suitable for the distance learning environment with a mean of 4.66 and a standard deviation of 0.589. It also shows that the teacher provides immediate feedback after giving assessments, with a mean of 4.41 and a standard deviation of 0.806. The table also shows that the teacher assesses students both informally and formally within the online or remote classroom through games, quizzes, online tests, etc., with a mean of 4.34 and a standard deviation of 0.839. It also shows that the teacher addresses potentially low-performing students through conferences and consultations, with a mean of 4.28 and a standard deviation of 0.934, informs the students of their accurate scores for the total assessment by giving score charts, with a mean of 4.38 and a standard deviation of 0.816, and rates the students' outputs objectively based on the standard rubrics, with a mean of 4.81 and a standard deviation of 0.545.

It can be gleaned from Table 3 that the level of Teacher's Procedures in terms of Evaluation is 4.48, with "High" as verbal interpretation.

According to Eriksson (2018), as part of teachers' everyday classroom assessment practice, feedback can be seen as being linked to the formative function of assessment, with the goal of assisting students in their learning processes as a result of the feedback. As a result, feedback can be evaluated based on the extent to which it serves a formative function (e.g., Gamlem and Munthe 2014; Jonsson, Lundahl, and Holmgren 2015;

See, Gorard, and Siddiqui 2016). Additionally, according to the findings of Hargreaves (2011), teachers viewed feedback to be most successful when there is confidence in the teacher-student connection, the feedback is clearly related to progress and criteria, and students grasp entirely the feedback they received. As per the perception of Grade 10 in their ICT class, the results revealed that they were aware of the evaluative characteristic of the lesson. There is necessary feedback corresponding to the tasks they do inside the class.

Table 4. Level of Teacher's Procedures in terms of Integration

Statement	Mean (x)	SD	Remarks
<i>My teacher reviews "netiquette" during our class for better engagement and behavior.</i>	4.61	0.619	Strongly Agree
<i>My teacher provides calming exercises or opportunities that are similar to the school's routine (stretches, uses familiar patterns, refers to special connections that learners have at school).</i>	4.38	0.926	Strongly Agree
<i>My teacher uses references to connect learners' interests, family traditions, home languages, cultures, values, etc., as part of the learning experience.</i>	4.16	1.067	Strongly Agree
<i>My teacher integrates several topics with relevant societal issues for more effective discussion.</i>	4.22	0.993	Strongly Agree
<i>My teacher collaborates with other subject teachers in constructing performance tasks that would show integration across the discipline.</i>	4.71	0.553	Strongly Agree
	OM=4.42	SD=0.83	High

Table 4 reveals the level of the Teacher's Procedures in terms of Integration. The teacher reviews "netiquette" during class for better engagement and behavior, with a mean of 4.61 and a standard deviation of 0.619. It also shows that the teacher provides calming exercises or opportunities similar to the school's routine (stretches, uses familiar patterns, refers to special connections that learners have at school), with a mean of 4.38 and a standard deviation of 0.926. The table indicates that the teacher uses references to connect learners' interests, family traditions, home languages, cultures, values, etc., as part of the learning experience, with a mean of 4.16 and a standard deviation of 1.067. It also shows that the teacher integrates several topics with relevant societal issues for more effective discussion, with a mean of 4.22 and a standard deviation of 0.993, and collaborates with other subject teachers in constructing performance tasks that would show integration across the discipline, with a mean of 4.71 and a standard deviation of 0.553.

It can be gleaned from Table 4 that the level of Teacher's Procedures in terms of Integration is 4.42 with "High" as verbal interpretation.

According to Deneme and Ada (2012), Integrated learning can be a critical component of educational success. It assists the students in integrating school, lessons, and life into one cohesive whole. Furthermore, it helps learners recognize and understand their own thinking and learning styles, allowing them to think and learn more efficiently. People use a variety of terminology (e.g., integrated, interdisciplinary, and transdisciplinary) to describe the linkages and integration that exist between several fields of study (NAE & NRC, 2014; Shen, Sung, & Zhang, 2015; STEM Task Force Report, 2014). As a result, integrating knowledge and skills from two or more disciplines is necessary in order to solve complicated issues or explain complex occurrences. According to the findings of Hus (2010)'s study on The Integration of the Subject Environmental Studies With Other Disciplines, integrating other subjects to teach environmental science has a substantial impact on students' content knowledge. In the findings, it reveals that the students are aware of having an

interdisciplinary process and context in their ICT subject that the teacher clearly employs.

Table 5 reveals the level of the Teacher's Qualities in terms of Digital Appropriateness. It shows that the teacher's digital presentation lecture is engaging and interactive, with a mean of 4.38 and a standard deviation of 0.723. It also shows that the teacher uses differentiated digital materials (music, photos, videos, etc.) during a class discussion that suits a specific topic, with a mean of 4.18 and a standard deviation of 0.759, utilizing the use of LMS (Edmodo and Aralinks) in posting learning resources and activities in class, with a mean of 4.73 and a standard deviation of 0.543, capable of navigating the online video conferencing applications or websites such as (Zoom or Google meet) during online discussions effectively with a mean of 4.61 and a standard deviation of 0.599.

Table 5. Level of Teacher's Qualities in terms of Digital Appropriateness.

Statement	Mean (x)	SD	Remarks
<i>My teacher's digital presentation lecture is engaging and interactive.</i>	4.38	0.723	Strongly Agree
<i>My teacher uses differentiated digital materials (music, photos, videos, etc.) during a class discussion that suits a specific topic.</i>	4.18	0.759	Strongly Agree
<i>My teacher uses LMS (Edmodo and Aralinks) in posting our learning resources and activities in class.</i>	4.73	0.543	Strongly Agree
<i>My teacher is capable of navigating the online video conferencing applications or websites such as (Zoom or Google meet) during online discussions effectively.</i>	4.61	0.599	Strongly Agree
<i>My teacher uses other digital learning materials (e.g., Kahoot, Quizzes, Padlet, Jamboard, etc.) during an online class.</i>	3.40	0.966	Strongly Agree
<i>My teacher has enough grounding in different digital technologies to be able to efficiently navigate them during class time.</i>	4.33	0.808	Strongly Agree
<i>My teacher can determine relevant digital learning materials from one that is untrustworthy, biased, dangerous, or outdated.</i>	4.31	0.817	Strongly Agree
<i>My teacher appropriately communicates on various platforms.</i>	4.58	0.605	Strongly Agree
<i>My teacher uses digital tools to connect and collaborate with other teachers and students for a better teaching-learning experience.</i>	4.44	0.747	Strongly Agree
<i>My teacher considers student access to technologies, both online and offline mode of learning.</i>	4.49	0.701	Strongly Agree
	OM 4.34	SD 0.727	High

The table also indicates that the teacher uses other digital learning materials (e.g., Kahoot, Quizzes, Padlet, Jamboard, etc.) during an online class, with a mean of 3.40 and a standard deviation of 0.966. It also shows that the teacher has enough grounding in different digital technologies to be able to efficiently navigate them during class time, with a mean of 4.33 and a standard deviation of 0.808, can determine relevant digital learning materials from one that is untrustworthy, biased, dangerous, or outdated, with a mean of 4.31 and a standard deviation of 0.817, appropriately communicates on various platforms, with a mean of 4.58 and a

standard deviation of 0.605, uses digital tools to connect and collaborate with other teachers and students for a better teaching-learning experience, with a mean of 4.44 and a standard deviation of 0.747, and considers student access to technologies, both online and offline mode of learning, with a mean of 4.49 and a standard deviation of 0.701.

It can be gleaned from Table 5 (see next page) that the level of Teacher's Qualities in terms of Digital Appropriateness is 4.34, with "High" as verbal interpretation.

In accordance with the findings of Ahlquist (2015), digital tool usage can be classified as positive if it results in some type of benefit, improvement, or resource, such as but not limited to expressing one's true self (Pempek et al., 2009), impression management (Birnbaum, 2013), building and maintaining relationships (Forste & Jacobsen, 2011), reducing loneliness (Lour, McMorris, Nickerson, & Yan, 2012), extra (Cheung, Chiu, & Lee, 2011). According to the findings of a study conducted by Instefjord (2015), effective integration of technology in the lesson can only be accomplished by integrating technology as a pedagogical tool for teaching and learning in all subjects in teacher education programs to a greater extent than is currently done. In this regard, based on the perception of the Grade 10 students, their teacher uses technology that is appropriate to the subject content; it also revealed that the use of appropriate digital tools increases the students' engagement, communication, and interactivity.

Table 6 reveals the level of the Teacher's Qualities in terms of the Quantity of Activities. It shows that the teacher determines his students' digital skills and digital readiness before giving activities, with a mean of 4.11 and a standard deviation of 0.913. It also shows that the teacher considers learning expectations from learning outcomes and overall subject design, with a mean of 4.26 and a standard deviation of 0.804, identifies reliable technology for assessing, with a mean of 4.53 and a standard deviation of 0.683. The table indicates that the teacher assesses prior learning approaches before giving assessments, with a mean of 4.35 and a standard deviation of 0.841. It also shows that the teacher gives activities suited to a given time frame, with a mean of 4.33 and a standard deviation of 0.905, gives enough activities that can be done within the given amount of time, with a mean of 4.21 and a standard deviation of 0.989, and gives enough activities that are suited to the essential skills needed for the subject, with a mean of 4.41 and a standard deviation of 0.776.

Table 6. Level of Teacher's Qualities in terms of Quantity of Activities

Statement	Mean (x)	SD	Remarks
<i>My teacher determines the digital skills and digital readiness of his students before giving activities.</i>	4.11	0.913	Strongly Agree
<i>My teacher considers learning expectations from learning outcomes and overall subject design.</i>	4.26	0.804	Strongly Agree
<i>My teacher identifies technology that is reliable for assessing.</i>	4.53	0.683	Strongly Agree
<i>My teacher assesses prior learning approaches before giving assessments.</i>	4.35	0.841	Strongly Agree
<i>My teacher gives activities suited to the given time frame.</i>	4.33	0.905	Strongly Agree
<i>My teacher gives enough activities that can be done within the given amount of time.</i>	4.21	0.989	Strongly Agree
<i>My teacher gives enough activities that are suited to the essential skills needed for the subjects.</i>	4.41	0.776	Strongly Agree
	OM 4.31	SD 0.844	High

It can be gleaned from Table 6 that the level of Teacher's Qualities in terms of Quantity of Activities is 4.31 with "High" as verbal interpretation.

Anh (2017) did a study to determine how different forms of interactive activities and interactive elements affect student learning outcomes and performance. According to the research findings, the chain of online learning activities reflects the operational interaction between actors, including students and teachers, students and content, students and students' peers, and students and technology. According to the findings, the findings indicate that online learning activities in the blended learning model impact student learning outcomes, with the student-to-student interaction having the most significant impact on student results. A model for assessing the incidence of learning outcomes based on interactive learning through learning activities is proposed in this study based on an analysis of the components mentioned above.

Prendergast (2017) also quoted van der Meer, Jansen, and Torenbeek (2010), who argued that teachers should address the disconnect between student and faculty expectations when assessing learning objectives and results. Their research of first-year students in New Zealand and the Netherlands revealed that students appeared to expect to put in a lot of effort during their time at the university. Specifically, the study found that the first-year teacher's responsibility is to communicate clearly about academic expectations. Both studies concluded that faculty members must be transparent about grading expectations, particularly during the first semester, when new students must become acquainted with the academic requirements. In the context of online education, a recurring subject was the necessity for students to have realistic expectations about the needs of online learning environments. A few examples of concerns that can be addressed at orientation include: identifying and understanding the precise expectations of course instructors, understanding and recognizing the expectations for course organization, and acknowledging and understanding the expectations for social interaction. Furthermore, according to Bonesrning and Opstad's (2012) findings, grades improve when students put out more effort and when there are sufficient activities to allow them to practice the targeted skills. The estimated impacts of the number of activities are significant. However, they are smaller than the effects described by Stinebrickner and Stinebrickner (Stinebrickner et al., 2008).

With the given findings, Grade 10 students are aware of the teacher's quantity of activities and know the importance of such activities.

Table 7 reveals the level of the Teacher's Qualities in terms of the Suitability of Materials. It shows that the teacher uses instructional materials that support the school's educational philosophy, goals, and objectives, with a mean of 4.39 and a standard deviation of 0.757. It also shows that the teacher makes sure to have diversified materials concerning levels of difficulty, students' skills, and readiness, with a mean of 4.18 and a standard deviation of 0.889, giving materials that meet high standards of quality in factual content and presentation, with a mean of 4.25 and a standard deviation of .858. The table indicates that the teacher selects materials that can hone students' multiple intelligences, with a mean of 4.20 and a standard deviation of 0.870. It also shows that the teacher selects materials that are available at home or can easily be found at the market, with a mean of 4.40 and a standard deviation of 0.743, provides a list of supplementary materials in case other materials are not available at home, with a mean of 4.15 and a standard deviation of 0.906, and sees to it that the materials for all activities are not too expensive, with a mean of 4.42 and a standard deviation of 0.807.

It can be gleaned from Table 7 that the level of Teacher's Qualities in terms of Suitability of Materials is 4.28, with "High" as verbal interpretation.

Table 7. Level of Teacher's Qualities in terms of Suitability of Materials

Statement	Mean (x)	SD	Remarks
<i>My teacher uses instructional materials that support the educational philosophy, goals, and objectives of the school.</i>	4.39	0.757	Strongly Agree
<i>My teacher makes sure to have diversified materials concerning levels of difficulty, students' skills, and readiness.</i>	4.18	0.889	Strongly Agree
<i>My teacher gives materials that meet high standards of quality in factual content and presentation.</i>	4.25	0.858	Strongly Agree
<i>My teacher selects materials that can hone students' multiple intelligences.</i>	4.20	0.870	Strongly Agree
<i>5. My teacher selects materials that are available at home or can easily be found at the market.</i>	4.40	0.743	Strongly Agree
<i>My teacher provides a list of supplementary materials in case other materials are not available at home.</i>	4.15	0.906	Strongly Agree
<i>My teacher sees to it that the materials for all activities are not too expensive.</i>	4.42	0.807	Strongly Agree
	OM 4.28	SD 0.833	High

According to the study by Abubakar (2020), from the study results, the materials used to teach students to play a substantial impact in students' academic achievement. In addition, students taught with instructional materials showed improved performance compared with those taught without such. In this case, it can be inferred that the appropriateness of materials used by the teachers to achieve the subject's objectives. Furthermore, as indicated in the data, Grade 10 students perceived that the materials used in their ICT subject were appropriate to the skills and competencies that they needed to acquire and hone.

Table 8 presents the level of the student's performance in ICT.

Table 8. Level of Students Performance in ICT

Grading Scale	Frequency	Percentage	Verbal Interpretation
90 - 100	80	94.12%	Advance
85 - 89	3	3.53%	Proficient
80 - 84	2	2.35%	Approaching Proficiency
75 - 79	0	0%	Developing
Below 75	0	0%	Beginning
	85	100%	
	Mean=95	SD=3	VI=Advance

This study refers to the level of students' performance in ICT. It was found out that most of the respondents belong to Advance, which is represented by eighty (80) students or ninety-four points twelve percent (94.12%)—followed by Proficient of three (3) students or three-point fifty-three percent (3.53%). The third range of the respondents belongs to the Approaching Proficiency, which consists of two (2) students or two-point thirty-five percent (2.35%). It also depicts that there were no Developing and Beginning with zero (0) number of students and zero percent (0%).

It can be gleaned from Table 8 (see next page) that the level of students' performance in ICT is defined as “Advance” as verbal interpretation with a mean of 95 and a standard deviation of 3.

Table 9 presents the significant relationship between the Teacher’s Procedure and Students’ Performance in ICT.

Table 9. Significant Relationship between the Teacher’s Procedures and Students Performance in ICT

Student’s Performance in ICT	Teacher’s Procedure	r	Interpretation	p
Grade	Discussion	0.007357289 ^{ns}	Negligible	0.435076499
	Demonstration	0.007465 ^{ns}	Negligible	0.431713533
	Evaluation	0.001091 ^{ns}	Negligible	0.7640679
	Integration	0.00807 ^{ns}	Negligible	0.413574

**significant at 0.05*

ns-not significant

Table 9 shows the significant relationship between Teacher’s Procedure and Student’s Performance in ICT, which predicts not significantly as manifested by higher probability values in its indicator at 0.05 level of significance. Further, the positive values for r indicate a direct relationship.

According to Bonney et al. (2015), there was a positive but weak link between teachers' pedagogical skills and students' performance in the 2010 Basic Education Certificate Examination outcomes ($r=0.198^*$). Furthermore, the association between teachers' pedagogical skills and students' performance in the BECE results for 2011 and 2012 was not statistically significant in either year. This means that the student’s performance in the 2011 and 2012 examinations had nothing to do with the teachers’ instructional abilities involved in the process. Therefore, the teachers' pedagogical knowledge could not be held responsible for the poor performance of the students in 2011 and 2012, respectively.

Similar to the previously stated study, the findings revealed that the Teacher’s Procedure does not have a significant relationship to the Performance of the Grade 10 student in ICT. Still, they have a high positive direct relationship. It can be implied that even though the teacher’s procedures in terms of Discussion, Demonstration, Evaluation, and Integration were ‘Very High,’ ‘High,’ ‘High,’ and ‘High,’ respectively, it did not greatly affect the overall performance of students in ICT.

Table 10 presents the significant relationship between the Teacher’s Qualities and Students’ Performance in ICT.

Table 10 shows the significant relationship between Teacher’s Qualities and Student’s Performance in ICT, which predicts not significantly as manifested by higher probability values in its indicator at 0.05 level of significance. Further, the positive values for r indicate a direct relationship.

Table 10. Significant Relationship between the Teacher's Qualities and Students Performance in ICT

Student's Performance in ICT	Teacher's Qualities	r	Interpretation	p
Grade	Digital Appropriateness	0.004092126 ^{ns}	Negligible	0.56081216
	Quantity of Activities	0.001454 ^{ns}	Negligible	0.729013002
	Suitability of Materials	0.004725 ^{ns}	Negligible	0.5319233

*significant at 0.05

ns-not significant

As previously stated, the study conducted by Bonney et al. (2015) looked into the relationship between quality instructors and students' academic achievement in Junior High Schools in the Sekondi Takoradi Metropolitan Assembly (STMA). According to the study's findings, a correlation was not found between the quality of teachers in the Sekondi-Takoradi Metropolitan Assembly and students' academic achievement ($r=0.451$). Despite the fact that there are good teachers in the city, their qualities did not appear to have a significant impact on the students' academic achievement. It is commonly assumed that high-quality teachers have a considerable impact on their students' academic success. This finding, on the other hand, is in contrast with the findings of further research such as those conducted by Adu and Olatundun (2007), Lockhead and Komenan (1988), and Maduka (2000), which found that competent teachers created high-achieving students.

In addition, the study by Sirait (2016), which looked at the relationship between teacher attributes and student accomplishment in Indonesia, is worth mentioning. According to the study's findings, teacher quality has a statistically significant impact on student accomplishment at the senior high school level. However, it has no effect at the junior high school level.

It is noteworthy that there might be some factors that can be considered to have such a result. In this study, both Teacher's Procedures and Qualities have a positive direct relation to the student's performance but no significance in their relation. This revealed that students were able to attain an 'Advance' level of performance in ICT regardless of the Qualities and Procedures of the teacher. This can be because the students, as 21st-century learners, already have the prior knowledge and technological skills in doing the tasks assigned. This assumption can be supported by the level of the students in their performance in ICT, as the data suggested majority, 94.12 %, of the students are already in the Advance level, which corresponds 90 - 100 Grade scale, and none of the students belonged to Beginning, below 75, or even Developing, 75 - 79 Grade scale. Nevertheless, based on the analyzed data, the teacher elicited 'Very High' to 'High' levels in both Procedures and Qualities as perceived by the students. Correspondingly, the data also revealed that most of the Grade 10 students attained 'Advance' proficiency in their performance in ICT.

Summary of Findings

The essence of this study aimed to determine the significant relationship between teacher's procedures and qualities to the students' performance in ICT.

Specifically, it sought answer to the following questions: 1. What is the extent of the teacher's procedures in terms of discussion, demonstration, evaluation, and integration? 2. What is the level of teacher's qualities related to digital appropriateness, the quantity of activities, and the suitability of materials? 3. What is the level of students' performance in ICT? 4. Does the teacher's procedure have a significant effect on the students' performance in ICT? And 5. Do the teacher's qualities have a significant effect on the students' performance in ICT?

In conducting this study, the descriptive method of research was employed, which involved collecting necessary data and information to test the hypotheses and answer questions concerning the "significant relationship between teacher's procedures and qualities to the students' performance in ICT." The instrument used was a questionnaire in the form of a checklist and a Five-Likert scale to gather information headed on the accomplishment of the study. The respondents of the study were composed of eighty-five (85) respondents. The statistical treatment utilized in this study consisted of weighted mean, standard deviation, and frequency.

Based on the data gathered, different findings are at this moment presented:

1. Level of Teacher's Procedures

The level of teacher's procedures in terms of discussion got an (OM=4.60, SD=0.622) was verbally interpreted as "Very High." The demonstration got an (OM=4.45, SD=0.777) and was verbally interpreted as "High." The evaluation got an (OM=4.48, SD=0.752) and was verbally interpreted as "High." And integration got an (OM=4.42, SD=0.831) and was verbally interpreted as "High."

2. Level of Teacher's Qualities

The level of the teacher's qualities in terms of digital appropriateness got an (OM=4.34, SD=0.727) was verbally interpreted as "High." The quantity of activities reached an (OM=4.31, SD=0.844) and was verbally interpreted as "High." And suitability of materials got an (OM=4.28, SD=0.833) and was verbally interpreted as "High."

3. Level of Students' Performance in ICT

The level of students' performance in ICT got an (OM=95, SD=3) and was verbally interpreted as "Advance."

4. Significant Relationship between the Teacher's Procedures and Students' Performance in ICT

All teacher procedures indicators denote a "not significant effect" in terms of discussion, demonstration, evaluation, and integration and indicate a ($P=0.435076499$, 0.431713533 , 0.7640679 , 0.413574), which is greater than the 0.05 level of significance.

5. Significant Relationship between the Teacher's Qualities and Students' Performance in ICT

All indicators of the teacher's qualities denote a "not significant effect" in terms of digital appropriateness, the quantity of activities, and suitability of materials and indicate a ($P=0.56081216$, 0.729013002 , 0.5319233) which is greater than the 0.05 level of significance.

Conclusion

Based on the findings of the study, the researcher drew the concluded that as perceived by the Grade 10 students in ICT, they were able to identify that the Teacher's Procedure in terms of Discussion, Demonstration, Evaluation, and Integration, was evident and an essential part of the subject. Students were able to assess their teacher's pedagogical skills based on how they were presented with the lesson in various forms of procedures. Additionally, the respondents also perceived the importance of the Qualities of the teacher in terms of how appropriate the technology and digital tool incorporated in the lesson. The alignment

of the activities done to the learning outcomes, and they perceived that the materials used in their ICT subject are appropriate to the skills and competency they need to acquire and hone.

Furthermore, with such findings, based on the statistical analyses of data, the hypotheses presented in the paper are accepted. There was no significant relationship between the Teacher's Procedures and Qualities to the students' performance, but they possess positive direct relationships. In this case, the findings might be affected by factors such as the students' already acquired 21st-century skills that are evident in their level of performance. Nonetheless, this research added additional insight and understanding of the teacher's relationship and the students in the teaching and learning process.

Recommendations

Given the presented conclusions, the following recommendations are hereby deduced;

1. With the given result, future researchers may look into a deeper understanding of the factors as to why, in the presented research, there were no significant relationships between variables.
2. Conduct the same study at different grade levels to gather more diverse respondents with a more heterogeneous level of performance.
3. Consider gathering, not just the students' responses but also using quantitative variables such as their scores in every assessment, behavior in the procedures, and/or even the teachers' perceptions.
4. Conduct the study using a different methodology; the future researchers may consider conducting an experimental study comparing controlled and experimental groups to come up with a more in-depth result.
5. Future researchers may also consider qualitatively analyzing data on the teacher's procedure and qualities vis-a-vis the student's performance to gain an in-depth understanding of the relation and phenomena that exist in the teaching and learning process.

References

- Abubakar, M. B (2020). Impact of instructional materials on students' academic performance in Physics, in Sokoto Nigeria. 2nd International Conference on Civil & Environmental Engineering. doi:10.1088/1755-1315/476/1/012071
- Ahlquist, J. (2015). Developing Digital Student Leaders: A Mixed Methods Study of Student Leadership, Identity, and Decision Making on Social Media. <https://www.proquest.com/docview/1705809805/10205CFB28E462EPQ/3>
- Anh, P. T. (2017). The impact of online learning activities on student learning outcome in a blended learning course. *Journal of Information & Knowledge Management*, 16(04), 1750040.
- Ariola et al. (2014). The Sampling Issues in Quantitative Research. <https://files.eric.ed.gov/fulltext/EJ919871.pdf>
- Baker, L. R., & Oswald, D. L. (2010). Shyness and online social networking services. *Journal of Social and Personal Relationships*, 27(7), 873-889.
- Balaji, M. S., & Chakrabarti, D. (2010). Student interactions in online discussion forum: Empirical research from media richness theory perspective. *Journal of interactive online learning*, 9(1).
- Birnbaum, M. G. (2013). The fronts students use: Facebook and the standardization of self-presentations. *Journal of College Student Development*, 54(2), 155-171.
- Bogott, T. A. (2017). An Exploration of Technology Integration Using Digital Game-Based Learning Within Early Childhood Settings. <https://www.proquest.com/docview/1961180994/10205CFB28E462EPQ/6>
- Bonesronning, H., & Opstad, L. (2012). How Much is Students' College Performance Affected by Quantity of Study? [https://doi.org/10.1016/S1477-3880\(15\)30012-8](https://doi.org/10.1016/S1477-3880(15)30012-8)
- Bonesrønning, Hans & Opstad, Leiv. (2015). Can student effort be manipulated? Does it matter?. *Applied Economics*. 47. 1511-1524. 10.1080/00036846.2014.997923.

- Bonney, E. A., et. al (2015). The Relationship between the Quality of Teachers and Pupils Academic Performance in the STMA Junior High Schools of the Western Region of Ghana. *Journal of Education and Practice*, v6 n24 p139-150
- Branch, T. (2020). A Qualitative Study of Teacher Experiences with Online Intervention Tools. <https://www.proquest.com/docview/2435174029/78166133901B4604PQ/8>
- Brasser, A. L. (2015). Social learning strategies: A qualitative study of self-regulated learning. <https://www.proquest.com/docview/1686128320/78166133901B4604PQ/1>
- Carreon, J. (2018). Blended Learning Tool in Teaching Grade 8 Information and Communications Technology Exploratory. DOI:10.13140/RG.2.2.21029.55525
- Cheung, C. M., Chiu, P. Y., & Lee, M. K. (2011). Online social networks: Why do students use facebook?. *Computers in human behavior*, 27(4), 1337-1343.
- Daniel, S.J. (2020). Education and the COVID-19 pandemic. *Prospects* 49, 91–96 <https://doi.org/10.1007/s11125-020-09464-3>
- Darling Hammond, L. (2020, May 19). A "New Deal" for education: Top 10 policy moves for states in the COVID 2.0 era. Learning Policy Institute. <https://learningpolicyinstitute.org/blog/covid-new-deal-education-top-10-state-policy-moves>
- De León Alvarado, (2016). Resilience processes, engagement and emotional competencies, in professionals attending elder people in violence situations in Saltillo, Coahuila and Monterrey, Nuevo León, Mexico. *Actualidades en Psicología*, 32(125), 33-50.
- Deneme, Selma & Ada, Selen. (2012). On Applying the Interdisciplinary Approach in Primary Schools. *Procedia - Social and Behavioral Sciences*. 46. 885-889. 10.1016/j.sbspro.2012.05.217.
- Ebrahim, H. S., Ezzadeen, K., & Alhazmi, A. (2015). Acquiring knowledge through mobile applications. *International Journal of Interactive Mobile Technology*, 9(3), 71-74.
- EdReports.org (2020). Instructional materials during remote learning reflection and planning tools. <https://www.edreports.org/resources/article/instructional-materials-during-remote-learning-reflection-and-planning-tool>
- Egan, D. M. (2019). Using Technology as an Independent Learning Strategy to Support Vocabulary Acquisition for Secondary Students with Learning Disabilities. <https://www.proquest.com/docview/2415113592/7E007A8661574F30PQ/3>
- Elavsky, C. M., Junco, R., & Heiberger, G. (2012). Putting twitter to the test: Assessing outcomes for student collaboration, engagement and success. *British Journal of Educational Technology*, 44(2), 273-287.
- Ellison, N. B. Gray, R., Vitak, J., Easton, E. W., et al. (2013). Examining social adjustment to college in the age of social media: Factors influencing successful transitions and persistence. *Computers & Education*, 67, 193-207.
- Eriksson, Elisabeth & Björklund Boistrup, Lisa & Thornberg, Robert. (2018). A qualitative study of primary teachers' classroom feedback rationales. *Educational Research*. 10.1080/00131881.2018.1451759.
- Gamlem, S. M., & Munthe, E. (2014). Mapping the quality of feedback to support students' learning in lower secondary classrooms. *Cambridge Journal of Education*, 44(1), 75-92.
- Giridharan, K. & Raju, Ramasamy. (2016). Impact of Teaching Strategies: Demonstration and Lecture Strategies and Impact of Teacher Effect on Academic Achievement in Engineering Education. *International Journal of Educational Sciences*. 14. 174-186. 10.1080/09751122.2016.11890491.
- Hargreaves, Eleanore. (2011). Teachers' Feedback to Pupils: "Like So Many Bottles Thrown Out to Sea"? 10.1007/978-94-007-0729-0_9.
- Hodges, T.S. & Weber, N.D. (2015). Making Heads or Tails of Classroom Flipping, *Kappa Delta Pi Record*, 51:2, 57-63, DOI: 10.1080/00228958.2015.1023135
- Hus, Vlasta. (2010). The integration of the subject of environmental studies with other subjects: The teacher's views. *Procedia - Social and Behavioral Sciences*. 2. 5078-5083. 10.1016/j.sbspro.2010.03.824.

- Hyman, P. et al. (2012). In the year of disruptive education. *Communications of the ACM*, 55(12), 20-22.
- Instefjord, Elen & Munthe, Elaine. (2015). Preparing pre-service teachers to integrate technology: an analysis of the emphasis on digital competence in teacher education curricula. *European Journal of Teacher Education*. 39. 1-17. 10.1080/02619768.2015.1100602.
- Jacobsen, W. C., & Forste, R. (2011). The wired generation: Academic and social outcomes of electronic media use among university students. *Cyberpsychology, Behavior, and Social Networking*, 14(5), 275-280.
- Jonsson, A., Lundahl, C., & Holmgren, A. (2015). Evaluating a large-scale implementation of Assessment for Learning in Sweden. *Assessment in Education: Principles, Policy & Practice*, 22(1), 104-121.
- Kauffman, Heather. (2015). A review of predictive factors of student success in and satisfaction with online learning. *Research in Learning Technology*. 23. 10.3402/rlt.v23.26507.
- Kauffman, Douglas F., Ruomeng Zhao, and Ya-Shu Yang. (2011). "Effects of online note-taking formats and self-monitoring prompts on learning from online text: Using technology to enhance self-regulated learning." *Contemporary Educational Psychology* 36.4: 313-322.
- Kee, K. F., Park, N., & Valenzuela, S. (2009). Being immersed in social networking environment: Facebook groups, uses and gratifications, and social outcomes. *Cyberpsychology & behavior*, 12(6), 729-733.
- Kelley, T. R., & Knowles, J. G. (2016). A conceptual framework for integrated STEM education. *International Journal of STEM education*, (NAE and NRC 2014) 3(1), 1-11.
- Kodel P., and Polikoff, M. S. (2017). How well aligned are textbooks to the Common Core Standards in mathematics? *American Educational Research Journal*, 52(6), 1185–1211. <https://doi.org/10.3102/0002831215584435>
- Kumar, P., Saxena, C. & Baber, H. (2021). Learner-content interaction in e-learning- the moderating role of perceived harm of COVID-19 in assessing the satisfaction of learners. *Smart Learn. Environ.* 8, 5. <https://doi.org/10.1186/s40561-021-00149-8>
- Kurzman, P. A. et al. (2013). The evolution of distance learning and online education. *Journal of Teaching in Social Work*, 33(4-5), 331-338.
- Lapupa, M. (2020). The Impact of Demonstration Learning on Pupils Understanding of Preparation of Salts. doi: 10.7176/JEP/11-3-13
- Lour, L. L., Yan, Z., Nickerson, A., & McMorris, R. (2012). An examination of the reciprocal relationship of loneliness and Facebook use among first-year college students. *Journal of Educational Computing Research*, 46(1), 105-117.
- Mayol, P.A. (2020). The Paradigm Shift For Teachers' Challenges In The New Normal. Retrieved from <https://cebufinest.com/paradigm-shift-teachers-challenges-new-normal/>
- McRae, P. A. (2013). Myth: Blended Learning is the next Ed-Tech Revolution. *Alberta Teachers' Association Magazine*. <https://www.teachers.ab.ca/Publications/ATA%20Magazine/Volume%2095%202014-15/Number-4/Pages/Myth-Phil-McRae.aspx>
- Meegama, Gayan. (2013). Two-way Text Messaging: An Interactive Mobile Learning Environment in Higher Education. *Research in Learning Technology*. 24. 10.3402/rlt.v24.31818.
- Mohamed, Ally. (2009). *Mobile Learning: Transforming the Delivery of Education and Training*. Athabasca, AB: Athabasca University Press. CDN\$39.95 ISBN 978-1-897425-43-5 (297 pages)
- Ohio Department of Education (ODE) Leadership Advisory Council. (2020). High Quality Instructional Materials for Remote Learning. <https://ohioleadership.org/high-quality-instructional-materials-for-remote-learning>
- Prendergast, C. A. (2017). Nontraditional online students' perceptions on student success conditions. <https://www.proquest.com/docview/1927181983/5F87037AE11546C9PQ/7>
- Rasheed, Rasheed & Kamsin, Amirrudin & Abdullah, Nor. (2020). Challenges in the online component of blended learning: A systematic review. *Computers & Education*. 144. 103701. 10.1016/j.compedu.2019.103701.

- Reich, T., Morry, M. M., & Kito, M. (2010). How do I see you relative to myself? Relationship quality as a predictor of self-and partner-enhancement within cross-sex friendships, dating relationships, and marriages. *The Journal of social psychology*, 150(4), 369-392.
- Saxena, C., Baber, H., & Kumar, P. (2020). Examining the moderating effect of perceived benefits of maintaining social distance on e-learning quality during COVID-19 pandemic. *Journal of Educational Technology Systems*, 49(4), 532-554. <https://doi.org/10.1177/0047239520977798>.
- Schunk, D. H., & Pajares, F. (2009). Self-efficacy theory. In K. R. Wenzel & A. Wigfield (Eds.), *Handbook of motivation at school* (pp. 35-53). Routledge/Taylor & Francis Group.
- See, B. H., Gorard, S., & Siddiqui, N. (2016). Teachers' use of research evidence in practice: A pilot study of feedback to enhance learning. *Educational Research*, 58(1), 56-72.
- Sevilla (2012). *Methodology of Thesis*. <https://www.studymode.com/essays/Methodology-Of-Thesis-1100509.html>
- Shen, J., Sung, S., & Zhang, D. (2015). Toward an analytic framework of interdisciplinary reasoning and communication (IRC) processes in science. *International Journal of Science Education*, 37(17), 2809-2835.
- Sirait, Swando, Does Teacher Quality Affect Student Achievement? An Empirical Study in Indonesia (October 2, 2016). *Journal of Education and Practice*, Vol. 7, No. 27
- Staker, H. and Horn M.B. (2012). *The Rise of K-12 Blended Learning. Profiles of Emerging Models*. Inforsight Institute. Charter School Growth Fund. pp. 165.
- Stamer, T. (2016). *Promoting Learning Strategies in Students with Learning Disabilities Through Blended Learning*. <https://www.proquest.com/docview/1878002768/7E007A8661574F30PQ/1>
- Steiner, D. (2018). Materials matter. *The Learning Professional*, 39(6), 25-28. <https://learningforward.org/wp-content/uploads/2018/12/materials-matter.pdf>
- Stinebrickner, R., & Stinebrickner, T. (2008). The effect of credit constraints on the college drop-out decision: A direct approach using a new panel study. *American Economic Review*, 98(5), 2163-84.
- Sun, Y. C., & Yang, F. Y. (2015). I help, therefore, I learn: service learning on Web 2.0 in an EFL speaking class. *Computer Assisted Language Learning*, 28(3), 202-219.
- Tibi, M.H. (2018). Computer science students' attitudes towards the use of structured and unstructured discussion forums in online courses. *Online Learning*, 22(1), 93-106. doi:10.24059/olj.v22i1.995
- Victoria, K. (2018). Why digital literacy is important for kids. <https://teachyourkidscode.com/why-is-digital-literacy-important/>
- Wallen (2012). *Quantitative Research Methods*. https://us.sagepub.com/sites/default/files/upm-binaries/70019_MerICTr_Chapter_7.pdf
- Weegar, M.A. & Pacis, D. (2012). *A Comparison of Two Theories of Learning - Behaviorism and Constructivism as applied to Face-to-Face and Online Learning*. Presented at the E-Leader Conference. Manila, Philippines.
- Weng, P. L., Maeda, Y., & Bouck, E. C. (2014). Effectiveness of cognitive skills-based computer-assisted instruction for students with disabilities: A synthesis. *Remedial and Special Education*, 35(3), 167-180.
- Witherspoon, M., Sykes, G., & Bell, C. (2016). *Leading a Classroom Discussion: Definition, Supporting Evidence, and Measurement of the ETS® National Observational Teaching Examination (NOTE) Assessment Series*. <https://files.eric.ed.gov/fulltext/ED570574.pdf>