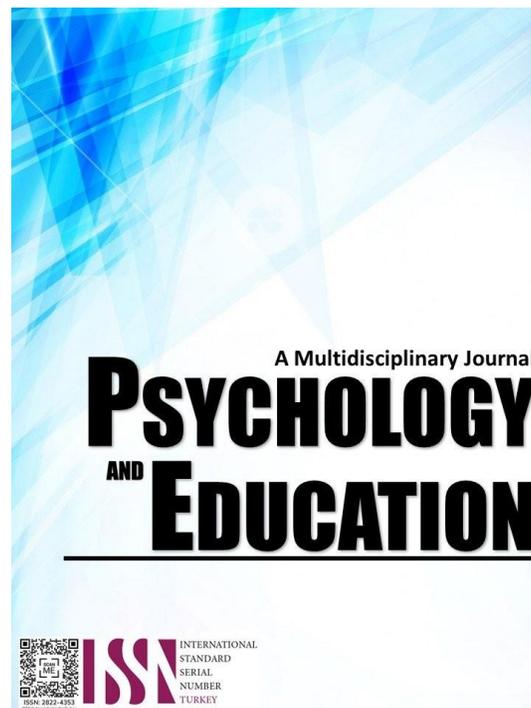


**A MODERATION ANALYSIS OF THE SECONDARY ENGLISH
TEACHERS' PROFILE ON THE RELATIONSHIP BETWEEN
THEIR TECHNOLOGICAL-PEDAGOGICAL-CONTENT
KNOWLEDGE AND VIRTUAL INSTRUCTIONAL
STRATEGIES IN THE DIVISION
OF OLONGAPO CITY**



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A Moderation Analysis of the Secondary English Teachers' Profile on the Relationship Between their Technological-Pedagogical-Content Knowledge and Virtual Instructional Strategies in the Division of Olongapo City

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Abstract

This research study aimed to investigate the relationship between teachers' Technological Pedagogical Content Knowledge (TPACK) and their utilization of virtual instructional strategies in teaching secondary English classes online. Additionally, the study explored the impact of demographic factors on teachers' TPACK and virtual strategies. The findings provide insights into the characteristics of the respondents, their TPACK levels, virtual instructional strategies employed, and the relationships among these variables. The profile analysis of the respondents revealed that the majority were in the age group of 24-35, with male teachers representing 17% and female teachers accounting for 83% of the sample. Furthermore, most of the participants were junior high school teachers, with varying years of service and professional development training. The assessment of teachers' TPACK indicated that participants had high levels of competence in technological, pedagogical, and content knowledge. Technological knowledge was rated as competent overall, with the frequent use of technology at work being the most prominent indicator. Pedagogical knowledge was highly competent across all indicators, with the ability to assess student performance receiving the highest rating. Content knowledge was also highly competent, with teachers demonstrating sufficient knowledge about English and various strategies for developing their understanding. Regarding virtual instructional strategies, the teachers displayed high competence in competencies and objective strategies, motivating students, presenting instructional content, lesson structure and pacing, activities and materials, questioning, and grouping. These findings suggest that teachers possess the necessary skills to effectively employ virtual instructional strategies in an online teaching environment. Correlational analyses revealed significant positive relationships between TPACK and virtual instructional strategies. Technological knowledge, content knowledge, and pedagogical knowledge were positively associated with the utilization of virtual instructional strategies. This suggests that teachers who possess higher levels of TPACK are more likely to effectively implement virtual strategies in their online classes. However, the study found no significant relationships between teachers' demographic profiles (age, sex, years in service, and training attended) and their TPACK or virtual instructional strategies. This indicates that regardless of demographic factors, teachers can effectively utilize virtual strategies if they have a strong foundation in TPACK. In conclusion, this research study highlights the importance of TPACK in the effective use of virtual instructional strategies for teaching secondary English online. Teachers who possess higher levels of TPACK are more likely to employ virtual strategies successfully. These findings have implications for teacher training programs, emphasizing the need to develop teachers' TPACK competencies to enhance their virtual teaching practices.

Keywords: *technological, pedagogical, content knowledge, virtual strategies*

Introduction

It was December 31, 2019 when some clustered cases of pneumonia were recorded in Wuhan, China. The virus then was unknown. Just within one week, Chinese officials stated on January 7, 2020, that they had identified the virus as a new coronavirus, first designated as 2019-nCoV by the World Health Organization (CNN Editorial Research, 2021). Then, multiple reports of the occurrence of those cases in USA, Japan, South Korea, and Thailand were identified. WHO renamed the virus as coronavirus Covid-19, and almost three months after it was first reported, they declared the Covid-19 as a pandemic (WHO, 2020). As of December 6, 2021, 265,194,191 were the confirmed cases of COVID-19 as reported to WHO, including 5,254,116 fatalities. On the other hand, 7,952,750,402 doses of vaccination have been delivered worldwide.

The COVID-19 epidemic has indeed wreaked havoc on education systems worldwide, impacting almost 1.6 billion students in over 190 nations on all continents. The United Countries Policy Brief (2020) stated that schools and other learning institutions' closures have affected 94 percent of the student population around the world, most specifically in poor nations.

As part of the attempt to restrict the coronavirus's spread, public venues like schools, universities, and businesses have been closed to allow residents to remain at home and avoid further transmission. To reduce the spread of illness, measures such as social isolation, limiting the size of events, and, where required, home quarantine are used (UOPeople, 2020).

Closing schools and workplaces allows individuals to minimize their connections with others, slowing the spread of the virus while the healthcare system adjusts to the epidemic.

Education is no different. Students from wealthy homes who are supported by their parents and who are enthusiastic and capable of

studying may be able to navigate their way beyond closed school doors to alternative learning alternatives. Those from poor backgrounds were often left behind when their schools closed.

In the Philippines, the COVID-19 pandemic ushered in a slew of firsts in the country's educational history. For the first time, school began in October rather than June. The K–12 students' semester break, which is typically conducted in October, took place last March 15–19.

According to the Department of Education's (DepEd) revised schedule for School Year (SY) 2020-2021, classes completed in public schools on July 10, which was traditionally the commencement of a new school year. Due to the considerable alterations to the previous school calendar, all other events – such as graduation and other end-of-year celebrations, the two-month "holiday," and even the start of a new school year – have been left in limbo (Hernando-Malipot, 2021).

However, students, parents, and school staff were not the only ones greatly affected, but most teachers were greatly impacted by the pandemic. In other countries like New Zealand, Covid-19 has had a substantial influence on the welfare of principals and teachers. Work is becoming less enjoyable, and administrators and teachers report feeling less supported. Principals at smaller schools and younger instructors have the greatest difficulties (Education Review Office, 2021). In Southern California, USA, Bintliff (2020) interviewed 73 teachers and found that they all expressed a feeling of fear and concern for their kids. Absenteeism was palpable. She emphasized the importance of administrators and other stakeholders acknowledging that secondary trauma can have a long-lasting effect on teacher well-being and that providing mental health support, self-care presentations, a trauma-informed care approach, and space for teachers to grieve with peers is critical.

Aside from mental health and work-life balance issues, the 360-degree shift from traditional teaching to remote teaching was a Herculean challenge for most of the teachers in both the public and private education sectors. Numerous K-12 and even higher education instructors have been compelled to shift their instruction to remote learning modes such as modular, online, or hybrid in order to continue teaching and learning. This presented a challenge to all educators, but particularly to those with inadequate experience of educational technology integration and a scarcity of ICT resources. Indeed, the majority of educators and institutions were taken aback.

It is obvious that technology is a significant aspect of 21st century teaching and learning. Knowledge and skills pertaining to the use of computers or integration of technology are somehow prerequisites in applying for a teaching position (DepEd Order 7, s. 2015). In fact at the 2018 National DepEd ICT Summit, DepEd Secretary Briones underlined the critical nature of integrating ICT into both teaching and governance in order to provide Filipino children with a quality, accessible, and relevant basic education. "If we disregard ICT, we will undoubtedly return to the dark ages... We must keep in mind that ICT is fundamentally a tool for decision-making, for comprehending the reality in which we live, and for solving problems" remarked Briones (2018). Unfortunately, two years later, not all teachers were technologically ready for this sudden change of direction to remote teaching.

In the Division of Olongapo City, public and private junior and senior high schools offered various distance learning modalities: modular distance learning (MDL), online distance learning (ODL), and television/radio-based instruction, pursuant to DepEd Order 12 s.2020, or the "Adoption of the Basic Education Learning Continuity Plan for School Year 2020-2021 in the Light of the COVID-19 Public Health Emergency". Only 11 public junior high schools offered ODL, while the other two, Iram High School and Sergia Soriano Esteban Integrated School of Kalaklan, offered modular distance learning. Meanwhile, all 5 public senior high schools in the locality offered ODL in teaching English-related subjects.

It is with utmost desire that the demographic profile and the virtual instructional strategies used by these teacher respondents undergo careful study to come up with capacity building opportunities for the teachers to enrich their technological, pedagogical, and content knowledge in teaching English online. This intends to address the gap by hopefully recommending relevant and needs-based professional development training for teachers, especially those who are teaching online and teaching English both in junior and senior high schools in the Division of Olongapo City. Moreover, by finding out the relationship among the variables in this study, and what demographic profile affects them, the researcher hopes to design an appropriate professional development training tailored to the teachers' needs.

Research Questions

This study conducted a moderation analysis of the secondary English teachers' profile on the relationship between their technological pedagogical content knowledge and virtual instructional strategies in the Division of Olongapo City. Specifically, the study sought to answer the following questions:

1. What is the profile of the respondents in terms of:
 - 1.1. sex,
 - 1.2. age,
 - 1.3. years of teaching experience, and
 - 1.4. trainings attended?
2. What is the self-assessed TPACK level of competence of the secondary English teachers specifically in terms of:
 - 2.1. technological knowledge,

- 2.2. pedagogical knowledge, and
- 2.3. content knowledge?
3. Is there a significant difference in secondary English teacher's TPACK when grouped according to their profile?
4. What are the identified Virtual Instructional Strategies used competently by the secondary English teachers in the Division of Olongapo City?
5. Is there a significant relationship between the TPACK and the virtual instructional strategies used by the secondary English teachers?
6. How does the demographic profile moderate the relationship between the TPACK and the virtual instructional strategies of the secondary English teachers?

Methodology

Research Design

Quantitative research primarily relies on the collection and analyses of numerical data in the study of social phenomena (Frey, 2018). This methodological approach has been extensively applied in educational research. Embedded in the paradigm of positivism, quantitative research methods emphasize empirical inquiry to understand social phenomena. Specifically, in this study the researcher aims to determine quantitatively the data that includes the demographic profile of the respondents (i.e. age, sex, years of teaching experience, and trainings attended), their self-assessment of their technological, pedagogical, and content knowledge, and the virtual instructional strategies they use in their online distance teaching.

The current study is also categorized as a descriptive research under the quantitative research design since it "describes and evaluates the existing state of persons, places, situations, or occurrences" (Mertler as cited in Cohen et al., 2018). It is a descriptive research in the sense that it will describe the above-mentioned data and the researcher will not be influenced by any identified variables.

Additionally, this study is a combination of survey and correlation research, since it conducted a survey to a sample of individuals to ascertain their characteristics and analyzed relationships between variables. Mertler (2019) states that "educational scholars apply this technique for describing the interactions between factors within a specific population." This is shown in this research, since it determined respondents' degree of competency in terms of their TPACK and virtual teaching strategies.

Respondents

The researcher used purposive sampling to identify the respondents. Purposive sampling entails hand picking examples for inclusion in the sample based on their perceived similarity or ownership of the desired characteristic(s). They curate the sample to match their own requirements. Purposive sampling is often used to identify 'knowledgeable individuals,' i.e. those who possess in-depth knowledge about certain subjects, maybe as a result of their professional function, authority, access to networks, expertise, or experience (Cohen et al, 2018).

Hence for this study, the researcher selected the respondents based on the following criteria: should be currently working as a public school teacher in any junior or senior high school in the Division of Olongapo City; is assigned to teach under the online distance learning modality; and should be teaching English or any English-related subjects.

Purposive sampling was used in this study since the nature of the research design and its goals and objectives precludes the use of a large number of respondents as primary data sources. The target respondents were only those secondary English teachers in public junior and senior high schools who are teaching online in the Division of Olongapo City.

There are 11 public junior high schools and 6 public senior high schools in the Division of Olongapo City. English is offered in each secondary grade level in junior high school. This is different in senior high school which offers English related subjects: 21st Century Literature, Creative Writing, Oral Communication, Reading and Writing Skills, Creative Non-Fiction: The Literary Essay and Practical Research.

Instrument

The researcher used researcher-made survey questionnaires as instruments to gather and collect data from the chosen respondents. Survey research selects a sample of subjects and administers a questionnaire or conducts interviews to collect data (Mertler, 2018). Google form, a free online tool for surveys and questionnaires, was used. The use of this application is one of the most possible ways to gather data since the researcher is remotely located from the respondents. Questionnaire using Google form is sent to the respondents. This can be accessed online by the respondents by sending them the link. These forms were integrated with spreadsheets, thus answers from respondents can be retrieved using spreadsheets.

The first instrument is the self-assessment survey questionnaire on the respondent's technological, pedagogical, and content knowledge adapted from Elas, et al (2019). This instrument combined both Schmidt et al. (2009) and Archambault and Crippen's (2009) recommendations on a valid and reliable instrument in measuring one's TPACK.

Another instrument that will be utilized in this study was adapted from the National Institute for Excellence in Teaching (NIET) Virtual

Learning Companion Tool (2021). A Companion Tool to the NIET Teaching and Learning Standards Rubric is designed to be used alongside NIET K-12 Teaching and Learning Standards Rubric. The tool offers sample practice for each indication of the NIET rubric, along with descriptions, as well as particular examples and ideas for adapting those indicators for use in a virtual environment.

Procedure

When the research instrument was confirmed as valid and reliable by the sample respondents and the selected experts, the researcher sought approval from the thesis adviser and the research panel to administer the said research instrument.

A letter of permission addressed to the Superintendent was sent to the Schools Division Office of Olongapo City in Barangay Asinan, Olongapo City, asking permission to conduct a survey through Google Forms among selected respondents in all the secondary schools, including integrated schools and senior high schools, who were offering online classes in their English and English-related subjects.

After securing permission from the division office, the researcher wrote a letter to the school heads with the approved permit. The researcher requested from the school head, following all Data Privacy protocols, a list of all the names and email addresses of the teachers who were assigned to teach English and English-related subjects through the online distance learning modality.

The researcher then sent a letter to the selected teachers with the Consent to Volunteer as a Research Participant form explaining the purpose, procedures, and duration of the research; any ethical considerations; and the researcher's plan for maintaining the confidentiality of the respondents' information and the results.

The teachers who consented to participated received a signed copy of the said consent form. The research participants were hereby reminded that their participation in this study was voluntary.

Then, the link to the Google Form containing the survey questionnaire for this research was sent to the teachers for their response. The data from the survey was readily available after the participants have answered the questionnaire. The Google Sheet with all the results was downloaded and encoding of the said data followed using SPSS for statistical analysis.

Data Analysis

The responses of the participants from the spreadsheet was analyzed using SPSS. The "Statistical Package for the Social Sciences" (SPSS) Statistics is a statistical software program that is often used in the social sciences for statistical analysis. It automates time-consuming data preparation chores and gives predictive and comparative data insights via a user-friendly menu-driven (and syntax-driven) interface (The SAGE Encyclopedia of Educational Research, Measurement, and Evaluation, 2018).

In determining the demographic profile of the respondents (Statement of the Problem 1), specifically their age, sex, years of teaching experience, and trainings attended, frequency and percentage was used.

To identify the TPACK level of competence of the secondary English teachers (Statement of the Problem 2), mean (measure of central tendency) was used. Mean is the average score of all the responses.

To determine the significant difference in secondary English teacher's TPACK when grouped according to their profile, paired- sample t-test was used.

For Statement of the Problem 4, mean (measure of central tendency) was used to identify the Virtual Instructional Strategies used competently by the secondary English teachers in the Division of Olongapo City,

Responding to Statement of the Problem 5, the significant difference between TPACK and the virtual strategy used was analyzed using a paired- sample t-test. Paired-sample t-test is a test used to compare the means of two variables for a single group.

Finally, to address Statement of the Problem 6, moderation analysis was utilized. A moderation analysis is used to assess if the connection between two variables is dependent on the value of a third variable (is moderated by its value). In this study, the researcher wanted to find out if the virtual instructional strategies used by the respondents are moderately affected by different demographic profiles such as age, sex, years of teaching experience, and trainings attended.

Ethical Considerations

Informed consent refers to the fact that the individual participating in the research is completely informed about the study (Frey, 2018). The researcher notified participants of the research's aim, the intended use of the results, any possible negative consequences of their involvement, and who will have access to the findings. The primary objective of informed consent is to enable the participant to make an educated choice about whether or not to engage in the study. Participation in this study is totally voluntary and the participants are free to withdraw their participation at any time. The researcher assured the participants that they will not experience any physical, psychological, or emotional harm in engaging in this study. Moreover, their identity and other personal information was treated with utmost confidentiality once the results were finalized and the study will be published. Each participant is required to sign the "Consent to Volunteer as a Research Participant" form before the gathering of data started. The research also declared that no conflict of interest was involved in this study.

Results and Discussion

How are the respondents described in terms of: sex, age, years in service, and trainings attended?

Table 1. Respondents' Profile According to Sex

Sex	Frequency	Percentage
Male	5	16.7
Female	25	83.3
Total	30	100.0

The total number of participants in this study is 30. The male teachers consist 17 % and the rest, 83% are female teachers.

Table 2. Respondents' Profile According to Age

Age Range	Frequency	Percentage
18-24 years old	1	3.3
24-35 years old	18	60.0
36-44 years old	4	13.3
45-54 years old	4	13.3
55 up years old	3	10.0
Total	30	100.0

The age range consists of 5 ranges. One participant is within 18-24 years old, 18 of them is within 24-35 age bracket, 4 participants come from 36-44 years old, 4 participants from 44-54 years old and 3 participants were above 55 years old. The majority of the respondents were 24-35 years old which consists the 60% of the total respondents.

Table 3. Frequency Distribution of Respondents' Years in Service

No. of Years in Service	Frequency	Percentage
<= 5.0	8	26.7
6.0 - 10.0	12	40.0
11.0 - 15.0	5	16.7
16.0 - 20.0	1	3.3
21.0 - 25.0	1	3.3
26.0 - 30.0	2	6.7
31.0+	1	3.3
Total	30	100.0

Table 3 showed the frequency of years of service of the respondents. Most of the respondents have 6 -10 years of service which comprised the 40% of the population, whereas the respondent with more than 31 years of service consist the 3.3 % of the population.

Table 4. Respondents' Profile According to their Online Teaching-Related Professional Development Activities

Online Teaching-Related Professional Development Activities Number of Hours	Frequency	Percentage
Less than 8 hours	4	13.3
8-24 hours	10	33.3
25-40 hours	7	23.3
More than 40 hours	9	30.0
Total	30	100.0

Trainings for online teaching related professional development were done beginning the school year of Covid-19 onset. Respondents who had less than 8 hours consist the 14 %, respondents who had 8-24 hours were 33 % of the sample size, 25-40 hours consists 23 % and those who have more than 40 hours were 30% of the sample. Majority of the respondents had 8-24 hours online training.

How may the TPACK of the secondary English teachers be described in terms of: Technological knowledge, Pedagogical knowledge, and Content knowledge?

Table 5. Technological Knowledge Indicator Mean Scores

Technological Knowledge	Mean Score	Interpretation
1. I know how to solve my own technical problems.	3.00	Competent
2. I can learn about technology easily.	3.07	Competent
3. I keep up with important new technologies.	3.20	Competent
4. I frequently use technology at my work.	3.37	Highly Competent
5. I know about a lot of different technologies.	2.87	Competent
6. I have the technical skills I need to use technology	3.07	Competent
7. I have had sufficient opportunities to work with different technologies	2.43	Somewhat Competent

Mean	3.00	Competent
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The table above showed that respondents are Highly Competent in using technology at work. Respondents were found to be Somewhat Competent in opportunities to work with different technologies. Respondents are considered Competent to the rest of technological knowledge indicators.

Table 6. *Content Knowledge Indicator Mean Scores*

<i>Content Knowledge</i>	<i>Mean Score</i>	<i>Interpretation</i>
1. I have sufficient knowledge about English.	3.53	Highly Competent
2. I have various ways and strategies for developing my understanding of English.	3.53	Highly Competent
3. I can create materials that map to a specific level of proficiency among my students in teaching English.	3.27	Highly Competent
4. I can decide on the scope of concepts taught within my class.	3.53	Highly Competent
Mean	3.47	Highly Competent

The table showed that respondents considered themselves Highly Competent in all Content Knowledge indicators, ($M = 3.47$). The lowest means score ($M = 3.27$). pertains to creating materials that map to a specific level of proficiency. The rest have equal mean score ($M = 3.53$).

Table 7. *Pedagogical Knowledge Indicator Mean Scores*

<i>Pedagogical Knowledge</i>	<i>Mean Score</i>	<i>Interpretation</i>
1. I know how to assess student performance in a classroom	3.67	Highly Competent
2. I can adapt my teaching based upon what students currently understand or do not understand.	3.60	Highly Competent
3. I can adapt my teaching style to different learners.	3.57	Highly Competent
4. I can assess student learning in multiple ways in my class.	3.43	Highly Competent
5. I can use a wide range of teaching approaches in a classroom setting.	3.47	Highly Competent
6. I am familiar with common student understandings and misconceptions.	3.40	Highly Competent
7. I know how to organize and maintain classroom management.	3.50	Highly Competent
Mean	3.52	Highly Competent

The table above showed that the respondents considered themselves Highly Competent ($M = 3.52$). The indicator with highest mean ($M = 3.67$) is the ability to assess student performance in a classroom while the lowest mean score ($M = 3.40$) is familiarity with common student understandings and misconceptions.

What are the most predominantly utilized Virtual Instructional Strategies used by the secondary English Teachers in the Division of Olongapo City?

Table 8. *Competencies and Objective Strategies Mean Scores*

<i>Competencies and Objectives</i>	<i>Mean Score</i>	<i>Interpretation</i>
1. I can communicate lesson objective(s) and alignment to the standard(s) via a slide, document, or video.	3.57	Highly Competent
2. I can refer to objective(s) and success criteria throughout the lesson (i.e., in all presentation documents, such as PowerPoints, videos, assignments, and rubrics etc.).	3.43	Highly Competent
3. I can use success criteria to assess student work and provide feedback.]	3.47	Highly Competent
4. I can use formative and summative checks to determine mastery of objectives or progressing towards mastery (e.g., quiz, written responses, discussion board posts, etc.).	3.50	Highly Competent
Mean	3.49	Highly Competent

Table 8 revealed that in terms of Competencies and Objectives Strategies, the respondents are Highly Competent in all the indicators. The highest mean score (3.57) is to communicate lesson objective(s) and alignment to the standard(s) or competencies via a slide, document, or video, while the indicator with the lowest mean score (3.43) is the teacher's reference to objective(s) and success criteria throughout the lesson (i.e., in all presentation documents, such as PowerPoints, videos, assignments, and rubrics). etc.).

Table 9. *Motivating Students Strategies*

<i>Motivating Students</i>	<i>Mean Score</i>	<i>Interpretation</i>
1. I can create clearly labeled documents and/or folders that signal or mark the order and flow of the lesson.	3.57	Highly Competent

2. I can insert meaningful and relevant key questions and wonderings at various places in the lesson.	3.40	Highly Competent
3. I can generate interest in the upcoming lesson topic (e.g., survey students prior to the lesson about what they already know about the subject, give a preassessment, send a link to a video to spark questions).	3.40	Highly Competent
4. I can include opportunities for student choice.	3.53	Highly Competent
5. I can include opportunities for students to share work publicly.	3.53	Highly Competent
6. I can reinforce students for participation by adding to the chat or discussion board (i.e., good job/nice comment; great thought-provoking question – let’s discuss in our synchronous time this week).	3.57	Highly Competent
Mean	3.50	Highly Competent

In Table 9, the respondents are rated Highly Competent in all the indicators of Motivating Students Strategies. The highest mean score (3.57) is to create clearly labeled documents and/or folders that signal or mark the order and flow of the lesson and to reinforce students for participation by adding to the chat or discussion board. The lowest mean score (3.40) is inserting meaningful and relevant key questions and generating interest in the upcoming lesson topic.

Table 10. *Presenting Instructional Content Strategies Mean Scores*

<i>Presenting Instructional Content</i>	<i>Mean Score</i>	<i>Interpretation</i>
1. I can storyboard the lesson plan during planning, and post and present materials in the order students will need them to be successful.	3.43	Highly Competent
2. I can show clear examples of high-quality work by posting and analyzing exemplars for student work.	3.50	Highly Competent
3. I can utilize recorded videos or slides to discuss and/or display the lesson agenda at the beginning of and throughout the lesson.	3.47	Highly Competent
4. I can intentionally utilize pictures and visuals via shared documents or embedded in slides to deepen student understanding.	3.50	Highly Competent
Mean	3.48	Highly Competent

Table 10 revealed that respondents are rated Highly Competent in all the indicators of Presenting Instructional Content Strategies. Showing clear examples of high-quality work by posting and analyzing exemplars for student work and utilizing pictures and visuals via shared documents or embedded in slides to deepen student understanding are the indicators with the highest mean score (3.50). The indicator with the lowest mean score (3.43) is to storyboard the lesson plan during planning, and post and present materials in the order students will need them to be successful.

Table 11. *Lesson Structure and Pacing Strategies Mean Scores*

<i>Lesson Structure and Pacing</i>	<i>Mean Score</i>	<i>Interpretation</i>
1. I can clearly label lessons to move from purpose to direct instruction, to practice then application, and how/when to submit work.	3.50	Highly Competent
2. I can provide/embed all materials necessary for understanding and completing the lesson.	3.50	Highly Competent
3. I can provide clearly written or verbalized directions for what is expected for every activity and assignment.	3.67	Highly Competent
4. I can provide office hours to support students and assist with differentiation.	3.47	Highly Competent
5. I can include scaffolds (e.g., read-alouds, thinking maps, links to resources).	3.57	Highly Competent
6. I can explicitly ask students to pause and reflect to process new learning throughout the lesson.	3.53	Highly Competent
Mean	3.54	Highly Competent

In Table 11, the indicators of Lesson Structure and Planning Strategies were rated Highly Competent by the respondents. The highest mean score (3.67) is to provide clearly written or verbalized directions for what is expected for every activity and assignment. The indicator with the lowest mean score (3.47) is to provide office hours to support students and assist with differentiation.

Table 12. *Activities and Materials Strategies Mean Scores*

<i>Activities and Materials</i>	<i>Mean Score</i>	<i>Interpretation</i>
1. I can plan for a variety of activities that include student options and menus that are all aligned to objectives and available to all students.	3.47	Highly Competent
2. I can include intentional opportunities where students prepare products to share/post for an audience, such as through an online submission tool and/or video.	3.47	Highly Competent



3. I can have students share work with another student for feedback prior to submitting it.	3.63	Highly Competent
4. I can prepare rigorous student work/assignments with models that show expectations.	3.43	Highly Competent
5. I can use checklists and rubrics as success criteria to help students monitor progress against expectations.	3.60	Highly Competent
6. I can turn on closed captioning for videos to support student understanding and language development.	3.40	Highly Competent
Mean	3.50	Highly Competent

Table 12 found that the respondents are rated Highly Competent in all the indicators of Activities and Materials Strategies. In fact, the highest mean score (3.63) in this cluster is to have students share work with another student for feedback prior to submitting it while the lowest mean score (3.40) is to turn on closed captioning for videos to support student understanding and language development.

Table 13. *Questioning Strategies Mean Scores*

<i>Questioning</i>	<i>Mean Score</i>	<i>Interpretation</i>
1. I can plan and record a variety of key question types on slides at opportune times to prompt reflection.	3.33	Highly Competent
2. I can end the lesson with a reflective question(s) aligned to the objective for students to respond to in a collaborative document tool or platform.	3.50	Highly Competent
3. I can plan for students to engage with one another on projects/assignments to ask each other questions or provide feedback through virtual tools.	3.50	Highly Competent
4. I can plan for opportunities for students to generate their own questions using a collaborative document tool or platform.	3.37	Highly Competent
Mean	3.43	Highly Competent

As revealed in Table 13, the respondents both from Junior High School and Senior High School are rated Highly Competent in all the indicators of Questioning Strategies. The highest mean score (3.50) in this cluster is to end the lesson with a reflective question(s) aligned to the objective for students to respond to in a collaborative document tool or platform and plan for students to engage with one another on projects/assignments to ask each other questions or provide feedback through virtual tools. On the other hand, the lowest mean score (3.33) is to plan and record a variety of key question types on slides at opportune times to prompt reflection.

Table 14. *Grouping Strategies Mean Scores*

<i>Grouping</i>	<i>Mean Score</i>	<i>Interpretation</i>
1. I can provide clear directions and responsibilities for group work.	3.57	Highly Competent
2. I can consider if the lesson lends itself to grouping students, group composition should be considered to ensure strong virtual collaboration.	3.47	Highly Competent
3. I can utilize self-assessment and peer assessment tools with group work.	3.47	Highly Competent
4. I can provide opportunities for students to choose the group that best meets their needs.	3.50	Highly Competent
Mean	3.50	Highly Competent

Table 14 showed that the respondents are rated Highly Competent in all the indicators of Grouping Strategies. The highest mean score (3.57) in this cluster is to provide clear directions and responsibilities for group work while the lowest mean score (3.47) is to consider if the lesson lends itself to grouping students, group composition should be considered to ensure strong virtual collaboration and utilize self-assessment and peer assessment tools with group work.

Is there a significant relationship between the TPACK and the virtual instructional strategies used by the secondary English teachers?

Is there a significant relationship between the technological knowledge and the virtual instructional strategies used by the secondary teachers?

Table 15. *SPSS Correlation Result between the Technological Knowledge and the Virtual Instructional Strategies used by the Secondary Teachers*

		<i>Correlations</i>	
		<i>Technological Knowledge</i>	<i>Virtual Instructional Strategies</i>
Technological Knowledge	Pearson Correlation	1	.488**
	Sig. (2-tailed)		.006
	N	30	30
Virtual Instructional Strategies	Pearson Correlation	.488**	1
	Sig. (2-tailed)	.006	



N	30	30
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** Correlation is significant at the 0.01 level (2-tailed).

Table 15 showed the mean scores of Technological Knowledge (M = 3.00, SD = 0.622) and Virtual Instructional Strategies (M = 3.49, SD = .440) of the 30 respondents. Using SPSS, the result of the correlation analysis showed that the Pearson Correlation coefficient between Technological Knowledge and Virtual Instructional Strategies is 0.488 and this correlation is significant (p < 0.01). It means that there exists a moderately high positive correlation between Technological Knowledge and Virtual Instructional Strategies.

Is there a significant relationship between the content knowledge and the virtual instructional strategies used by the secondary teachers?

Table 16. SPSS Correlation Result between the Content Knowledge and the Virtual Instructional Strategies used by the Secondary Teachers

		Correlations	
		Content Knowledge	Visual Instructional Strategies
Content Knowledge	Pearson Correlation	1	.657**
	Sig. (2-tailed)		.000
	N	30	30
Visual Instructional Strategies	Pearson Correlation	.657**	1
	Sig. (2-tailed)	.000	
	N	30	30

** Correlation is significant at the 0.01 level (2-tailed).

Table 16 showed the mean scores of Content Knowledge (M = 3.47, SD = 0.463) and Virtual Instructional Strategies (M = 3.49, SD = .440) of the 30 teachers. The SPSS correlation analysis result showed that the Pearson Correlation coefficient between Content Knowledge and Virtual Instructional Strategies is 0.657 and this correlation is significant (p < 0.001). It means that there exists a high positive correlation between Content Knowledge and Virtual Instructional Strategies.

Is there a significant relationship between the pedagogical knowledge and the virtual instructional strategies used by the secondary teachers?

Table 17. SPSS Correlation Result between the Pedagogical Knowledge and the Virtual Instructional Strategies used by the Secondary Teachers

		Correlations	
		Pedagogical Knowledge	Visual Instructional Strategies
Pedagogical Knowledge	Pearson Correlation	1	.773**
	Sig. (2-tailed)		.000
	N	30	30
Visual Instructional Strategies	Pearson Correlation	.773**	1
	Sig. (2-tailed)	.000	
	N	30	30

** Correlation is significant at the 0.01 level (2-tailed).

Table 17 showed the mean scores of Pedagogical Knowledge (M = 3.52, SD = 0.417) and Virtual Instructional Strategies (M = 3.49, SD = .440) of the 30 teachers.

The SPSS correlation analysis result showed that the Pearson Correlation coefficient between Content Knowledge and Virtual Instructional Strategies is 0.773 and this correlation is significant (p < 0.001). It means that there exists a high positive correlation between Content Knowledge and Virtual Instructional Strategies.

How does the demographic profile moderate the relationship between the TPACK and the virtual instructional strategies of the secondary English teachers?

Moderation Analysis for Age Range

Table 18.1. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.805a	.648	.607	.27597

Predictors: (Constant), Interaction term, TPACK, Age Range
Dependent Variable: Strategies

Table 18.2. ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.638	3	1.213	15.924	.000b
	Residual	1.980	26	.076		
	Total	5.618	29			

Dependent Variable: Strategies
Predictors: (Constant), Interaction_term, TPACK, Age Range



Table 18.3. *Coefficients*

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	.073	.671		.109	.914			
	TPACK	.932	.164	.866	5.670	.000	.760	.744	.660
	Age Range	.156	.077	.387	2.018	.054	-.405	.368	.235
	Interaction	.122	.060	.332	2.040	.052	.439	.371	.238

Dependent Variable: Strategies

The TPACK showed in Table 18.1 Model Summary explained that 65% (R Square = 0.648) of the variation were in virtual instructional strategies used by the secondary English teachers. The One-Way ANOVA result above was found to be significant ($p < 0.001$). TPACK knowledge and age range are positively related to the virtual instructional strategies used by the secondary English teachers.

The interaction between age and TPACK of the teachers indicated that the TPACK increases with the age of the teachers. There was a significant relationship between TPACK and virtual instructional strategies ($p < 0.001$) and accounted for a large effect ($r = 0.660$).

There is no significant relationship between age and virtual instructional strategies ($p > 0.05$). The moderation analysis showed that age has no significant effect on the relationship between TPACK and virtual instructional strategies.

Moderation Analysis for Sex

Table 19.1. *Model Summary*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.767a	.588	.541	.29825

Predictors: (Constant), INT_term, TPACK, Zscore (Sex)
Dependent Variable: Strategies

Table 19.2. *ANOVA*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.306	3	1.102	12.387	.000b
	Residual	2.313	26	.089		
	Total	5.618	29			

Dependent Variable: Strategies
Predictors: (Constant), INT_term, TPACK, Zscore(Sex)

Table 19.3. *Coefficients*

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	.624	.501		1.245	.224			
	TPACK	.865	.148	.804	5.830	.000	.760	.753	.734
	Sex	.057	.071	.130	.805	.428	-.115	.156	.101
	Interaction	-.041	.083	-.078	-.498	.623	.101	-.097	-.063

Dependent Variable: Strategies

The TPACK showed in the table Model Summary explained the 59% (R Square = 0.588) of the variation in virtual instructional strategies used by the secondary English teachers. The One-Way ANOVA above was significant ($p < 0.001$). TPACK and sex were positively related to the virtual instructional strategies used by the secondary English teachers.

The negative interaction between sex and TPACK of the teachers indicated that the TPACK decreased among female teachers. There was a significant relationship between TPACK and virtual instructional strategies ($p < 0.001$) and accounted for a large effect ($r = 0.734$).

There was no significant relationship between sex and virtual instructional strategies ($p > 0.05$). The moderation analysis showed that age has no significant effect on the relationship between TPACK and virtual instructional strategies, $p > 0.05$.

Moderation Analysis for Years in Service

Table 20.1. *Model Summary*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.780a	.609	.564	.66036023

Predictors: (Constant), INT, Zscore (TPACK), No. of Years in Service
Dependent Variable: Zscore (Strategies)

Table 20.2. *ANOVA*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.662	3	5.887	13.501	.000b
	Residual	11.338	26	.436		
	Total	29.000	29			

Dependent Variable: Zscore (Strategies)
Predictors: (Constant), INT, Zscore (TPACK), No. of Years in Service



Table 20.3. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	-.242	.210		-1.152	.260			
	Zscore(TPACK)	.813	.128	.813	6.351	.000	.760	.780	.779
	Years in Service	.025	.017	.209	1.435	.163	-.045	.271	.176
	INT	.109	.148	.104	.737	.468	.000	.143	.090

Dependent Variable: Zscore (Strategies)

The TPACK showed in the table Model Summary explained that 58% (R Square = 0.578) of the variation were in virtual instructional strategies used by the secondary English teachers. The One-Way ANOVA above was significant ($p < 0.001$). TPACK Knowledge and years in service were positively related to the virtual instructional strategies used by the secondary English teachers. The positive interaction between years in service and TPACK of the teachers indicated that the TPACK increased with the increasing number of years in service. There was a significant relationship between TPACK and virtual instructional strategies ($p < 0.001$) and accounted for a large effect ($r = 0.779$). There was no significant relationship between years in service and virtual instructional strategies ($p > 0.05$). The moderation analysis showed that years in service has no significant effect on the relationship between TPACK and virtual instructional strategies, $p > 0.05$.

Moderation Analysis for Trainings Attended

Table 21.1. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.768a	.589	.542	.29792

Predictors: (Constant), INT, TPACK, Prof Dev Activities
Dependent Variable: Strategies

Table 21.2. ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.311	3	1.104	12.433	.000b
	Residual	2.308	26	.089		
	Total	5.618	29			

Dependent Variable: Strategies
Predictors: (Constant), INT, TPACK, Prof Dev Activities

Table 21.3. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	.796	.456		1.744	.093			
	TPACK	.857	.144	.797	5.959	.000	.760	.760	.749
	Trainings	-.049	.058	-.117	-.842	.408	.162	-.163	-.106
	INT	-.012	.057	-.029	-.216	.830	-.091	-.042	-.027

Dependent Variable: Strategies

The TPACK showed in Table 23.1 Model Summary explained that 59 % (R Square = 0.589) of the variation in virtual instructional strategies were used by the secondary English teachers. The One-Way ANOVA showed above was significant ($p < 0.001$). TPACK was positively related to the virtual instructional strategies used by the secondary English teachers. Trainings was negatively related to virtual instructional strategies. The negative interaction between trainings and TPACK of the teachers indicated that the TPACK decreased with the increasing number of hours of trainings attended by teachers. There was a significant relationship between TPACK and virtual instructional strategies ($p < 0.001$) and accounted for a large effect ($r = 0.749$). There was no significant relationship between trainings and virtual instructional strategies ($p > 0.05$). The moderation analysis showed that trainings has no significant effect on the relationship between TPACK and virtual instructional strategies, $p > 0.05$.

Conclusions

Based on the findings of the study, the following conclusions were made:

Participants perceived their Technological Knowledge as Competent.

Participants rated their Pedagogical Knowledge and Content Knowledge as Highly Competent.

Participants rated themselves Highly Competent in all indicators of virtual strategies utilized during online teaching class.

Teachers perceived themselves Highly Competent in providing clearly written or verbalized directions for what is expected for every activity and assignment.

Teachers got the lowest mean score ($M = 2.43$) in Technological Knowledge indicator 7(I have had sufficient opportunities to work with different technologies) which meant that teachers must be given time to explore various technological application.

The Technological Knowledge and Virtual Strategies had a moderate positive correlation.

Both Content Knowledge and pedagogical Knowledge had a high positive correlation with Virtual Strategies.

Demographic profile of teachers had no significant effect on the TPACK and Virtual Strategies utilized by teachers.

Overall, TPACK had a high positive relationship with Virtual Strategies used by teachers.

Based on the findings and conclusion, the researcher recommends the following:

Most of the respondents were millennials which can be assumed that they are technologically savvy. This age range of teachers can be EdTech mentors which will serve to support the other teachers in terms of technological problems aside from the IT staff in the school.

Provide targeted and in-depth training sessions specifically focusing on differentiation strategies for teachers. This will enable them to effectively cater to the individual differences and diverse learning needs of their students. The training should include practical examples, resources, and techniques to support teachers in implementing differentiation strategies in their virtual classrooms.

Recognize that teachers have different levels of expertise and professional needs. Instead of generic professional development programs, tailor the training sessions to address the specific needs and challenges faced by the teachers. This approach will ensure that teachers receive relevant and meaningful support that directly contributes to their professional growth.

Acknowledge the importance of investing in teachers' professional development by allocating a higher budget specifically for training programs. With increased funding, it becomes possible to bring in highly credible and well-trained speakers and trainers who can provide valuable insights and expertise in various subject areas. This will ensure that teachers receive high-quality training that aligns with the changes and advancements in the educational landscape.

Design a comprehensive professional development training that encompasses effective online teaching practices, TPACK (Technological Pedagogical Content Knowledge), and virtual instructional strategies. This training should provide teachers with the necessary knowledge, skills, and tools to enhance their virtual teaching abilities. It should cover topics such as utilizing technology effectively, integrating pedagogical strategies in virtual classrooms, and implementing virtual instructional strategies across different content areas. The training should be interactive, practical, and offer ongoing support to teachers as they apply their learning in their teaching practice.

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