



The Shift towards New Teaching Modality: Examining the Attitude and Technological Competence among Language Teachers teaching Filipino

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Abstract

The Covid-19 pandemic has provoked a shift in teaching modality as the traditional face to face instruction could not be realized in the fear of the continuous widespread of the disease. Against this, the present study aimed to determine the attitude of the respondents toward online teaching and identify teachers' technological competence. In addition, the study also intended to determine whether a relationship exists between the main variables, and whether a gender gap could be found with respect to attitude toward online teaching and teachers' technological competence. 162 teachers teaching the Filipino language were surveyed using a developed, validated and pilot tested questionnaires (Attitude toward online Teaching Tool [Cronbach's $\alpha = 0.862$], Teachers' Technological Competence Tool [Cronbach's $\alpha = 0.898$]). The study disclosed that the respondents' attitude is characterized to be 'somehow negative' and they claimed to be technologically 'competent'. In addition, the study refutes the existence of gender gap with respect to attitude and competence; however, a significant positive and linear

relationship was drawn between the variables attitude and competence (p-value =0.000, r-value =0.586).

Introduction

Life and living are both greatly influenced by technology; hence, life as we know it could hardly be pictured out should we counterfactually imagine the absence of technology. This assertion simply means that technology is something that could not be taken for granted as it has successfully integrated itself in most, if not all, of human activities. One great result of technology is that it has transfigured communication (De Los Reyes, De Vera, & Medriano, 2018). Consequently, it could be said that technology has '*profoundly shaped our society*' (Almerich, Orellana, Suarez-Rodríguez, & Diaz-Garcia, 2006: 110).

One aspect that is greatly influenced by technology is undoubtedly to be the field of education. Güneús, Gökçek, and Bacanak (2010: 1266) indicated that technology has '*important effects on education area*'. It has given birth to online teaching which is slowly and steadily becoming the norm (Kearns, 2016). Moreover, online teaching is claimed to have '*revolutionized education*' (Stan, 2014:4517) as it has made possible the kind of education, previously inconceivable, that is 'borderless' (Davies, 2001).

Online teaching challenges the preconception that education is a process requiring physical presence in one definite place. Through technological support, it has become a reality, and almost a common practice for people around the globe separated by time and space to meet online, be taught and learn. Thus, it could be said that online courses provide a certain kind of freedom that attracts learners constrained to physically attend traditional classes for one reason or another. Hence, it is no wonder that this kind of education gained popularity (Limperos, Buckner, Kaufmann, & Frisby, 2014), and was demanded by students from colleges and universities to be offered (Lokken, & Mullins, 2014).

These claims suggest two things - there is a steady trend regarding the incorporation of online teaching as a mode of delivery or a shift in preference with respect to platforms of teaching. Whichever it is, the inevitable truth is that online teaching as a practice is here to stay. In fact, there has been a dramatic increase in the number of schools and universities adapting this method of instruction in the teaching of various subjects and courses (Allen, et al., 2004). Davies (2001) explained that 'globalization' acts as the driving force behind this modern practice apart from the apparent preference of learners for off-campus education through online schooling (Welch, & Napoleon, 2015).

In previous years, online schooling was offered to people who do not have time to attend regular instruction (Stan, 2014). However, the outbreak of the pandemic, the infamous Covid-19, has altered everything. When circumstances were changed, face to face instruction was no longer a practice, and online teaching remained no longer an option or choice, but the only viable means.

Teachers were then asked to instantly consider hosting virtual classes. The demand to abruptly shift counters the recommendation of Comas-Quinn (2011:7) that the introduction to the new modality of teaching should be '*gradual, well-supported, and well-integrated*'. But, times are desperate therefore measures become drastic.

Educators were required to digitize materials and develop digital contents. In the hope of continually educating the young, the teachers were pressed to adapt to a digitally-rich environment without having considered their technological competence which is a requisite to be able to perform efficiently as online instructors (Welch, & Napoleon, 2015), and a key variable integrated in the teaching and learning process (Almerich, et al., 2006).

Moreover, this context presents itself as an interesting area for research with respect to the investigation of teachers' attitude toward virtual instruction. The construct of attitude is an essential consideration because it serves as a determinant of choice, action and behavior (Erwin, 2001). Therefore, even if teachers are instructed, their compliance or noncompliance to policies would greatly be determined by their attitude.

With this, it is interesting to determine the attitude toward online teaching of educators confronted with challenges - (1) they are in areas with limited internet connectivity, and (2) the curricula they follow and use are intended for face-to face instruction – apart from the common understanding that the shift from the traditional classroom teaching practice to online is daunting and more often than not lead to burn out (Hogan, & McKnight, 2007). It is noted that this is an essential undertaking as teachers play a key role in the learning and teaching process (Comas-Quinn, 2011). It could be inferred that the success of education is greatly dependent on teachers. This is true as regards face to face instruction, and equally true with respect the new teaching modality.

Againsts the ideas previously mentioned, this current study bears the objectives of determining teachers' technological competence and attitude toward online instruction, identifying whether a significant relationship exists between the extent of technological competence of the respondents and their attitude toward online teaching, and finding whether a gender gap in the technological competence and attitude toward online teaching is present with respect to the sample group of the study.

Literature Review

Online Teaching

Online education is part and parcel of the 21st century learning (Cross, & Polk, 2018), and it is one of the major approaches in education along with the other two, the traditional (also known as face to face), and blended (also known as hybrid or mixed) (Alzahrani, & O’Toole, 2017).

The proliferation of online teaching in the years to come is evident and predictable. Generally, it is education realized in a newly-found modality making it technologically-dependent. In a similar note, Eichelberger, and Leong (2019) put forth that one salient point separating online teaching from the traditional mode is the high dependence of the former on technology to realize communication.

Online teaching is also known by many other terminologies such as virtual education (Davies, 2001), online schooling (Welch, & Napoleon, 2015), distance learning education (Salvo, Shelton, & Welch, 2017), telementoring and electronic mentoring (also e-mentoring) (Omar, Hassan, & Atan, 2012), and virtual teaching (Guasch, Alvarez, & Espasa, 2010). The terminologies evolve around the key idea of technology as suggested by the terms online, virtual, electronic, tele- and distance.

The choice for the digital platform in which to realize education stems from varied reasons ;nevertheless, the two main are convenience (Mupinga, Nora, & Yaw, 2006), and flexibility of access (Bolliger, & Wasilik, 2009). Interestingly, another is that online schooling offers a ‘color free’ environment (Salvo, et al., 2017). Discrimination inside typical classrooms based on one’s skin color is likely to happen; though, it is unlikely to take place when learning happens in a digital environment. People of color are less likely to be judged instead treated equally in online classes (Salvo, et al., 2017) which holds true to individuals with physical constraints. Additionally, the digital environment serving as venue for instruction offers interesting features such as the synchronous and asynchronous communication between students and teacher and among learners themselves (Umar, & Rathakrishnan, 2012) which according to Barbosa, Barbosa, and Rabello, (2016) make online teaching student-centric. Although the enumeration of the advantages online education offers is non exhaustive, they are enough to be convinced that digital instruction is attractive. Supportive of this is the study of Khorsandi, Kobra, Ghobadzadeh, Kalantari, and Seifei (2012) which surveyed 685 students using an online software found that the respondents significantly favor online instruction over the traditional classroom or face to face teaching. However, the question is does the same hold true in the case of teachers?

At this juncture, it is pointed that online teaching is claimed to have ‘redefined’ teachers (Comas-Quinn, 2011). This means that educators accustomed to traditional instructions are demanded to learn and acquire new skills, master new techniques and reinvent practices because instructional habits learned over the years and were found effective in the performance of face to face instruction are not necessarily appropriate when it comes to performing virtual teaching (Cross, & Polk, 2018). In a similar vein, Knowles, Holton, and Swanson (2005) asserted that many classroom pedagogies could not be translated to online teaching. This suggests an essential understanding that shifting from the traditional teaching to the virtual kind, contrary to commonly held misconception, is not a matter of simply digitizing hard copies of instructional materials.

Salvo, et al. (2017) discussed that online education demands from learners different requisites such as technological equipments (e.g. computers, laptops, cellphone, tablets and other digital devices), productivity softwares (e.g. Google Apps, Microsoft Office, Open Office and the likes), and a stable internet connectivity. Additionally, Mupinga, et al. (2006) extended the list by pointing to the need for technological proficiency. Rationally, these requirements apply to teachers performing online teaching more. Hence, Eichelberger, and Leong (2019) opined that students may not be ready and prepared for a technologically-rich environment which would make online learning a challenging and frustrating experience; addedly, it is pointed out that this is not only correct in the case of students but also with teachers.

On another note, teaching in a digitally rich environment is not without criticisms. Mainly, it is criticized for being a complex task which is both time-consuming (Spector, 2005) and demanding (Bolliger, & Wasilik, 2009). Another is that online teaching develops a sense of disconnection and loneliness which is brought about by the geographical distance between the teacher and students (Kehrwald, 2008).

No doubt is cast in reference to the benefits of online teaching provides. There may be some identified disadvantages; yet, the gains are suspected to outweigh them. But, the demands online teaching imposes to teachers especially those who were not gradually introduced to it is great and too much to bear. This can never be truer in the case of teachers who have not practice online teaching, but because of the need to do so were required to adapt the platform and are expected to continuously do so in the coming school year. Thus, it becomes compelling to explore the competence and attitude of the people behind the computer screens managing online classes because the most important thing about technology use in education is not the policy, but the learning managers, the teachers (Malinina, 2015). Additionally, teachers are key elements in the use of ICT in education and are essential agents of technology use and

integration (Almerich, et al., 2006; Güneús, et al., 2010) influencing students adoption and use of technology in education.

Technological Competence

Digital schooling owes its existence to technology. Without which, it would forever remain part of our imagination. Hence, for online teachers to be effective in delivering education in this modality, they should be technologically literate (Yücel, & Koçak, 2010) because the use of technological tool in education is inevitable (Yavuz, 2005) especially in the online platform in which technological dependence could be claimed absolute (Eichelberger, & Leong, 2019). Therefore, the importance of teachers' competence in the use of technology – *to work with it and involve it into teaching and learning* - is an understatement (Malinina, 2015: 76). Thus, teachers technological competence should be trained and developed (Yücel, & Koçak, 2010), because for teachers to make the best use of information and communication technology they must be equipped with adequate technological competence (Malinina, 2015; Gençtürka, Gökçek, & Güneú, 2010).

Competence is '*a knowledge, skill or ability that enables one to effectively perform the activities of a given occupation or function to the standards expected in employment*' (Richey, Fields, & Foxon, 2001:26 cited in Martin, Budhrani, & Wang, 2019). Therefore, there is a pressing need to be met. The determination of the technological competence of teachers. As the demand for online class grows amidst the pandemic, determining whether teachers performing or are to conduct virtual classes possess the appropriate skill to effectively dispose of the role as digital instructors (Welch, & Napoleon, 2015) is a dire necessity. Hence, technologic competence is now noted to form part of teachers' professional competence (Kubrickýa & Částková, 2015).

Numerous studies have determined teachers' technologic competence. Yücel, and Koçak (2010) which studied the basic technological competence of 120 teacher candidates and found that the respondents possess basic competency at least at mediate level. Another study of similar objective is that of Malinina (2015) which, through the use of a research questionnaire as main researching technique, found that the respondents, foreign language teachers, were of basic or intermediate level of technological competence. Additional to the list is the research of Güneús, et al. (2010) which, through employment of a self-report assessment tool, found that teachers reported themselves to be 'incompetent' in the subdivision of database while the respondents deemed themselves 'very competent' with respect to the subdivision of basic computer operation skills. One more is the study of Sølvsberga, Rismark, and Haaland (2009)

in which, as they surveyed in the literature, found that teachers were ‘*insecure*’ in the use of technology.

In determining technological competence, varied scales were developed and validated. Gençtürka, et al. (2010) validated and tested the reliability of the Technology Proficiency Self-Assessment (TPSA). The said instrument was applied to 205 primary school teachers and was determined to be of high reliability ($\alpha = 0.94$). The study of Yücel, and Koçak (2010) used the Basic Technology Competency Scale for Educators (BTCSE) (with reliability of $\alpha = 0.95$) with four measures (Very qualified, Qualified, Unqualified, and Very Unqualified). Moreover, the study of Güneş, et al. (2010) also employed the use of the same instrument, the BTCSE. Against these, it could be claimed that the development of scales quantifying technological competence is common among scholars, and is an acceptable practice in research.

At this juncture, it is noted that academic institutions are affording technological training to enhance online teaching (Bailey, & Card, 2009). In connection to this, Roman, Kelsey, and Lin (2010) found in their study that when the teachers’ technological competence improved they feel more attuned to online teaching. It is then critical to point that developing the needed technological skills relate to the efficient and effective discharge of the performance of an online instructor. However, it pointed out that the claim that teachers are trained may be true in developed countries, not in developing ones. Thus, this research contextualized in the case of teachers from a developing country intends to provide baseline information relating to teachers’ technological competence to guide possible training to be afforded to teachers, because only research-guided training proved to be effective in enhancing teachers’ technologic competence and skills.

Addedly, the need to determine the technological competence of the teachers is anchored on the claim that technological challenge is one of the factors largely responsible for teachers’ negative attitude towards online teaching (Comas-Quinn, 2011). This means that a relationship exists between attitude toward online teaching and teachers’ technological competence. The said claim should be verified in the case of the respondents of the study. Such could be a source of essential implications for efficient delivery of online education.

Attitude towards Online Teaching

Initially, the investigation of the latent variable attitude started in the field of social psychology. Later on, it was investigated in different fields such as in sociolinguistics (e.g. Alieto, 2018; Hernandez, 2020; Berowa, Devanadera, & David, 2018; Tonio, & Ella, 2019; Go Silk, et al., 2020) and in education (Navarro-Villarroel, 2011).

The construction of attitude is perceived differently by varied authors (Somblino, & Alieto, 2019). Bohner, and Wanke (2002) indicated that attitude is an evaluation performed toward the attitudinal object. This means that attitude is a kind of appraisal (either positive or negative according to Gonz lez-Rian o, 2002) of an object, thing, idea, event and whatnot.

Predecessors have ventured on quantifying attitude through development of research tools (Tsai, Sunny, & Tsai, 2001). Illustrative of this point are the following : Yavuz (2005) who developed a 50-item research tool with a five-point Likert scale; Tsai et al. (2001) specifically developed an 18-item tool with four subscales (perceived usefulness, affection, perceived control, and behavior); Valois, Frenette, Villeneuve, Sabourin, and Bordeleau (2000) examined the factorial structures (affect, cognitive, and behavior), through the use of confirmatory factorial analysis, of the Computer Attitude Scale for Secondary Students which employed a 4-point Likert scale ranging from strongly disagree and strongly agree; Francis, Katz, and Jones (2000) developed the Hebrew language edition of the Computer Attitude Scale through translation and back translation method , and found that the validated version to be reliable; Isman, and Dabaj (2004) utilized as 27-item to determine the attitude toward internet of student-teachers – the measure is of five-point Likert scale ranging from strongly disagree to strongly agree; and Frantom, Green, and Hoffman (2002) sampled 574 children from rural schools in one district to develop an attitude toward technology scale.

This listing, though limited, suggests that measuring the construct of attitude attracted interests of scholars and researchers in the field of various disciplines. Supportive of this is the claim of Francis, et al. (2000) that instruments measuring attitude abound, and no shortage is noted. Moreover, it could be implied that although attitude is a latent construct it could be measured by developing a questionnaire structured and fashioned to an overall attitude result (McKenzie, 2010).

It is remarked that although there were numerous of studies on attitude these studies took different directions – attitude toward technological tools (Yavuz, 2005), attitude toward internet (Tsai et al., 2001; Isman, and Dabaj, 2004; Alzahrani, & O’Toole, 2017), attitude toward computer (Valois et al., 2000; Francis, et al., 2000), attitude toward technology (Frantom et al., 2002), attitudes in online and traditional courses (Wasserman, 2019), attitude toward web-based learning (Chen, & Tsai, 2007), attitude toward interactive classroom communications systems (Kay, 2009),

This study, through a developed scale, intended to measure the attitude of the respondents toward online teaching. No studies, much to the knowledge of the researcher, were conducted on the same topic directed toward the sample group of this study. Thus, the finding of this

study, considering its contextualization, would be an essential contribution to the collective knowledge on attitude toward online teaching.

Gender in Attitude towards Online Teaching and Technological Competence

The construction of gender is socially developed (Bacang, Rillo, & Alieto, 2019). Deductively, it could be said that people's understanding and perception of gender is determined by the community people live in.

Distinction between gender and sex has been established and noted. Toraman, and Özen (2019) explained that sex is pre-determined biologically while gender is a social construction; however, it is interesting to note that despite the distinction researchers remain to use gender to pertain to the binary categorization – being male or female (e.g. Devanadera, & Alieto, 2019; Kay, 2009; Zhang, 2005). This reflects the claim of Robbins and McGowan (2016) that the gender understanding relating to the binary categorization persists among people. In consonance with this, the current study use of the term gender is operationalized referring to the male and female categorization.

The investigations of gender difference with respect to attitude toward technology use have been conducted with different group types : teachers (Ahmad, 2000; Alzamil, 2003), university students (Chen, & Tsai, 2007), and secondary school students (Kay, 2009). In addition, Gender attitudinal differences toward technology use have been found and established across studies conducted in varied contexts and group types, and the said differences were attributed to different factors (Cai, Fan, & Du, 2017). Results suggest that males are exhibiting better attitudes toward computer use . An example is the findings of Shahaani (1993) that girls showed less interest and confidence in learning computers pointing to a significantly less attitude compared to male counterparts in the study.

With respect to technological competence, varying and contradicting results exist. In Shahaani (1993), females were found to have equal competence with the males of the study. However, Males were found to have higher technological competence than females (Yücel, & Koçak, 2010). Thus, this study which intended to determine a gender divide on technological competence is conducted not to confirm or debunk previous results. Instead, aimed to contribute additional data leading to a contextualized understanding of the influence of gender as regard respondents' contextual background.

It is noted that no study, to the knowledge of the research, was conducted with respect to gender differences in relation to online teaching. There may be those conducted but the numbers are

definitely limited suggesting a dearth in literature with respect to the case mentioned elsewhere in this study; hence, the conduct of this investigation.

Statements of Research Questions

The study carried out a four-pronged objective. Primarily, the study investigated the attitude toward online teaching and technological competence of language teachers teaching the Filipino language. The following specific questions served as guides in the conduct of the investigation:

1. What is the attitude of the respondents toward online teaching?
2. What is the technological competence of the respondents?
3. Is there a significant difference in the attitude towards online teaching and technological competence of the respondents when data are grouped according to gender?
4. Is there a significant relationship between the respondents' attitude toward online teaching and their technological competence?

Methodology

Research design

The study employed a descriptive-quantitative-correlational research design.

The key purpose of the study is to quantify the attitude toward online teaching and the technological competence of the teachers. Toward this end, a quantitative research method is the most appropriate option to make. Additionally, the study realized the processes of gathering, collecting, tabulating and analyzing data for interpretation and description of a phenomenon suggesting it to be descriptive (Calderon, 2006 cited in Rillo & Alieto, 2018). Moreover, the study is interested in determining whether a significant relationship between the attitude toward online teaching and technological competence could be drawn as such the study is noted to be correlational (Kendra, 2020).

With regard to the time allocation for data collection, the data were gathered during one contact with the respondents suggesting that the study is cross-sectional (Setia, 2016 cited in Perez & Alieto, 2018) and population-based (Buslon, & Alieto, 2019).

Furthemore, the collection of data was performed through the use of questionnaires which Creswell (2012 in Delgado & Kassim, 2019) noted to be a viable means of performing essential practices in quantitative studies, the quantification and measurement of variables. Also, such an approach is deemed practical, economical and efficient especially when a large sample size is surveyed

in a (Dillman, Smith, & Christian, 2009 in Alieto, 2018) study such in the case of this current investigation.

Respondents of the study

The study enlisted a total of 162 teachers teaching Filipino. The gender composition of the sample size is as follows: 50 or 30.9% are males and 112 or 69.1% are females. This data shows that the number of females more than double the number of males in the study. This reflects the trend determined in different studies that the teacher education course and profession are dominated by females (Alieto, 2019; Horton-Ramos, 2020; Ricohermoso, Abequibel, & Alieto, 2019).

With respect to distribution of respondents across socioeconomic statuses, the majority (140 or 86.4%) reported themselves to be of middle economic status. On the other hand, the least number are those who reported to be of high SES (only 3 or 1.9%).

As regards age, the youngest is aged 26 while the oldest reported to be 56 (mean age = 31.321, standard deviation = 8.926). As suggested by the standard deviation, the distribution of age is dispersed. This means that the study was able to sample cross a wide range. The same holds true in terms of years of service [the range is 0-31 (mean = 6.925, standard deviation = 6.615)].

In relation to educational attainment, the profile of the respondents is as follows: with bachelor's degree only (96 or 59.3%), with a master's degree (48 or 29.6%) , and with a doctorate degree (18 or 11.1%).

The Research Instruments

To attain the objectives of the study, two research tools were developed to quantify the attitude of the respondents toward online teaching and their technological competence.

The Attitude toward Online Teaching Tool (AtOTT) consists of 30 items equally divided into three sections (affective, cognitive, and behavior). In addition, a four-point Likert scale (1 for Disagree/Never, 2 – Somehow Disagree / Rarely, 3 – Somehow Agree / Often, and 4 – Agree / Always) was used as a scheme of answering the tool.

For the affective and cognitive sections of the AtOTT, equal numbers of positive and negative statements were developed. The first five items in the two sections are positive statements while the succeeding and remaining items are negative statements.

On the other hand, the TTCT is of a single factor consisting of 10 items with a four-point Likert scale ranging from Not competent to Very Competent. It is remarked along this line that use of

an even scale is informed by the claim of Singh (2006) that such would be a means of avoiding the central tendency error.

Validation

The instrument was developed through extensive review of literature. Inspirations in the development of the items were drawn from various previously conducted studies. For the Attitude toward Online Teaching Tool (AtOTT), the studies of Borup, and Evmenova (2019), Sicam, and Lucas (2018), Somblingo, and Alieto (2019), Omar, et al. (2012), Çiftci, Güneş, and Üstündağ (2010), and Mat Daud (2006) were utilized as guide. For the Teachers' Technological Competence Tool (TTCT), the studies of Albrahim (2020), Mat Daud (2006), Bigatel, Ragan, Kennan, May, and Redmond (2012), and Johnson (2013) served as inspirations.

Two experts holding doctorate degrees and are seasoned researchers validated the items of the questionnaire. Initially, forty-five items were developed equally subdivided into three sections (affective, cognitive, and behavior) as informed by the tripartite model of attitude structure (Valois, et al., 2000). The affective category includes items (e.g. *Developing digital contents to be used for online teaching is enjoyable*) that would measure respondents' toward online teaching as the attitude object. On the other hand, the cognitive category consists of statements (e.g. *Lecturing online is less effective as it appears impersonal resulting in limited learning*) relating to thoughts or beliefs about online teaching. And, the behavior category includes items (e.g. *I develop digital contents even when having face to face classes*) encompassing people's action (Valois, et al. 2000).

After validation of the experts, five items were removed from each section for reasons that some items are needless repetitions of previous items, some are inappropriate considering the context and respondents of the present investigation, and some are vague and present semantic conflicts of terminologies used. With respect to the TTCT, originally the instrument consisted of 15 items. After validation, five items were removed for similar reasons explained previously.

Reliability

After incorporating suggestions of the validators, the instruments were administered to 52 language teachers teaching Filipino who did not form part of the sampling frame of the study. The respondents of the pilot testing are with age ranging from 21-52 with mean age equals 29.56 (standard deviation = 7.945). In terms of years of experience, the range is 1-27 (mean = 6.250, standard deviation = 6.342). Moreover, most (34 or 65%) of the respondents reported to

attain only a bachelor's degree. On another hand, some (12 or 23.1%) reported to have earned a master's degree while a few (6 or 11.5%) declared to take hold of a doctorate degree.

The responses drawn from the questionnaires were coded first in a spreadsheet. Moreover, the data was treated using the SPSS. Initially, the raw data was treated with descriptive statistics to whether errors in the coding were committed or there were missed entries. Afterwards, Cronbach's reliability test was employed to determine the reliability or internal consistency of the items and the questionnaire as a whole.

The analysis yielded the results that the AtOTT was with a Cronbach's $\alpha = 0.862$, and the TTTCT was with a Cronbach's $\alpha = 0.898$. In relation to this, George and Maller (2003:231) explained that the following reliability results could be characterized as follows : greater than 0.9 – '*excellent*', greater than 0.8 – '*good*', greater than 0.7 – '*acceptable*', greater than 0.6 – '*questionable*', greater than 0.5 – '*poor*', and if less than 0.5 – '*unacceptable*'. This implies that the scales developed are reliable to assess the attitude toward technology and technological competence. Therefore, both the instruments were of 'good' reliability; hence, all of the items were included in the final form of the questionnaire.

Coding procedure

For the responses in the affective and belief subsections, the coding scheme applied for positive statements is as follows : 1 for disagree, 2 for somehow disagree, 3 for somehow agree, and 4 for agree. The reverse was used for negative statements. On the other hand, for the responses to the statements in the behavior subsection, the following coding was used : 1 for never, 2 for rarely, 3 for often , and 4 for always.

To give interpretation to the computed mean score (also arithmetic mean), table 1 provides the interpretation for the computed mean score. The range was developed using equal intervals.

Table 1

Attitude Scale

Range		Attitude toward Online Teaching		Interpretation
3.25	4.0	Agree	Always	Positive Attitude
2.5	3.24	Somehow Agree	Often	Somehow Positive
1.75	2.4	Somehow Disagree	Rarely	Somehow Negative
1.0	1.74	Disagree	Never	Negative Attitude

As regards, the responses from the technological competence research tool, the scheme of coding is as follows : 1 for not competent, 2 for somehow competent, 3 for competent, and 4 for very competent. Moreover, to provide interpretation of the analysis of the data, table 2 is used.

Table 2
Extent of technological competence scale

Range		Technological Competence
3.25	4.0	Very Competent
2.5	3.24	Competent
1.75	2.4	Somehow Competent
1.0	1.74	Not Competent

Furthermore, the demographic details were coded to allow treatments using the SPSS. The codes are as follows: for gender, 1 for male and 2 for female; for socioeconomic statuses, 1 for low, 2 for middle, 3 for high; for educational attainment, 1 for bachelor’s degree, 2 for master’s degree, and 3 for doctorate degree.

Data gathering procedure

Permissions were first sought from identified individuals purposively selected in consideration of the characteristics of the sample group. Individuals who consented to participate were asked to complete an online survey using an online application. The said survey did not in anyway solicit personal information to encourage anonymity in responses and lessens the ‘*Pygmalion effect*’ which encourages respondents to answer favourably according to the perceived objective of the study (Perry, 2005).

Statistical Treatments used in the study

Table 3 presents the statistical tools to treat the raw data in order to answer the raised questions in this study.

Table 3

Statistical Tools used in the study

No.	Research Questions	Hypothesis	Statistical Tool
1	What is the attitude of the respondents toward online teaching?		Descriptive Statistics (Mean, and Standard Deviation)
2	What is the technological competence of the respondents?		
3	Is there a significant difference in the attitude towards online teaching and technological competence of the respondents when data are grouped according to gender?	There is no significant difference in the attitude toward online teaching and technological competence of the respondents across gender	T-test for Independent Sample
4	Is there a significant relationship between the respondents' attitude toward online teaching and their technological competence?	There is no significant correlation between the respondents' attitude toward online teaching and their technological competence	Pearson Product Moment Coefficient or Pearson r

Results and Discussion

Respondents' Attitude toward Online Teaching

To determine the attitude of the respondents toward online teaching, the responses from the AtTOT were grouped according to the three aspects. The mean score for each aspect was computed. Afterwards, the arithmetic means were added and divided according to the number of aspects to determine the overall attitude. Table 4 provides the analysis. Included in the table are the variable, mean [M], standard deviation [SD], and interpretation [Interp.]

Table 4

Respondents' attitude toward online teaching

Variable	M	SD	Interp.
Attitude toward Online Teaching	2.44	0.39	Somehow Negative

Scale: 1.0 to 1.74 – Negative Attitude, 1.75 to 2.4 – Somehow Negative, 2.5 to 3.24 Somehow Positive, and 3.25 to 4.0 Positive

The above table provides the descriptive analysis of the raw data relative to the determination of the attitude toward online teaching of the teachers. It was revealed that the respondents are in possession of a ‘Somehow Negative’ attitude toward online teaching. This means that the teachers are inclined to likely favor the traditional teaching.

Intriguingly, studies have documented the demand and popularity of online schooling (e.g. Limperos, et al., 2014; Lokken, & Mullins, 2014; Welch, & Napoleon, 2015). However, if this contention is placed in the right perspective, it could be noted that the increasing interest in online education is from the point of view of students, not from the standpoint of teachers who are managing online classes.

It is suspected that online teaching, in the case of the respondents of the study, presents itself as a taxing and demanding task to perform. This is supported by Hogan and McKnight (2007) that shifting from the traditional practice to online is daunting and causes burnout. It remarked that the teachers in this study had not had the experience of handling online classes. This implies that they are starting from scratch when they would be required to do online class. On top of that, teachers are to develop digital contents and to maneuver online platforms with little and less support. This is claimed because the demand for the shift of teaching modality came without prior training and support systems put in place.

Further analysis was performed to provide a clearer and holistic picture of the attitude of the respondents toward online teaching. Table 4.1 gives such analysis.

Table 4.1

Descriptive Analysis of the Aspects of Attitude

Aspects	Mean	SD	Descriptor	Interpretation
Affective	2.62	0.47	Somehow Agree	Somehow Positive
Cognitive	2.33	0.51	Somehow Disagree	Somehow Negative
Behavior	2.37	0.51	Rarely	Somehow Negative

Scale: 1.0 to 1.74 – Negative Attitude, 1.75 to 2.4 – Somehow Negative, 2.5 to 3.24 Somehow Positive, and 3.25 to 4.0 Positive

From the table above, it could be noticed that the respondents, in general, rated statements in the behavior and cognitive aspects resulting in an interpretation described as ‘Somehow Negative’. This means that with respect to their belief and behavior towards online teaching they are inclined towards being negative; however, the opposite is true with respect to the affective aspect which is leaning towards being positive.

This means that the respondents rated low the statements that relate to beliefs about online teaching, and that the respondents are rarely performing tasks related to the use of technology, and manipulation of tools related to managing online education. Moreover, the data revealed that the aspect least rated is the cognitive which suggests that respondents are of beliefs not favoring digital teaching.

Table 4.2 provides the least rated items in the questionnaire as per aspects.

Table 4.2
Least rated items across aspects of attitude

Aspects	Statements	M	SD	Description
Affective	Gaining stable internet connection to conduct online classes is frustrating.	2.13	1.08	Somehow Agree
	Class interaction is detested because of the difficulty in managing it.	2.30	0.86	Somehow Agree
	Online lecture is disliked as teaching is realized in a discomfort-inducing platform.	2.36	0.79	Somehow Agree
Cognitive	Cheating (e.g. plagiarism) is more likely done by students doing online classes.	1.97	1.01	Somehow Agree
	Online learning posts financial burden to both teachers and students.	2.03	0.99	Somehow Agree
	Online discussion lacks feeling and depersonalized at a great extent as compared to face to face instruction.	2.17	0.90	Somehow Agree
Behavior	I perform online recitation with my students.	1.72	0.92	Never
	I conduct online classes even prior to its being a required approach in school.	2.02	0.90	Rarely

I require online presentation of students' reports and activities.	2.19	0.78	Rarely
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Scale: 1.0 to 1.74 – Negative Attitude, 1.75 to 2.4 – Somehow Negative, 2.5 to 3.24 Somehow Positive, and 3.25 to 4.0 Positive

From the above table, it could be noted that the lowest rated item comes from the behavior aspect. The respondents, on the average, rated the item 'never'. This means that most (as suggested by the small standard deviation) of the respondents do not conduct recitation online. This means that recitation as a practice is deemed best to be realized inside a traditional classroom. This result relates to an extent to the item '*I require online presentation of students' reports and activities*' which was rated rarely. From these, it could be deduced that teachers seem to favor students' delivery of outputs, discussion of ideas realized in the face to face context. It is believed that the loss of communicative cues in mediated classes is the reason for teachers' preference to conduct recitation, reports and presentations traditionally. Communicative cues (visual, verbal and non-verbal) are typically not available or not given due focus when performing online classes (Teven, 2012). These cues are seen to serve as supplements for students to have their messages get crossed to their teachers. Moreover, the teachers revealed that they have rarely performed online instruction prior to the demand of doing so due to the Covid pandemic. This suggests that despite the popularity of the approach across the world (Limperos, et al., 2014; Lokken, & Mullins, 2014) the respondents remain to yet attain familiarity with modality. This is believed to be true to teachers in developing countries – catching up needs to be done soon.

For the cognitive aspect, the least rated item has something to do with encouraging more to cheat when classes are held online. The teachers seem to worry that technology would likely make students cheaters that instead of working for their project and assignments they would simply search the net and submit someone else's work. This concern is logical considering how easy it would be to simply copy others' work and claim it as one's own. This is one downside of the copy-paste technology. Further, it is supposed that teachers worry about students cheating in online classes because they have not had access to tools or applications that could be used in detecting plagiarized work. This is raised to point that technological support in such a form may not be provided to teachers; hence, their hesitation. The second lowest rated item in this aspect is the one associated with the cost online teaching entails. The teachers perceive online teaching to bear additional cost at their end and of their students considering that internet connection in the country is expensive (Salac, & Kim, 2016). Concern relating to cost is an

issue in the case of the respondents noting that most of the respondents are average earners, some are below average, while an insignificant number claimed to be financially stable. This to an extent proves the point of Horton-Ramos (2020) that online practices are not without a cost. Instead, at times prove to be expensive which discourages those of low income to engage themselves with. This once more is taken to mean that teachers do not receive institutional as regards funding for internet access. The last of the least three rated items relates with the idea that face to face is personal while online is impersonal. This belief is suspected to stem from the Filipino culture that teaching requires establishment of rapport with students. The Filipino teachers perceive teaching as an act of touching lives and making difference which is well realized when teachers go beyond the duty of simply instructing students. However, this seems to be not realized when classes are performed digitally. The distance between teachers and students makes the teaching and learning experience nothing more than a task to be performed. For the affective domain, the least rated among the items in the section has something to do with the stability of internet connection. The Philippines is one of the countries with very meager average internet speed (Salac, & Kim, 2016). This concern of teachers is valid in sense that no amount of preparation would cause success of online education if the internet connection is unstable and erratic. The next item is about the difficulty of managing online class which frustrates teachers. This confirms the observation of Spector (2005) that conducting digital teaching is realizing a complex tasks. This suggests that familiarity of traditional teaching serves as a comfort zone to teachers who have practiced it over the years. This is related with the item that claims online teaching as discomfort-inducing and the item claiming difficulty of performing practices such as recitation. This proves the idea of Knowles, et al. (2005) that some classroom practices and pedagogies do not translate to online teaching. This means that teachers need to reinvent and such would require them to be taken away from traditional habits developed over the years which is notably to be a discomfoting practice. Thus, this result implies that the shift to online teaching should be gradual – proving the adage that haste makes waste.

Respondents' Technological Competence

To determine the technological competence of the respondents, the responses from the 10-item research tool (TTCT) were coded and initially entered into a spreadsheet. The raw data was treated with descriptive statistics. The mean score of the items were computed to determine the technological competence of the teachers. Table 5 presents the analysis.

Table 5

Teachers' Technological Competence

Variable	M	SD	Interp.
Technological Competence	2.52	0.56	Competent

Scale: 1 to 1.74 Not competent, 1.75 to 2.4 Somehow competent, 2.5 to 3.24 Competent, and 3.25 to 4.0 Very competent

The above table shows the technological competence of the respondents. The data shows that the respondents reported themselves to be 'competent'. This means that the respondents perceived themselves to be able to perform tasks with the use of computers and technology. This finding counters the claim of Sølvsberga, et al. (2009) that across studies teachers were found to be insecure of their skills in using technology. The reason for this is that most of the respondents are digital natives (DN). These are individuals born from the year 1982 onwards (Howlett, & Waemusa, 2018). From the data on age, 77.2% of the respondents are DN and only 22.8% are digital migrants.

Digital natives are individuals claimed to be adept with technology as they were born when technology is already integrated in daily life while those digital migrants are those struggling with the use of technology. This is the reason seen to explain the result of the study. Table 5.1 provides the ranking of the statements as reported by the teachers to see in details the technologic competence of the respondents.

Table 5.1

Mean Score per item of the research tool

No.	Statements	M	SD	Descrip.	Rank
1	Accessing various technological resources and tools (e.g. productivity tool, e-books, content management system etc.)	2.51	0.72	Competent	7
2	Organizing and presenting the learning materials in digital format	2.50	0.67	Competent	8
3	Developing assessment through online tools and applications	2.37	0.72	Not Competent	9
4	Utilizing computers and other digital devices employed in online classes	2.54	0.73	Competent	6

5	Trouble shooting internet connection issues, and device-related troubles	2.20	0.84	Not Competent	10
6	Employing appropriate multimedia technologies appropriate for learning activities	2.57	0.75	Competent	5
7	Aligning content with pedagogical approaches and appropriate technology	2.59	0.74	Competent	3.5
8	Using online communication tools	2.72	0.75	Competent	1
9	Designing learning activities considering available technologies	2.63	0.76	Competent	2
10	Using technology to facilitate collaborative creation and peer editing of students work	2.59	0.73	Competent	3.5

Scale: 1 to 1.74 Not competent, 1.75 to 2.4 Somehow competent, 2.5 to 3.24 Competent, and 3.25 to 4.0 Very competent

The table above provides the arithmetic mean of the responses of the respondents per item of the research tool. It could be noted that from the 10 skills the respondents identified themselves, in general, to be competent in 8 , and not competent in two items. This connotes that the respondents' possess technological competence to a favorable extent. The kind that is enough for them to perform tasks and duties electronically such as the use of online communication tools which was noted to be ranked 1 – meaning this is the skill the respondents perceived themselves to be most competent at. It is speculated that the reason for this is that these communication tools are available features in social networking sites. It is remarked that the respondents have an understanding and experience in using the communicative tools as social media sites are popular nowadays.

However, the finding reveals a concern that needs to be addressed. The teachers declared themselves to be not competent in developing online assessment using applications available. This is an essential concern as assessment is part of teaching. Teachers must then be provided with training that would equip them with the technical know-how on developing online assessment using technological tools. Moreover, teachers claimed that trouble shooting was still a capacity to attain. This is because when troubles with devices and connections happen it is a common practice to have the issues taken care of by IT specialists as such teachers do not intend to understand and perform troubleshooting. Additionally, this data clearly points out

what to include in sets of training to be provided, and which skills should be taught as priority, and which ones as secondary.

Attitude toward Online Teaching and Technological Competence across Gender

To determine the difference in the attitude toward online teaching and technological competence across the dichotomous variable gender, the inferential statistics known as independent sample T-test. Table 5 shows the analysis.

Table 5

Difference: Attitude toward online teaching and Technological competence across gender

Variables		Categories	M	SD	Descript.	Sig.	Interp.
Dependent	Independent						
Attitude toward Online Teaching	Gender	Male	2.43	0.49	Somehow Negative	0.759	Not Significant
		Female	2.45	0.35	Somehow Negative		
Technological Competence		Male	2.44	0.61	Not Competent	0.209	
		Female	2.56	0.52	Competent		

N-162 : Males – 50; Females – 112

The above table presents the analysis determining whether a difference in the attitude toward online teaching and technological competence is statistically significant between the male and female respondents.

For attitude toward online teaching, the data revealed that the females of the study, in general, are manifesting better attitudes in comparison to males. This is suggested by the mean scores for each gender category (mean difference =0.02). However, the difference is not statistically significant as provided by the significance value of 0.759 > than alpha = 0.05. Hence, the null hypothesis is accepted. This means that gender is not a variable influencing difference with respect to attitude toward online teaching. This finding to an extent is contrary to what previous researchers have found that gender attitudinal difference exists with respect to attitude in the use of technology (Cai, et al., 2017). One reason pointed out for the determined difference was that females were less interested in computers than males resulting in a ‘lesser’ attitude.

It is remarked that gender in this study is found to have a neutral effect on the attitude toward online teaching. Both male and female respondents manifested the attitude described as

‘somehow negative’. It is supposed that in the case of this sample group both perceived the preparation and managing online class daunting. It must be mentioned that these teachers are also exposed to similar experience in terms of slow internet connection. Thus, the similarity of experiences led respondents to regard and evaluate similarly online teaching.

For the variable technological competence, the data disclosed that the females reported to be more competent than males as the mean score of the females is greater than the mean score of the males (mean difference = 0.12). Thus, the males’ reported to be ‘not competent’ while the females claimed to be ‘competent’. In relation to this, previously conducted studies have unveiled differing results from the findings of this study. Shahaani (1993) concluded that females have equal competence with males while Yücel, and Koçak (2010) identified males to have higher technological competence.

However, it must be noticed that the identified difference is not statistically significant (sig. = 0.209 > α = 0.05). This implies that the males and females of the study do not significantly differ in terms of their technological competence. Thus, gender is not a factor influencing significant difference in technological competence. The explanation for this relates to the composition of the sample in which genders were not equally represented. As previously discussed, the sample is overwhelmingly composed of females. Therefore, future studies on the same topic should consider this case, and provide an equal sample of respondents across gender categories.

Correlation: Respondents’ Attitude towards Online Teaching and Technological Competence

To determine whether the variables attitude toward online teaching and technological competence significantly correlate, the parametric statistical tool known as Pearson r was employed to treat the data. Table 6 gives that analysis.

Table 6

Significant relationship between attitude toward online teaching and technological competence

Variables	p-value	r-value	Interpretation
Attitude toward Technological Online Teaching competence	0.000*	0.586	Significant/ Moderate Correlation

*Significant at alpha = 0.001(2-tailed)

The above table shows the relationship between the respondents' attitude toward online teaching and technological competence. The data revealed that there is a significant relationship between the variables ($p\text{-value} < \alpha = 0.001$). Thus, the null hypothesis is rejected. This means that technological competence predicts attitude toward online teaching and vice versa. Moreover, the relationship is positive and linear. This means that the respondents who have high technological competence are the ones likely to possess a positive attitude toward online teaching. Conversely, the respondents with low technological competence are the ones likely to be negative toward managing online classes. In addition, the strength of association between variables is medium/ moderate.

This study confirms the claim that when teachers are technologically challenged they are more likely to be 'negative' toward online teaching (Comas-Quinn, 2011). This is because performing digital classes largely depends on teachers' technological skills (Eichelberger, & Leong, 2019). If teachers do not possess the needed skills, they are likely to fail and be frustrated. This is further supported by the investigation of Roman, et al. (2010) in which they found that when teachers were able to improve their technological skills they became more attuned to online teaching. Thus, the result implies that teachers do not only need technical support (Comas-Quinn, 2011), but also be afforded with technological training to enhance their technological competence which would eventually result to enhance online teaching (Bailey, & Card, 2009).

Conclusion

This study on teachers' attitude toward online teaching and their technological competence revealed interesting results. Based on the findings, the study concludes that the attitude toward online teaching of the respondents needs to be enhanced as they are manifesting the kind that is gearing towards being negative. This is noted to be a redflag. In the desire of educational institutions to explore online teaching as viable means in times of pandemic, teachers' attitude toward this modality may act as a hindrance eventually affecting the quality of education delivered online. Another is that the teachers of the study are to an extent adept in using technology; although, their competence remains limited. There is a need to continuously enhance teachers' technological skill as it is now considered to form part of teachers' professional competence (Kubrickýa & Částková, 2015), and a must have especially when online schooling remains as the sole option to take due to the pandemic crisis. On another note, despite finding that females are technologically competent the males, the difference is not statistically significant. Thus, gender has a neutral effect on the technological competence of the

respondents which also holds true as regards their attitude toward online teaching. Finally, the study has clearly determined that there is a significant, linear and positive relationship between the investigated main variables of the study.

Pedagogical Implications

Digital education presents itself as the ‘future’ of schooling. To transition from the traditional to the modern modality is far from being simple. Contrary to popular notion that it is simply an act of digitizing materials used in face to face instruction, it is a brand new thing that would render inappropriate previously learned pedagogies. Therefore, teachers must be trained and coached to allow themselves to reposition and restructure perspective about online teaching, to assess possessed knowledge and skills, and modify educational habits to fit present needs.

In addition, teacher training institutions should incorporate in their curriculum the teaching and developing of competencies need for virtual education. Presently, the teacher education curriculum provides very limited space for the honing of skills that would lead teachers to become efficient online classroom managers.

Finally, the developers of the curriculum should revisit and restructure curricula considering the present case caused by the pandemic. Currently, the curricula used across the country are packaged for face to face instruction. This results in the problem of teachers to transition. Considering latest turn of events, the curriculum must be developed to bear ‘fluid’ characteristics which would allow teachers to convert activities suiting demands of time.

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Appendix A

Attitude toward Online Teaching Tool

Affective Section

Postive Statements

Developing digital contents to be used for online teaching is enjoyable.

Conducting recitation is a pleasurable experience when realized online.

Creating and administering online assessment is exciting to do.

Lecturing using online class platforms is stimulating.

Learning about new applications used in online teaching is interesting.

Negative

Gaining stable internet connection to conduct online classes is frustrating.

Online lecture is disliked as teaching is realized in a discomfort-inducing platform.

Class interaction is detested because of the difficulty in managing it.

Managing class activities in online platforms is hated due to the complexity of skills demanded by it.

Doing online class and having to take videos of one's self while instructing is awkward and non-engaging.

Cognitive Section

Postive Statements

Online Teaching is engaging and stimulating for students.

Online teaching is a viable alternative approach promising educational result better with those of face to face instruction.

Developing digital contents and delivering of quality for online class is possible and doable.

Online class is attractive to students making them engaged and motivated learners.

Online class is convenient for teachers and students as classes could be held anywhere, and no physical classroom is needed.

Negative Statements

Less interaction between learners and teachers and among learners themselves is attained in online teaching.

Online discussion lacks feeling and depersonalized at a great extent as compared to face to face instruction.

Lecturing online is less effective as it appears impersonal resulting in limited learning.
Cheating (e.g. plagiarism) is more likely done by students doing online classes.
Online learning posts financial burden to both teachers and students.

Behavior Section

I develop digital contents even when having face to face classes.
I create online assessments as a means of evaluating students.
I conduct online classes even prior to its being a required approach in school.
I ask my students to submit requirements or output electronically.
I require online presentation of students' reports and activities.
I perform online recitation with my students.
I interact with my class using digital platforms.
I explore applications and online platforms to supplement my teaching practices.
I read and study about new technology and applications that could be used in teaching.
I buy digital devices to be used in doing teaching online.

Appendix B

Teachers' Technological Competence Tool

	Statements	Not Competent	Somehow Competent	Competent	Very Competent
		1	2	3	4
1	Accessing various technological resources and tools (e.g. productivity tool, e-books, content management system etc.).				
2	Organizing and presenting the learning materials in digital format.				
3	Developing assessment through online tools and applications.				
4	Utilizing computers and other digital devices employed in online classes.				
5	Trouble shooting internet connection issues, and device-related troubles.				
6	Employing appropriate multimedia technologies appropriate for learning activities.				
7	Aligning content with pedagogical approaches and appropriate technology.				
8	Using online communication tools.				
9	Designing learning activities considering available technologies.				
10	Using technology to facilitate collaborative creation and peer editing of students work.				