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Techmentoring program: A school-based ICT initiative for teachers

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Abstract

The emergence of computers and their associated technologies has prompted educators to examine and transform their classroom practices to respond to the call for technology integration. Although there have been several ICT training initiatives conducted for teachers, ICT tools are not yet seamlessly integrated into the classrooms. This study aimed to find out the effectiveness of the Techmentoring program as a school-based ICT initiative among non-ICT teachers in basic education. This study utilized a one-group pretest-posttest quantitative research design to determine teachers' attitudes and skills before and after the Techmentoring program along different phases of ICT uses which are familiarization, utilization, integration, reorientation, and evolution. Survey questionnaires are used before and after the implementation of the program. Considering the principles of mentoring, only 23 teachers are selected to be part of the Techmentoring program. The findings of the study revealed a significant difference in teachers' attitudes and skills before and after Techmentoring. Teachers' perceived skills and attitudes in navigating the varied ICT tools have significantly improved, supported by their feedback on the implementation. It further revealed that mentor-supported professional development and not just merely training is an effective strategy in ensuring that teachers will acquire the skills needed for them to effectively integrate ICT tools in the teaching-learning process.

Keywords: ICT initiative, ICT tools, teacher training, Techmentoring, mentoring

Introduction

The emergence of computers and their associated technologies is responsible for transforming the way the world operates today. Powered by these tools, the technological revolution has facilitated greater ease of communication, sharing, collaboration, and access to information and knowledge. The abrupt changes especially in educational institutions experienced globally during the pandemic have cemented the crucial role that these technologies play to

sustain communities. The Digital 2020 reports revealed that 4.5 billion people used the internet in 2020, while social media users reached the 3.8 billion mark (Adam & Metljak, 2022). Of the world's total population, nearly 60% became online (Kemp, 2020). The lockdown caused the acceleration of the adoption of digital technology (Michigan, 2020).

With these changes, integrating ICT into the classrooms is a necessity to support education across the curriculum (Vitanova, et.al.2015). ICT competencies among teachers become an invaluable prerequisite and antecedent in the success of the teaching-learning process. In this connection, there have been several ICT initiatives of countries to empower their educational systems. As early as 2003, UNESCO already noted advanced countries like Australia, South Korea, and Singapore with integrated ICT in the education system even before the Philippines acknowledged the potential that these technologies can offer in schools. Nonetheless, at present, the country is trying to cope with these lost years by coming up with several ICT initiatives and partnering with private companies to provide computers and other technological resources to schools nationwide. At present, the government is very supportive of these initiatives and closely monitors ICT integration in schools. ICT is not only a means of accomplishing educational outcomes but a significant factor in the restructuring of the educational system which includes new pedagogy, new interactive and participatory models, and continuous and lifelong learning (Vitanova, et.al. 2015). This is also in response to Education 4.0 which calls primarily for digitizing processes in the education sector (Alda, et.al 2020).

The Department of Education (DepEd), for instance, has put a premium on the need to integrate information and communications technology (ICT) into all its processes - school computerization, teacher training, IT curriculum development, multimedia content development, financing, and monitoring and evaluation. Meanwhile, the Enhanced Basic Education Information System (EBEIS) of the department provides an online platform for encoding, storing, and reporting all school information, such as enrollment and resource inventories. With these developments, the number of training and seminars for teachers on ICT has increased (Top, et.al., 2021) and the expectation of utilization has also been raised. To address issues on ICT competency, several trainings have already been conducted by the DepEd to capacitate and address the lack of ICT competencies among teachers. Moreover, in 2018 DepEd also launched its program on Digital Rise. This laid down the department's plans for capacitating teachers and providing technical support through seminars and workshops. However, the expected integration of technology in the classrooms may not guarantee success as planned all the time because of some challenges and reasons (Williams, 2017). There have been reported concerns, especially on the ICT implementation from the teachers being the direct implementers of these various classroom-related ICT initiatives.

Some of the barriers to more holistic implementation of ICT identified are lack of access, resistance to change, lack of time, and lack of training and support (Bingimlas, 2009 in Gellerstedt, 2018). Moreover, the lack of infrastructure is a common concern since not all schools are equipped with technological devices and internet connectivity. Teachers' regard of ICT as a teaching tool may also affect their integration. Their negative regard and experience in ICT may hinder the success of technology integration in classroom settings. Another reason may be on technological support they receive from their school administrators. The study by Khanlari (2016) stated that in most cases teachers troubleshoot computer problems on their own which they were not competent enough. These experiences may prompt teachers to stop using ICT if they feel that they are on their own in this endeavor. The trainings provided may not also be enough as these are mostly done in large numbers. Some teachers reported that these mass trainings are provided as one-shot sessions and do not provide one-on-one mentoring, are not discipline-based, and are not according to teachers' level of ICT competence. Williams (2017) purported that preparing teachers who are used to traditional

and non-digital tools is a critical issue. Thus, it is important to accommodate the teachers' ICT context when planning for ICT trainings for them to experience ICT in a positive light. This experience can promote ICT transfer into teachers' contexts (Mishra, et.al., 2019). Thus, there is a need for individualized and need-based training and mentoring.

The high expectations from teachers to be able to integrate technology in their classes calls for more effective training initiatives. Michailidi & Stavrou (2021) pointed out that the traditional "mass" teacher professional development programs and activities are rarely effective because they lack attention to the individual needs of the teacher. Therefore, a program where individual needs are taken into consideration is fundamental if teachers are to make the transition to new ways of teaching (Lai, 2001; McKenzie, 1998 as cited in Ingham, 2008).

With this, the researchers determine if teachers' attitudes, skills, and use of ICT-based resources will change after "Techmentoring". In this context, the researchers facilitate the setup of different e-learning tools or ICT-based materials as resources for the LMS. Teachers are mentored in using these e-learning tools for instruction and management of learning and how to navigate using the learning management system for a specified number of sessions following the Techmentoring implementation plan.

Research objectives

The study aimed to determine the effectiveness of the Techmentoring program among non-ICT teachers as the basis for mentor-supported professional development programs in schools.

Specifically, it ascertained the following:

1. attitude and skills of non-ICT teachers towards ICT-based resources before and after in terms of familiarization; utilization; integration; reorientation; and evolution; and,
2. the difference in the attitude and skill among non-ICT teachers before and after the Techmentoring;

Theoretical and conceptual background

To fully benefit from the current information era, everyone should be equipped with knowledge and skills related to ICT. Teachers and administrators should consider the fact that technology in education may and can contribute to educational goals.

This study is anchored on the Mentoring Theory of Ragins and Scandura (1999) who stated that mentors are "influential individuals with advanced experience and knowledge who are committed to providing upward mobility and support to their protégé's careers." On the other hand, one kind of Mentoring is Goal-Oriented Mentoring which is defined as *a* form of mentoring that centers on specific goals with a shorter time window and results-oriented framework. This is adopted in this study since the focus is on providing support to non-ICT teachers using digital learning tools.

Considering the bulk of work basic education teachers have, they rarely have the opportunity to sit down with a colleague and share their teaching expertise. In an institution wherein many skilled teachers have mastered their domain knowledge, it is essential that this knowledge is shared and not restricted to just one person. The environment or the workplace becomes healthier if everyone in it supports the professional development of each other by filling in the weaknesses of one another.

According to Ragins and Scadura (1999), mentors are "influential individuals with advanced experience and knowledge who are committed to providing upward mobility and support to their protégés' careers." A mentor shares his/her knowledge about a particular

domain in which the mentor has expertise. This expertise comes with experience and is more of a practical on-job training process. Mentoring is regarded as one such system to facilitate professional learning and thus create change (Nicholls, 2012).

Today, "the role of mentor has evolved to become more of a facilitator of the learning rather than the provider of knowledge. Both mentor and mentee benefit from the relationship" Ingham (2008). The type of mentoring one is engaged in has also been identified according to different contexts. "Academic mentoring characterizes the apprentice model of education where a teacher imparts knowledge, provides support, and offers guidance to a student protégé on academic (e.g., classroom performance) as well as non-academic (e.g., personal problems, identity issues) issues" (Jacobi, 1991 as cited in Sanchez-Garcia, et al., 2013).

This understanding of mentoring has much in common with concepts such as coaching or counseling, which imply seniority on behalf of the "helper". Contemporary definitions of mentoring, however, place more focus on providing support, building self-confidence, and competencies, and improving working relationships. Several papers describe ICT mentoring in higher education (for instance, Franklin, et., al. 2001), while a smaller number report on mentoring as a form of ICT professional development in schools (Chuang, Thompson & Schmidt, 2003). Regardless of the context, mentoring in ICT is likely to be different from traditional mentoring models since within computer contexts; it is not uncommon for a younger or more junior person to mentor an older and more experienced professional. Mentoring also has the potential to provide a whole-school framework for ICT professional development; one consistent with experiential learning and the development of a learning organization. With a plethora of definitions according to varied contexts, in this study, mentoring in ICT may afford a different perspective on how one acquires understanding and skills compared to the traditional way of providing ICT training.

Moreover, since ICT training is skill-based, experiential learning is essential. As the mentee understands the technicalities of the technology, he or she should also experience the technology and use it firsthand. "Prior research has shown that one-shot workshops without ongoing individual technology support often fail to meet the specific needs of most educators; instead, one-on-one technology mentoring models show promising results" (Chuang, Thompson & Schmidt, 2003 in Jamissen, et al., 2006).

Further, academic mentoring facilitates the overall personal and professional growth of the protégé (Austin, 2002). In the academe, a mentor may be identified based on his area of expertise and may or may not come from the same institution as the protege. Mentoring partnerships are described as collaborative endeavors and sharing of knowledge and skills and "as the learning partnership evolves, the mentoring partners share the accountability and responsibility for achieving a mentee's learning goals" (Zachary 2000). McKenna (2005) believes that "mentor training should never be a one-shot in-service. It should be an ongoing process of instruction, interaction, sharing, support, and reflection". As suggested, the mentees/participants of a mentoring training program "need considerable support, guidance and, time to progress in developing their role in mentoring" (Wai-Ling Packard 2003, as cited in Ingham, 2008). When designed and implemented effectively, researchers have pointed out that mentoring programs can promote positive outcomes for proteges. "Mentoring is often discussed as a means to increase desirable behavior (e.g., academic performance, job performance) and decrease undesirable behavior" (Munro, 2009). May literature also claimed that mentoring has a positive effect on mentees' attitudes.

Moreover, since the study uses educational technology as the core of the Techmentoring program, this study also utilizes the theory of the Technology Adoption Model. According to Hooper and Rieber (1995), this theory states that the full potential of any educational technology can only be realized when educators progress through different steps or phases. As mentioned by the two, these phases are as follows: Familiarization, Utilization,

Integration, Reorientation, and Evolution. It is only through following these steps that the full potential of any educational technology can be realized and not be misused or discarded.

On the other hand, Techmentoring is the strategy or the support highlighted in this study. It is a process by which the techmentor, the teacher recognized to be an ICT expert or someone whose professional experience is in educational technology, provides support to the techmentee or teachers who are not graduates of any ICT-related courses or those not teaching ICT-related subjects. The researchers followed these steps or phases in implementing the Techmentoring Program based on the TAM Model by Hooper and Rieber.

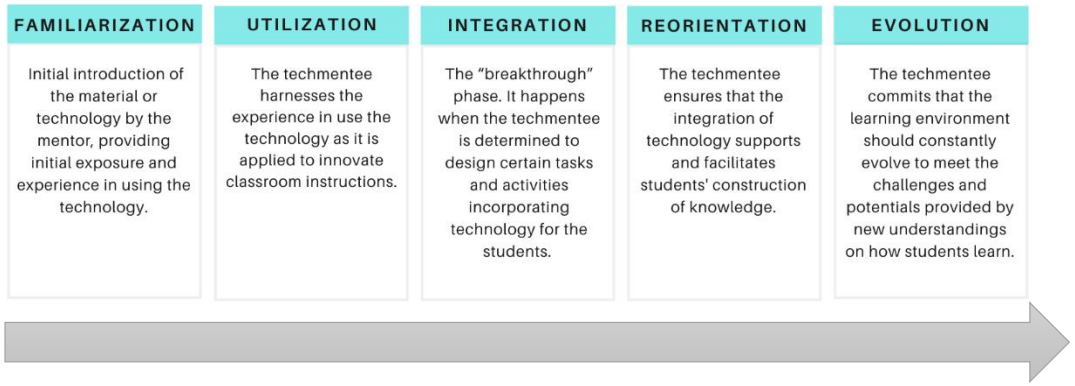

Figure 1. Technology Adoption Model by Hooper and Rieber (1995) as applied in the Techmentoring program

Familiarization

The teacher/techmentee simply becomes acquainted with the technology, which may provoke interest. The techmentor and techmentee discuss further the initial experience encountered. It is expected that at the end of this phase, there is an increase in enthusiasm and interest on the part of the techmentee. A spark to use or innovate the technology or material may be expected as well.

Utilization

The techmentor in this phase monitors if the techmentee has used certain features of ICT tools which can be seen through students' activities. An example is when a teacher asks the students to have a short story written, typed, and uploaded for checking. The teacher/techmentee uses applications to simulate the solving of mathematical equations. This is enough evidence that a techmentee has progressed beyond the familiarization phase.

Integration

In this phase. the techmentor assists and monitors the techmentee's use of technology. The techmentor makes sure that the teacher/techmentee can utilize the materials/technology as intended and as indicated in his/her lesson design. This is exemplified when a teacher finds it difficult to function without the technology, like how he/she also finds it extremely difficult to teach without a chalkboard. This on the other hand may look like the end of the

Techmentoring program to some, but, it is just actually the start of the teacher's or techmentee's understanding of educational technology.

Reorientation

In the reorientation, the teacher or techmentee must reconsider and conceptualize the center of the learning process – the learner. The role of the techmentor is to ensure that the techmentee has acknowledged that his/her classroom should cater to students' needs and interests. The techmentor provides support to the techmentee so that integration of LMS in classroom activities and tasks becomes easy and natural for the techmentee.

Evolution

Evolution serves as a reminder that the educational system must continue to evolve and adapt to remain effective in the final phase, Evolution. In this stage, the techmentor provides assurance of support whenever the techmentee integrates LMS in his/her classroom. The techmentor also encourages the techmentee to innovate and continuously adopt and adapt to the changing needs of his/her students. In this phase, the techmentor helps the techmentee craft action plans on addressing the changing needs of the students. A list of LMS activities as well as varied resources will also be provided to the techmentee to ensure that even if the entire Techmentoring program has concluded, the teacher still manages to integrate ICT-based resources that will adopt and answer the changing needs and interests of the students.

Consequently, Sanchez et al. (2013) suggested that "the effective use of ICT would depend on in-practice mentoring (i.e., guided practice) and peer collaboration that responds to specific real situations and not just grounded in general non-contextualized teaching." If a program like "Techmentoring" will be implemented effectively and efficiently, favorable outcomes for the administrators, teachers, and students may be expected. Lastly, the teachers' attitudes and skills before and after the Techmentoring program will also be determined. This will establish if there is indeed a change of attitudes and skills among these teachers after the program.

Research methodology

Research design

This study utilized the one-group pretest-posttest design in determining teachers' attitudes and skills before and after the Techmentoring program using a questionnaire. Data from these were quantitatively analyzed. Moreover, the researchers deduced teachers' feedback during the implementation of the program to support the quantitative results.

Research participants

This study was conducted in one basic education institution in Cebu City, Region 7. Considering the principles of mentoring, only a small group of teachers are selected. Complete enumeration or total population sampling was used catering to all twenty-three teachers in the aforementioned school who met the following criteria and who showed interest to be part of the program. These teachers met the inclusion criteria which include: teacher-participants are all non-ICT teachers; they are not a graduate of any computer-related courses and have not taught any ICT subjects; have agreed to be mentored one-on-one and have approved to journey with the mentor from the start to finish.

Research instruments

This study used a researcher-made questionnaire that was subjected to validation. The Likert Scale questionnaire is divided into five sections with 35 questions each. This instrument determines the skills and attitude of the teachers on the use of ICT-based resources along different phases: familiarization, utilization, integration, reorientation, and evolution. It is a Likert Scale questionnaire with options Strongly Agree, Agree, Slightly Disagree, and Disagree.

Data gathering procedure

For the study to materialize, approval and permissions were sought from various offices like the research ethics committee, the school's division superintendent, the school head, and the teacher-participants. An ethics clearance has been sought before the conduct of the study. The researchers have adhered to the ethical principles of confidentiality, anonymity, non-maleficence, and beneficence throughout the conduct of the study. The researchers explained the nature of the study and the steps to be followed in the Techmentoring sessions. After the participants' consent was signed, an orientation was conducted to provide clear expectations for the entirety of the Techmentoring program. After all, teacher-participants agreed, and after consent was signed, the questionnaires were provided before (and after) the program implementation. After, the schedule of the Techmentoring was given to the teacher-participants. Once they agreed to the schedule, the researchers then conducted the 2-month Techmentoring sessions following the Techmentoring implementation plan that the researchers have crafted. After two months of implementation, the respondents were then made to answer the survey questionnaire. The researchers interviewed some of the respondents and asked them about their experiences during the Techmentoring program. The data gathered were then subjected to statistical treatment and analysis. The weighted mean for each phase of the techmentoring process on teachers' skills has been computed and interpreted based on the following ranges and descriptions:

Ranges	*Description*			
1.00 – 1.74	Not Skillful	2.50-		3.24
Skillful				
1.75 – 2.49	Less Skillful	3.25	–	4.00
Highly Skillful				

Meanwhile, teachers' attitude as reflected per techmentoring phase has been interpreted based on the mean score with the following ranges and description below:

Ranges	*Description*	
1.00 – 1.74	Not Agreeable	2.50 – 3.24
Agreeable		
1.75 – 2.49	Less Agreeable	3.25 – 4.00
Highly Agreeable		

Results and discussion

Attitude and skills of teachers before the Techmentoring program

The attitude and skills of teachers toward ICT -based resources before the Techmentoring are presented in Table 1 and Table 2. Table 1 presents the perceived skills of teachers in terms of

familiarization; utilization; integration; reorientation; and evolution of ICT-based resources before the Techmentoring program.

Table 1. The Pre-Test Results of Teachers' Skills, n = 23

Techmentoring Process (based on TAM Model)	Mean (Standard Deviation)	Description
Familiarization	1.99 (.47)	Less Skillful
Utilization	2.02 (.57)	Less Skillful
Integration	1.88 (.59)	Less Skillful
Reorientation	2.06 (.63)	Less Skillful
Evolution	2.25 (.60)	Less Skillful
Overall	2.04 (.53)	Less Skillful

Overall, the results revealed that teachers believe that they are not that familiar and are less skillful with the features of the selected ICT-based resources, nor do they have utilized and integrated these in their classrooms. The data is contrary to the expectations of those in the administration that teachers nowadays are already equipped with the digital skills to answer the needs of the time. Even with the several ICT training provided to the teachers, they still are not confident with the use and integration of digital tools, digital software, and LMS-based resources. For teachers to integrate digital technologies into their practice, they need an ever-evolving understanding of which technologies exist and their functionalities. If given varied opportunities and resources, this understanding will turn into something practical we call -skills.

Moreover, the ongoing challenge that teachers also need to face is the rapid evolution and availability of technologies. Teachers are sometimes left wondering which of these tools are helpful and easy to use. They are ultimately left to make decisions regarding which technologies they will incorporate into their classrooms. As the researchers have observed and supported by recent research, teachers have been using the available technologies, but they primarily use presentation technologies like PowerPoint.

It is also observed that most of them were hesitant to continue and join the series of mentoring sessions when he first introduced these tools to them. This observation is also supported by the results of the study of Sanchez et al. (2012) that even though these teachers were sent to several ICT trainings, they have difficulty implementing what they have learned due to the lack of educational resources: lack of specific programs to apply in the subject; scarce institutional support; absence of computer technicians in the school to support teachers; and lack of time in class to use ICT. Likewise, while the researchers recognize the importance of trainings, it only provides a one-time package of support while the initiation of Techmentoring program provides consistent support to the beginning learners.

Moreover, the result implies that teachers need scaffolding and support in acquiring the necessary skills to use these available tools effectively. Support should not only be in the form of additional seminars but the form of mentoring and opportunities for experiential learning. However, although these teachers feel that they lack the technical skills in utilization and integration of these digital tools and LMS-based resources, most of them believe that these tools provide a lot of opportunities for students to learn better.

This belief is reflected in the results presented in Table 2 on the teachers' perceived attitude in terms of the Techmentoring processes.

Table 2. The Pre-Test Results of Teachers' Attitude, n = 23

Techmentoring Process (based on TAM Model)	Mean (Standard Deviation)	Description
Familiarization	2.66 (.44)	Agreeable
Utilization	1.97 (.71)	Less Agreeable
Integration	2.67 (.52)	Agreeable
Reorientation	2.76 (.45)	Agreeable
Evolution	2.84 (.32)	Agreeable
Overall	2.58 (.43)	Agreeable

The data presented in Table 2 confirms that these teachers believed that these digital tools and LMS-based resources could help address learning gaps in their classrooms. They also agreed that these resources provide limitless opportunities for students, thereby, improving educational outcomes. However, it is also worth noting that these teachers were hesitant to use these in their classrooms due to their lack of technical skills. Literature has also highlighted the importance of ICT skills for teachers for greater integration of ICT (Buntat et al., 2010; Paryono and Quito, 2010; Sukri, 2010; Usman and Pascal, 2009). One of the most investigated ICT-related emotions is anxiety, a negative feeling of apprehension toward the application of new technologies in the classroom (Joo et al., 2016).

Despite these, the researchers were hopeful before the implementation since most of the teacher-participants were optimistic that they would eventually learn if they were only mentored and helped. The teachers who participated in this study represented a wide range of opinions and thoughts about integrating technology into the classroom. Most expressed an interest in learning more about technologies. Others reported that they are discouraged from using some technologies due to the lack of resources and time constraints for learning new technologies. Very few were still skeptical about the benefits of using technologies. These few believed that these tools had distracted students more than they helped them.

On the other hand, the range of uses of technologies for these teachers also varies. Even with practices like encoding grades and using Excel, if possible, there were still those who would prefer the calculator and the hardcopy class record. But more consistently, teachers used those technologies that support access like Google for general web searches and dissemination of knowledge using presentation software, such as PowerPoint, and for a few YouTube videos. Very few reported using LMS and other online collaboration tools like Kahoot, Quizziz, Padlet, etc, with comments that reflect a range of reactions, from hesitation to anxiety. Some may claim that they are not familiar with these tools since they were not introduced to them. The following are some of the teachers' comments which show their varied reactions and feelings.

"My hands are shaky whenever I click these buttons." P3
"What if I will click a different button, and everything will be erased." P10
"It's easier and fast just to write it down." P13

This implies that even with the glaring opportunities that these ICT tools provide and even for some who have acknowledged these advantages, they are still hindered by their lack of skills in navigating through these tools. There has been a worldwide discussion about challenges set to teacher education concerning how to help teacher educators in using ICT in teacher education (Ingham, 2008).

Table 3, on the other hand, shows the post-test results of the perceived skills and attitudes among the respondents still along with the Techmentoring processes.

The attitude and skills of non-ICT teachers toward LMS-based resources after the Techmentoring are presented in Table 3 and Table 4.

Table 3. The Post-Test Results of Teachers' Skills, n = 23

Techmentoring Process (based on TAM Model)	Mean (Standard Deviation)	Description
Familiarization	3.30 (.44)	Highly Skillful
Utilization	3.22 (.43)	Skillful
Integration	3.22 (.49)	Skillful
Reorientation	3.26 (.44)	Highly Skillful
Evolution	3.20 (.59)	Skillful
Overall	**3.24 (.46)**	Skillful

Table 3 further revealed that overall, the respondents agreed that after the Techmentoring sessions, teachers now have the basic technical skills to navigate through the various LMS-based resources. In addition, in terms of familiarization and reorientation, teachers strongly agree with the statements that they are familiar now with the features of LMS-based resources and their potential to provide better learning opportunities for students. In terms of reorientation, they strongly agreed as well that a teacher, can create student-centered activities and help students appreciate more the subject through LMS-based resources.

In most cases and as observed by the researcher, resistance can be a result of a lack of confidence or fear of using ICT for learning. Teachers often worry that their knowledge level does not match those of their 'digitally native' students. It is for this reason that before the technmentoring, teachers perceived the training as tedious and a repetition of the previous trainings they have attended. Comments like,

> *"We were already trained on that before and it's still the same." P4*
> *"I still have so many things to do and learning how to use technology is the least priority." P8*
> *"We've done this before. What makes these sessions different?"P14*

This distracts from one of the main advantages of ICT skills for educators: being able to facilitate lessons more effectively using digital technologies. The solution to many of these issues is just as traditional as the problems: teacher mentoring and not just mere training. The mentoring helped them focus on their own individual skills shortage with our reference to that of their peers. Since mentoring is done on a one-on-one basis, their needs were specifically addressed.

Moreover, training in ICT needs to be recognized as essential for teaching and as an enabler of other teaching and learning practices. One training is not sufficient, schools need to invest in and implement long-term ongoing training and mentoring and continuous professional development to keep up with rapidly evolving digital technologies.

On the other hand, the data from Table 4 below indicated that the change in perceived skills is also observed in the post-test results of teachers' perceived attitude toward LMS-based resources along the Techmentoring processes after the Techmentoring program.

Table 4. The Post-Test Results of Teachers' Attitude, n = 23

Techmentoring Process (based on TAM Model)	Mean (Standard Deviation)	Description
Familiarization	3.66 (.44)	Highly Agreeable
Utilization	2.96 (.58)	Agreeable
Integration	3.71 (.42)	Highly Agreeable
Reorientation	3.67 (.43)	Highly Agreeable
Evolution	3.32 (.45)	Highly Agreeable
Overall	**3.46 (.41)**	Highly Agreeable

The results in Table 4 revealed that after the Techmentoring program, teachers strongly agreed and firmly believed in the countless possibilities that they can explore using ICT-based resources. They think that after the Techmentoring program, they can provide a more supportive environment for their students.

There have also been conversations and questions about teachers being replaced by digital technology. Teachers would also unanimously agree that the answer is "No." Digital technology can never be the teacher of the future, but it will be the teacher's assistant, playing a supportive role that can positively impact learning outcomes. Teachers need to understand that a positive, proactive relationship with technology can help them and their learners. To achieve these outcomes, however, teachers need to expand and maintain their knowledge of learning technologies and develop their ability to critically assess digital learning tools to identify those that offer the most significant benefit to their students. The study's findings also support that the teachers indeed believed that the use of ICT in the classroom helps explain complex concepts so students can understand those concepts, thus improving better educational outcomes easily.

Differences in the attitude and skills among teachers

Table 5 and Table 6 below show the comparative analysis of the pre and post-test results of the attitude and skills of teachers in terms of familiarization; utilization; integration; reorientation; and evolution of ICT-based resources before and after the Techmentoring program.

Table 5: The Comparative Analysis of the Pre and Post-Test Results of the Teachers' Skills, n = 23

Techmentoring Process (based on TAM Model)	Pre Test	Post Test	Test Statistic (P-Value)	Description
Familiarization	1.99 (0.47)	3.30 (.44)	15.04** (0.000)	Significant at .05
Utilization	2.02 (0.57)	3.22 (.43)	13.36** (0.000)	Significant at .05
Integration	1.88 (0.59)	3.22 (.49)	12.21** (0.000)	Significant at .05
Reorientation	2.06 (0.63)	3.26 (.44)	12.79** (0.000)	Significant at .05
Evolution	2.25 (0.60)	3.20 (.59)	15.32** (0.000)	Significant at .05
Overall	2.04 (0.53)	3.24 (.46)	16.37** (0.000)	Significant at .05

**Values reported as Mean (Standard Deviation), ** Significant at 0.05*

It further shows a significant difference in teachers' perceived skills before the Techmentoring program and after. From "less skillful" in the pre-implementation to "Skillful" in the post-implementation.

These results can be attributed to the fact that input and training were conducted. However, the results also imply the need to acquire skills to move from "Agree" to "Strongly Agree." Ingham (2008), in his study, claimed that "in many countries, the development of mainstream initial teacher education has been slowed down by inadequate ICT skills of teacher educators." The study of Meisaloa et al. (2009) revealed that the motivation of teacher educators to use information and communication technologies (ICT) in their teaching and guiding student teachers to use different technologies was high. They hope for more collaboration and cooperation among the administration and colleagues. It was also observed that teachers were very eager to learn; however, most of them did not have the necessary technical knowledge to navigate the different resources. The techmentor has to guide each in manipulating the materials introduced. Research found that the individual professional development of teachers in an ICT context where they participate in an ongoing mentoring program was effective (Epper & Bates, 2001; Judge & O'Bannon, 2008 as cited in Ingham, 2008). The TPACK model by Mishra and Koehler (2006) describes the competencies needed for teachers of today. This includes three dimensions: technological knowledge, pedagogical knowledge, and content knowledge.

Side by side with teachers' skills is their attitude toward ICT and the Techmentoring sessions in general. The teachers' "hesitations" during the orientation of the training were replaced with "excitement" and "hope" that technology integration and utilization is not complex if they are assisted in their journey.

Table 6 below shows the significant change in the teachers' attitudes toward ICT and integration.

Table 6. The Comparative Analysis of the Pre and Post-Test Results of the Teachers' Attitude, n = 23

Techmentoring Process (based on TAM Model)	Pre Test	Post Test	Test Statistic (P-Value)	Description
Familiarization	2.66 (.44)	3.66 (.44)	15.87** (0.000)	Significant at .05
Utilization	1.97 (.71)	2.96 (.58)	9.49** (0.000)	Significant at .05
Integration	2.67 (.52)	3.71 (.42)	17.17** (0.000)	Significant at .05
Reorientation	2.76 (.45)	3.67 (.43)	15.14** (0.000)	Significant at .05
Evolution	2.84 (.32)	3.32 (.45)	5.08** (0.000)	Significant at .05
Overall	**2.58 (.43)**	**3.46 (.41)**	18.27** (0.000)	Significant at .05

** Values reported as Mean (Standard Deviation), ** Significant at 0.05*

On the other hand, Table 6 above further shows an essential manifestation that our teachers are indeed very willing and positive to undergo specific trainings primarily if they work according to their pace and with a mentor at the side. From "Slightly Disagree" and "Agree" to "Strongly Agree" in terms of their attitudes toward technology. This is also observed by the techmentor every time he goes from one teacher to another. Having a mentor helps them be comfortable and confident in what they are doing, especially when their specific needs and difficulties are addressed. They were not also hesitant in raising their concerns since they work at their own pace. It is also suggested that the student participants in a mentoring training program "need considerable support, guidance and, time to progress in developing their role in mentoring" (Wai-Ling Packard 2003, as cited in Ingham, 2008).

Even though the teachers still have difficulty navigating through the different ICT tools, they are very willing to undergo several trainings. They are open to varied possibilities and opportunities that these technological tools will bring. They are very much willing to learn and undergo mentorship. Their attitudes toward these will help them not feel pressured and stressed out as new tools are introduced. A positive outlook on the changes happening now will be helpful as teachers go through the technicalities of learning these new technological tools. Consequently, Sanchez et al. (2013) suggested that "the effective use of ICT would depend on in-practice mentoring (i.e., guided practice) and peer collaboration that responds to specific real situations and not just be grounded in general non-contextualized teaching."

The results of this study imply that given teachers' positive attitude toward mentoring, the call of the Department of Education for ICT integration has all chances to be successful because the main facilitators of this process see the necessity to promote and integrate ICT in education. As already mentioned in this study, technical problems caused teachers' negative attitudes toward technology integration. Further, if adequately addressed through strengthened continuing professional development programs, mentoring programs, and technology integration initiatives, the school has a significant likelihood of success.

Conclusion and recommendations

The results of the study have highlighted the importance of need-based teacher mentoring programs as compared to mass trainings. It provides insights into the practices employed by the techmentor along the different phases of the mentoring process. The Techmentoring program hones technological skills, provides technological support, and creates a positive attitude among teachers. Further, the study revealed that effective mentor-supported professional development can be successful in increasing the integration of technology in any

classroom when the training is relevant and encourages the integration of technology into the curriculum. These findings revealed that a "teacher needs a teacher too" as it extends the mentoring process beyond what mass trainings and induction programs can offer. Further, the researchers purport that intervention strategies should be designed to address the technological needs of the teachers. The results of this program were very positive. It shows the enhancement of teachers' skills and the positive change of attitude about technology integration and utilization. Therefore, the findings from this research have implications for thinking about teacher mentoring programs in different schools. Prior research has also shown that one-shot workshops without ongoing individual technology support often fail to meet the specific needs of most educators; instead, one-on-one technology mentoring models show promising results (Chuang, Thompson & Schmidt, 2003 in Jamissen, et al., 2006).

The department should develop supportive environments that afford teachers an avenue to further master, integrate, and reflect on the new technologies in education. Monitoring and upgrading the school ICT laboratories and technical equipment may also be done as this positively affects the use of ICT among teachers. As technology continues to expand and cause changes in education, the department of education should sustain and strengthen its initiatives in addressing the current technological needs of teachers as these are considered a necessity and prerequisite for lifelong learning

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