

# Development of Techno-Pedagogical Skills among Teacher Educators: The Case of Higher Technical Teachers' Training College of the University of Buea, Cameroon

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## Abstract

The aim of this study was to investigate teachers' perception of techno-pedagogical skills in HTTTC Kumba. It was hypothesized that the perceived usefulness of techno pedagogical skills has no significant effect on teachers' performance in HTTTC Kumba. 42 teachers of HTTTC were sampled by multistage sampling technique and administered a questionnaire. The data were analyzed using frequencies and percentages for descriptive statistics, while the Chi-Square Test was used for testing the hypothesis. The results indicated a significant positive perception of technology among teachers in HTTTC Kumba despite the limitations and non-acceptance of technology demonstrated by some teachers in their responses. It was recommended that the teachers and teachers in training could be encouraged to have a more positive attitude towards the use of technology in their classrooms by providing the right infrastructure and provision for them to get technology-related help when needed.

**Keywords:** techno-pedagogic skills, perception, teacher educator

## Introduction

Integrating emerging technologies into the teaching and learning process entails the instructors taking up new roles, teaching methods and even new approaches for training teachers (Makrakis, 2005). Therefore, this implies that the 21st century teacher needs to be knowledgeable and versed not only on pedagogy but technology. That is, he/she needs to be a techno pedagogue. According to (Palanisamy et al., 2020), Pedagogy means 'Science and the Art of Teaching.' 'Techno' is derived from the Latin word 'Texere,' meaning 'weave or merge. Techno-Pedagogy means tailoring teaching strategies in the learning environment itself. Techno-pedagogy is an important area that determines whether an educational media product is effective or not. In fact, 'pedagogy' means the art of teaching science and 'techno' refers to handmade art, which is derived from Latin (economical or practical). Here, 'techno' is a paradox; it intervenes or crosses such 'pedagogy' with its own. Techno-pedagogy means adopting the tactics of teaching in the realm of learning (Saravanakumar et al., 2020).

Pedagogy is derived from two Greek words, "paid," meaning child and "agogos," meaning lead. So, pedagogy literally means "to lead the child". Thus, pedagogy has been defined as the art and science of teaching children, which indicates teacher-directed instruction. (Knowles, 1984). According to Notify-RSS (2020), Effective pedagogy incorporates an array of teaching strategies that support intellectual engagement because there is no single universal approach that suits all situations. Different strategies used in different combinations with different groupings of students will improve learning outcomes. Some strategies are

better suited to teaching certain skills and fields of knowledge than others. Some strategies are better suited to certain student backgrounds, learning styles and abilities.

According to Kumar (2018), techno-pedagogy is the art and craft of incorporating technology in effectively tailoring teaching-learning experiences. Techno pedagogical skills are very useful in making the teaching-learning process a joyful experience as it would make notable changes in the interaction pattern of teachers. Even though techno pedagogy is a boon in teaching and learning, it is a fact that the fruits of these skills are not properly utilized by the stakeholders. It requires conscious recognition of the mediated learning environment to maximize the ease and clarity in the transmission of information. Acquiring techno-pedagogical proficiency will make teaching and learning a pleasurable exercise as it would lessen the pressure on the teachers and enable the students to plunge deeper into the knowledge acquisition process. Beaudin and Hadden (2004) revealed in their study that techno-pedagogical skills foster the students for further development and attainment of learning outcomes.

Sathiyaraj and Rajasekar (2013) posit that techno-pedagogical competency is the ability and expertise of the teacher to make use of the necessary technology appropriately and effectively in teaching. If a teacher possesses this competency, it is possible for him or her to bring the entire world into the classroom and hence the class would be very interesting to the students, irrespective of the subjects taught. Sathiyaraj and Rajasekar (2013) found in their study that techno-pedagogical expertise needs to be improved to

better equip teachers in this digital era to enable them to face the challenges in the modern classroom.

According to Beaudin and Hadden (2004), techno-pedagogical skills foster the students for further development and attainment of learning outcomes and maintain the context of designing classroom-based resources through the use of ICT by the teachers. Therefore, techno-pedagogy skill is a necessary component of teacher education.

Sathiyaraj and Rajasekar (2013) opined that techno-pedagogical expertise needs to be developed and improved to equip teachers to face the challenges in the modern classroom in this digital era as well as equip the teachers to meet up with the increasing demand for *distance learning*, also called *distance education*, or *e-learning*; characterized by the physical separation of teachers and students during instruction and the use of various technologies to facilitate and maintain student-teacher as well as teacher-student communication.

Higher Technical Teachers' Training College-HTTTC Kumba is a teacher's training college. Teacher Education is to learn to teach and teach to learn (Gloria & Benjamin, 2014). Various studies have emphasized the importance of teachers having knowledge on how to integrate technology into the teaching-learning process. Even though techno pedagogical skills have been found to be very vital to a 21<sup>st</sup>-century teacher educator, the teachers' perception of the usefulness of these techno pedagogical skills will affect how much attention they will pay to it. This, in turn, will affect their development of these techno pedagogical skills as well as their performance.

### Common Techno-Pedagogical Tools

Mwalongo (2011) advanced that there are lots of ICT tools for educational purposes, including the internet, websites hardware like computers, photocopiers, printers and scanners, as well as varying types of software. Kawade (2012) also supported this by stating that teachers equip themselves with hardware devices, including Computers, Photocopying machines, Digital cameras, Scanners, Projectors, Printers, and DVD Players. Higgins and Packard (2004) emphasized that interactive whiteboards, smart boards and multimedia projectors are widely used by school administrators for handling meetings, in-house training for teachers and staff, video conferencing and presentation purpose. These varying techno-pedagogical tools have been classified in this study as communication and collaborative tools and media sharing tools.

### Communication and Collaborative Tools

Westbrook (2012) defined collaborative learning as a pedagogy in which people come together in groups and learn from each other through cooperation. Each student takes responsibility for the learning of other students in their group as well as their own and they help each other to be successful (Gokhale, 1995). Collaborative learning methods involve teamwork among students (García-Valcárcel et al., 2013). Various strategies may be used to help students work together to achieve specific common objectives, which are the responsibility of all members of the group. Collaborative learning is an activity that involves a process where a group of students collaborates to achieve some problem-solving tasks in a more interactive environment (Alavi et al., 1995). McCafferty et al. (2006) asserted that collaborative learning had acquired a new dimension with the widespread use of information and communication technologies. In a teaching environment, collaborative activities are designed to implement new strategies that benefit teaching. Storch (2005) explains that collaborative activities make students more responsible for collaborative writing tasks, especially because they have joint responsibility. Teachers, on their part, have changed their role from knowledge transmitters to information managers. In this technological context, learners should also be proficient in new skills, given the amount of information available in digital format.

Khalil and Ebner (2017) see collaboration among learners as an important crux to learning where participants interact with each other and exchange ideas and share information. Collaborative

learning views knowledge as a social construct that stimulates active social interaction that could stimulate learning as learners work together independently and bring together their results into the final output.

Some communication and collaborative pedagogical tools as highlighted by Banteli et al. (2017), including web conferencing tools, Virtual Learning Environment (VLE), podcasts, discussion forums, virtual social networks, and PowerPoint presentations and tutorial groups media groups. (Şimşek & Arat, 2015) in a study outlined some communication tools used in the teaching and learning process, including computers and the internet, distance learning, special programs, CDs for learning, multimedia projection machines and teleconferences, which to him, enrich learning and teaching environments.

### Media Sharing Tools

Media sharing sites enable users to upload and share their multimedia content (photos, videos and audio) on the web. People can view the files uploaded by others, enrich them with tags, and share their thoughts through comments. Examples of such social media tools are YouTube, Flickr, iTunes and Shutterfly (Faizi et al., 2013). It was also found that men used media sharing sites like YouTube, blogs, social Q & A sites, wiki sites as well as user review sites more frequently than female students (Kim et al., 2014). On the other hand, the students of humanities made more use of media sharing sites than science students. The science as well as engineering students, are less likely than the humanities students to access the media-sharing sites for opinions and news (Kimet et al., 2014).

Some researchers describe media sharing platforms and social media tools as the technologies which are used to facilitate social interactions, make possible collaborations, and enable negotiations across multiple people (Bryer & Zavattaro, 2011). Social media has created the potential to promote a personal learning environment as an educational approach to boost self-regulated learning (Dabbagh & Kitsantas, 2012).

Vaughan (1998) asserted that multimedia in the teaching-learning process had facilitated learners to become easily engaged in their learning effort. The strength of multimedia is its multi-sensory operation and stimulates the several senses of the learners simultaneously. It also helps in mutual interaction and enables the end-users of the application to manage the content and flow of information. These emphases make the need for media sharing technological skills by teachers a very important one.

### Teachers' Perception of Techno-Pedagogy

Sunyani (2015) stated that teachers' perceptions of self-efficacy in using technologies affect their usage of those technologies. Teachers with high confidence in their abilities in using technologies or software are likely to adopt useful teaching-learning devices. Watt (1980) argued that beliefs and attitudes play a fundamental role in the way that teachers deal with technology in the classroom. In other words, dealing effectively with technology relates not only to the knowledge of the capability, limitations, applications, and implications of technology but also to individuals' attitudes and perceptions regarding ICT tools.

Teachers are now able to use computers to demonstrate dynamic processes in real-time such as by providing students with simulations of how gases behave at different temperatures in science classes (Hurwitz, 1999) or by showing videos and movie clips of significant historical events, all of which allow the teacher to provoke deeper thought processes. Cope and Ward (2002) state that more experienced teachers find technology less helpful and they are not eager to use it in their classroom. This is maybe due to the lack of enough preparation on how to properly use it. Some teachers use technology because they are obliged to, mostly because of administrative reasons.

Knezek and Christensen (2002) stated that teachers' attitudes toward ICT are multi-faceted (with at least seven underlying dimensions) and tend to become more positive due to ongoing, needs-based training across attitudinal types. Anxiety tends to be

reduced rather quickly with meaningful exposure to ICT. On the other hand, enthusiasm/acceptance of ICT and belief in the utility of ICT for professional productivity is slower to evolve. It appears that other types of attitudes take longer to change in the time frame of years rather than months (Knezek & Christensen, 2002).

### Objectives

The main objective of this study is to investigate teachers' perception of techno-pedagogical skills in HTTTC Kumba.

### Research Questions

What is the perception of teachers about techno-pedagogical skills in HTTTC Kumba?

### Hypotheses

$H_0$ : Perceived usefulness of techno pedagogical skills has no significant effect on teachers' performance in HTTTC Kumba.

$H_a$ : Perceived usefulness of techno pedagogical skills has a significant effect on teachers' performance in HTTTC Kumba.

### Methodology

According to Kothari (2004), a research design is the arrangement of conditions for the collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. The research design adopted for this study was a descriptive survey design. Since this research has to do with the behaviors and attitudes of teachers toward techno-pedagogy in HTTTC Kumba, thus the researcher's choice of survey design.

### Population of The Study

The Higher Technical Teachers' Training College of the University of Buea in Kumba (HTTTC – Kumba) was created by Presidential Decree No. 2014/090 of March 7, 2014, with a location in Kumba, Meme Division, South West Region. It went operational on May 4, 2015. The teaching and administrative staff of HTTTC Kumba constituted the population for this study.

### Sample

Amin (2005) defines a sample as a group of individuals, objects or events from which data are collected. The sample for this study was 42 respondents drawn from all the teaching and administrative staff of HTTTC Kumba of the college.

### Sampling Technique

According to Amin (2005), there are broadly two sampling approaches, namely probability and non-probability sampling. The probability sampling approach involves selecting a sample in such a way that all the elements in the population have some chance of being selected, while in non-probability, the elements in the population do not have a well-defined chance of being selected.

**Table 1**  
*Teachers' Demographic Characteristics*

Variable	Description	F	%
Gender distribution	Male	25	59.5
	Female	17	40.5
	Total	42	100.0
Age	25-30	1	2.4
	36-40	15	35.7
	41-45	12	28.6
	46-50	7	16.7
	51-55	1	2.4
	Total	42	100
Academic qualification	DIPET/DIPES		
	II	6	14.3
	Masters	14	33.3
	Ph.D	22	52.4
	Total	42	100.0

The multistaged sampling technique was used to get the sample for this study. The multistaged sampling technique is a process of moving from a broad to a narrow sample using a step-by-step process. (Ackoff, 1953). So firstly, purposive sampling was used on all 14 departments of HTTTC Kumba and in the next stage, random sampling was used to get the sample.

### Instrument for Data Collection

The instrument used in the collection of data was a questionnaire. Because many researchers have already investigated the development of techno-pedagogic skills, a suitable instrument, developed by Hanane and Djilali (2015) in a study titled ICT and the development of techno-pedagogical skills among the Algerian University Teachers was chosen and adapted to suit this study. The questionnaire was prepared using the four-point Likert scale (strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). Where SA = 4, A = 3, D = 2, and SD = 1. Items were set which address the research question and these items are positively cued statements relating to the research questions being addressed by the group of items. The respondents were expected to respond to each of the items by placing a bold tick on the respond or Likert option they consider appropriate about what prevails in the college in terms of techno-pedagogy development. The reliability and validity of the instrument was attained by the fact that the instrument to be adapted will be obtained from an already published document.

### Administration of The Instrument

The researchers personally met the respondents and administered the questionnaire. Considering the tight schedule of the lecturers and administrators of HTTTC Kumba, they were given a day or two as the case may be so that they could complete the questionnaire for the researchers to stop by and collect.

### Method of Data Analysis

The data were analyzed using frequencies, percentages, means and standard deviations for descriptive data and inferential statistical techniques were used to test the hypothesis. The result of the hypothesis was computed using the Chi-Square test for independence. Chi-Square was used to test the extent to which the dependent variable (teachers' performance) was influenced and affected by the independent variable (development of techno-pedagogical skills). Chi-Square tests were suitable in this case because the research made use of one sample (teachers of HTTTC Kumba) with common characteristics.

## Results

### Demographic Statistics

Table 1 shows the demographic characteristics of the sampled teachers in HTTTC Kumba. The characteristics examined include gender, age, academic qualifications, academic ranks and number of years of teaching in HTTTC Kumba.

Variable	Description	F	%
Academic rank	Instructor	12	28.6
	Assistant lecturer	20	47.6
	Lecturer	8	19.0
	Associate professor	2	4.8
	Total	42	100.0
Number of years in teaching at HTTTC Kumba	01-05	30	71.4
	06-10	12	28.6

Note. Source: Fieldwork, 2020

From Table 1, it can be observed that the majority, 25 (59.5%) of the 42 teachers randomly sampled in HTTTC Kumba, were males, while the rest, 17 (40.5%), were females. It is a clear depiction of the average higher technical institution in Cameroon which is often dominated by male teachers; hence a random selection is more likely to fall on a male teacher.

Table 1 further reveals that the majority 15 (35.7%) of the 42 sampled teachers were aged between 36-40 year; 12 (28.6%) were aged between 41-45 years; 7 (16.7%) were aged between 46-50 years; 6 (14.3%) were aged between 31-35 years while an equal 1 (2.4%) and 1 (2.4%) were aged between 51-55 years and 25-30 respectively. From Table 1, it can also be observed that the majority, 22 (52.4%) of the respondents, were Ph.D. holders; 14 (33.3%) were holders of master's degrees, while the rest 6 (14.3)

were holders of DIPET/DIPES II. Concerning academic rank, it can be seen that the majority of 20 (47.6%) were Assistant Lecturers; 12 (28.6%) were Instructors; 8 (19.0%) were Lecturers and 2 (4.8%) were Associate Professors. Table 1 further reveals that the majority, 30 (71.4%) of the sampled teachers, have worked in HTTTC Kumba for between 01-05 years and the rest, 12 (28.6%), have worked for between 06-10 years.

Moreover, the research question here was "what is the perception of teachers about techno pedagogical skills in HTTTC Kumba?" posed to examine teachers' perception of techno-pedagogical skills in HTTTC Kumba. The results in Table 2 show the perception of techno-pedagogical skills by the sampled teachers in HTTTC Kumba.

**Table 2**  
*Teachers' Perception of Techno-Pedagogical Skills in HTTTC Kumba*

Variable	Description	F	%	Decision
Technological devices like projectors facilitate lesson presentation	Strongly agree	29	69.0	Agree
	Agree	13	31.0	
	Total	42	100.0	
Techno-pedagogical resources like computers facilitate teaching	Strongly agree	27	64.3	Agree
	Agree	15	35.7	
	Total	42	100.0	
Technology enhances teaching professional development	Strongly agree	26	61.9	Agree
	Agree	13	31.0	
	Disagree	1	2.4	
My techno-pedagogical skills enable me to perform better than other teachers	Strongly disagree	2	4.8	Agree
	Total	42	42.0	
	Strongly agree	18	42.9	
Techno-pedagogical skills facilitate access to instructional resources for teaching	Agree	20	47.6	Agree
	Disagree	3	7.1	
	Total	42	42.0	
Technology-supported teaching makes learning more effective	Strongly disagree	1	2.4	Agree
	Total	42	42.0	
	Strongly agree	27	64.3	
My techno-pedagogical skills positively affect my teaching performance in class	Agree	15	35.7	Agree
	Total	42	100.0	
	Strongly agree	15	35.7	
Technology-supported teaching makes learning more effective	Agree	22	52.4	Agree
	Disagree	2	4.8	
	Total	42	100.0	
My techno-pedagogical skills positively affect my teaching performance in class	Strongly disagree	3	7.1	Agree
	Total	42	100.0	
	Strongly agree	16	38.1	
My techno-pedagogical skills positively affect my teaching performance in class	Agree	18	42.9	Agree
	Disagree	6	14.3	
	Total	42	100.0	

Note. Source: Fieldwork, 2020

Table 2 reveals that the majority, 29 (69.0%), strongly agreed while 13 (31.0%) agreed with the statement that "technological devices like projectors facilitate lesson presentation," and this led to the decision "agree" for that particular item. Concerning the suggestion that "techno-pedagogical resources like computers facilitate teaching," the majority, 27 (64.3%), strongly agreed while the rest, 15 (35.7%), agreed and the overall decision for that item was "agree." Concerning the statement "technology enhances teaching professional development," a total majority of 39 (92.9%) stood for agreeing to options while a total of 3 (7.1%) went in for the disagree options leading to an overall decision "agree" for that statement.

Table 2 further reveals that a total majority of 38 (90.5%) of the sampled teachers agreed while a total of 4 (9.5%) disagreed with the statement "my techno-pedagogical skills enable me to perform better than other teachers," leading to an overall decision "agree" for that item. It can further be observed from the table that all 42 (100%) agreed with the statement that "techno-pedagogical skills facilitate access to instructional resources for teaching."

Table 2 also reveals that from the statement "technology-supported teaching makes learning more effective," a total majority of 37 (88.1%) agreed while a total of 5 (11.9%) disagreed, which led to the overall decision "agree" that statement.

Concerning the last item, "my techno-pedagogical skills positively affect my teaching performance in class," a total majority of 34 (81.0%) agreed while 8 (19.1%) disagreed and that led to the overall decision "agree" for that item. Based on the responses from the sampled teachers in HTTTC Kumba about their perception of techno-pedagogical skills, it can be stated that more than 90% of teachers in HTTTC Kumba have a positive perception of techno-pedagogy as a catalyst for better performance. However, there is an indication that there still exists a certain  $\geq 5\%$  who are yet to believe in technology. From the results, it can be seen as people who perceive techno-pedagogical skills and tools as what

facilitates lesson presentation, facilitates teaching, enhances professional development and enables them to perform in their jobs. These are indications that there is a significant positive perception of technology among teachers in HTTTC Kumba despite the limitations and non-acceptance of technology demonstrated by some teachers in their responses.

**Teachers' Performance**

Table 3 below represents the items that were used to assess the independent variable, which was teachers' performance.

**Table 3**  
*Teachers' Assessment of Their Level of Performance*

Variable	Description	F	%	Decision
My skills in integrating technology into the classroom is	Excellent	4	9.5	Good
	Very good	7	16.7	
	Good	12	28.6	
	Average	15	35.7	
	Poor	4	9.5	
The integration of technology into my lessons improves my performance as a teacher	Total	42	100.0	Agree
	Strongly agree	14	33.3	
	Agree	23	54.8	
	Disagree	2	4.8	
	Strongly disagree	3	7.1	
	Total	42	100.0	

Note. Source: Fieldwork, 2020

Table 3 showed that out of the respondents for this study, most of them, 15 (35.7%), had average skills in techno-pedagogy while the least of them had either excellent (4/9.5%) or poor (4/9.5%) techno pedagogical skills. This thus gave an overall rate of "good" for pedagogic skills of teachers in HTTTC Kumba. Concerning the teachers' perception of the effect of using technology integration on their performance, the majority of the teachers were in accord

(37/88.1%) that integrating technology into their lessons has a positive effect on their performance.

**Verification of Hypothesis**

*H<sub>0</sub>*: Perceived usefulness of technology has no significant effect on teachers' performance in HTTTC Kumba.

*H<sub>a</sub>*: Perceived usefulness of technology has a significant effect on teachers' performance in HTTTC Kumba.

**Table 4**  
*Crosstab of H<sub>0</sub>*

			My skills in using technology for teaching and learning is				Total
			AVG	VG	GD	EX	
Techno-pedagogical skills facilitate access to instructional resources for teaching.	SA	Count	1	23	1	2	27
		Expected count	1.9	19.3	3.2	2.6	27.0
	A	Count	2	7	4	2	15
		Expected count	1.1	10.7	1.8	1.4	15.0
Total	Count	3	30	5	4	42	
	Expected count	3.0	30.0	5.0	4.0	42.0	

Note. AVG = Average; VG = Very good; GD = Good; EX = Excellent; SA = Strongly agree; A = Agree

**Table 5**  
*Chi-Square Tests Results for H<sub>0</sub>*

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.881 <sup>a</sup>	3	.049
Likelihood ratio	7.783	3	.051
Linear-by-Linear association	1.160	1	.281
N of Valid cases	42		

Note. <sup>a</sup>6 cells (75.0%) have an expected count of less than 5. The minimum expected count is 1.07.

The Chi-Square results in Table 5 show the calculated chi-square ( $X^2_{cal}$ ) of 7.881 with a degree of freedom of 3 and a *p*-value of .049. Given the *df* = 3, the tabulated (critical value) is 7.815, assuming a significance level of 0.05. Since the calculated chi-square is greater than the critical value, it is less risky rejecting the null hypothesis. Also, given that *p*-value = .049 is less than  $\alpha = 0.05$ , the researcher can reject the null hypothesis at less than 5% risk. In that light, with 95% confidence, the null hypothesis, which states that "Perceived usefulness of technology has no significant effect on teachers' performance in HTTTC Kumba," is rejected and the

alternative retained. Therefore, the perceived usefulness of technology has a significant effect on teachers' performance in HTTTC Kumba.

**Discussion**

From the objective of this study which was to examine teachers' perception of techno-pedagogical skills in HTTTC Kumba, it was found that teachers in HTTTC Kumba have a positive perception of techno-pedagogy as a catalyst for better performance. However,

there is an indication that there still exists a certain  $\geq 5\%$  who are yet to believe in technology. It can be seen as people who perceive techno-pedagogical skills and tools as what facilitate lesson presentation, facilitates teaching, enhances professional development and enables them to perform in their jobs. The results justify the findings of Lindita and Skenderi (2018), who also found out that about 60% of the teachers surveyed used technology and their classroom and had a positive perception of teaching technology and concluded that teachers believe technology enhances lifelong learning, which is one of the most important aims of learning in general. The findings also align with Leema and Saleem (2017), who stated that techno-pedagogical skills in the present teacher education scenario have to improve upon most of the impeding factors.

These results further indicated a significant positive perception of technology among teachers in HTTTC Kumba despite the limitations and non-acceptance of technology demonstrated by some teachers in their responses. These findings are a contradiction to Sunyani (2015), who saw that teachers have a low self-efficacy perception of their capacity to use technology in the classroom and that as high as 63% of participants accepted that they do not use computers daily for instructional purposes as much as other teaching resources such as books. The following results of the study are enough for the researcher to believe that teachers' perception of techno-pedagogy is fast gaining a positive orientation in technical teacher training institutions like HTTTC Kumba.

### Conclusion

From the results of this study, it is concluded that teachers in HTTTC Kumba have a positive perception of technology, through a certain number of teachers in the college are unwilling to accept technology. They perceive techno-pedagogical skills and tools as what facilitate lesson presentation, facilitate teaching, enhances professional development and enables them to perform in their jobs. Therefore, there is a significant positive perception of techno-pedagogy among teachers in HTTTC Kumba.

### Recommendations

In line with the findings of this study, the following recommendations were made.

#### For Practitioners

In-service training courses on the importance and use of technology in the classroom should be held for the teachers from time to time by the managers of the institution.

The teachers in training, too, can be encouraged to integrate technology into their own future classrooms by providing technological and contextual infrastructure where they can practice. Moreover, the curriculum should be enriched with compulsory courses on how to integrate technology into the classroom.

Provision should also be made for the availability of infrastructures like computer laboratories etc., where the teachers can frequently practice these techno pedagogical skills.

Technology consultation centers should be created where in teachers who are facing some difficulties with integrating technology could be attended to.

#### For Researchers

Further research to this study could be doing a comparative study between other countries which are technologically advanced and our country so that areas of improvement and attention could be pointed out.

Another suggestion could be getting the perception of the teachers in training on the use of technology in their classrooms.

Yet another suggestion could be how the development of techno pedagogical skills in teacher educators could be improved.

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