

Developing ICT Competency Training for Teachers of Marginalized Community Schools and Public Sector Schools of Himalayan Region

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Abstract

Information and Communication Technology (ICT) has the potential to improve education and bridge the digital divide in underserved communities. However, teachers in marginalized community schools and public sector schools of the Himalayan region often face challenges in integrating technology into their teaching and learning due to a lack of ICT competency and access to resources. This paper discusses the importance of ICT competency training for teachers in the Himalayan region, as well as the benefits and potential barriers to implementing such training. Based on quantitative analysis on the best practice and a review of literature, the paper recommends a holistic approach to ICT competency training that considers the needs, motivations, and contexts of teachers, as well as the available resources and infrastructure. The paper concludes with some suggestions for further research and action.

Keywords: ICT Competency, Teacher Training, Digital Literacy, Himalayan Region, Marginalized Community Schools, Public Sector Schools

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Introduction

Information and Communication Technology (ICT) has become an integral part of education, with teachers and students alike relying on it for learning and teaching. However, a lack of ICT competency among instructors in the Himalayan region's public and underprivileged schools prevents the efficient use of ICT in the classroom. This paper aims to discuss the importance of developing ICT competency training for teachers in these schools and provide recommendations for implementing such a program.

The Himalayan region is a diverse and challenging area in terms of geography, culture, and socio-economic development. Many schools in this region, especially those in marginalised communities and the public sector, face numerous challenges in providing quality education to their students. These challenges include a lack of qualified teachers, limited resources and infrastructure, and cultural and linguistic barriers. In recent years, ICT has been seen as a way to overcome some of these challenges and enhance education in the Himalayan region. Thus in this paper we will discuss the current status of teachers' ICT competency and its implications in the region's teaching and learning process.

This study is a result of the field based ICT competency training provided to teachers in marginalized community schools and public sector schools of Helembu and Tibetan Refugee School in the month of March and September 2021. This quantitative study is an effort to understand the need of ICT competency training for teachers of marginalized community schools and public sector schools of Himalayan region. The sections in this paper are organised to get a better understanding of the current status of the study.

The paper is organised as follows: first, it discusses the benefits and potential barriers to implementing ICT competency training for teachers in the Himalayan region. Second, it reviews the literature on ICT competency training for teachers, including the different models and approaches, the components and domains of ICT competency, and the factors that influence the effectiveness of such training. Third, it presents a recommendation for a holistic approach to ICT competency training in the Himalayan region, based on the needs, motivations, and contexts of teachers, as well as the available resources and infrastructure. Finally, it suggests some areas for further research and action.

Purpose of the study

The establishment of ICT competence training for teachers in marginalized community schools and public sector schools in the Himalayan area of Nepal is being studied in order to comprehend the potential and obstacles involved in putting such training programmes into action. It is feasible to pinpoint the particular requirements and resources needed to incorporate technology into the classroom successfully by researching the experiences of instructors and students in the area. The design and execution of ICT competency training programmes that are customized to the unique context of the Himalayan area can be influenced by this knowledge. Additionally, research on how ICT competency training affects student learning outcomes may support policy and decision-making by demonstrating the worth of funding such training programmes.

Benefit and challenges on implementing ICT competency training

The implementation of ICT competency training for teachers in the Himalayan region has the potential to bring a number of benefits to both teachers and students. Some of the benefits of ICT competency training for teachers include:

Enhanced teaching effectiveness: ICT competency training can help teachers to effectively integrate technology into their classrooms, leading to more engaging and interactive teaching methods. This can improve student learning outcomes and support the development of 21st century skills such as problem-solving and critical thinking.

Improved access to educational resources: ICT competency training can provide teachers with access to a wider range of educational materials and resources, including online databases, educational websites, and virtual learning environments. This can help to enhance the quality of education, particularly in underserved and marginalized communities where access to traditional educational resources may be limited.

Increased professional development opportunities: ICT competency training can provide teachers with the opportunity to develop new skills and knowledge, as well as connect with other educators through online professional development opportunities and virtual collaboration.

However, there are also potential barriers to implementing ICT competency training for teachers in the Himalayan region. Some of the challenges that may be faced include:

Lack of infrastructure and resources: Many rural and remote areas in the Himalayan region may lack the necessary infrastructure and resources, such as reliable internet access and computers, to facilitate the effective use of ICT in the classroom.

Teacher readiness and confidence: Some teachers may be hesitant to use technology in the classroom due to a lack of readiness or confidence in using ICT. This may require additional support and resources to help teachers build their confidence and skills.

Ongoing support and maintenance: ICT competency training should not be a one-time event, but rather an ongoing process of professional development and support. This may require resources for ongoing training and support, as well as technical support and maintenance to ensure that technological resources are functioning properly.

Cultural and linguistic considerations: It is important to consider the cultural and linguistic context of the Himalayan region when designing and implementing ICT competency training programs. This may involve adapting training materials and resources to be culturally and linguistically appropriate, as well as providing support for teachers who may not be fluent in the language of instruction.

Significance of the study

The Himalayan region is home to a diverse and marginalized community, many of whom rely on education as a means of social and economic mobility. However, access to quality education remains a challenge, particularly in rural and remote areas. One way to address this

challenge is to invest in the development of ICT competency training for teachers in marginalized community schools and public sector schools.

ICT refers to the use of electronic devices, software, and networks to access, process, and exchange information and knowledge (International Telecommunication Union (ITU), 2020). ICT has the potential to improve access to education, enhance the quality of teaching and learning, and promote equity and inclusivity in underserved communities (Almerich et al., 2016; UNESCO, 2016). However, the effective integration of ICT into education depends on the competency of teachers in using and leveraging technology for teaching and learning (Becta, 2004; Voogt et al., 2016). ICT competency refers to the knowledge, skills, attitudes, and values that enable teachers to use ICT effectively and appropriately in their professional practice (Koehler & Mishra, 2009). Without ICT competency, teachers may not be able to fully exploit the potential of technology to enrich and transform their teaching and learning, and may also face challenges in keeping up with the changing demands and expectations of the digital age (Drent & Meelissen, 2008; Voogt et al., 2016).

Given the importance of ICT competency for teachers in the Himalayan region, this paper aims to review the literature, analyse the quantitative data and best practices on ICT competency training for teachers, and provide recommendations for developing such training in marginalized community schools and public sector schools of the Himalayan region.

Project Execution

The project was executed as a series of complete tasks including physical training session, group sharing and Asynchronous enrollment in Google classroom for further collaboration.

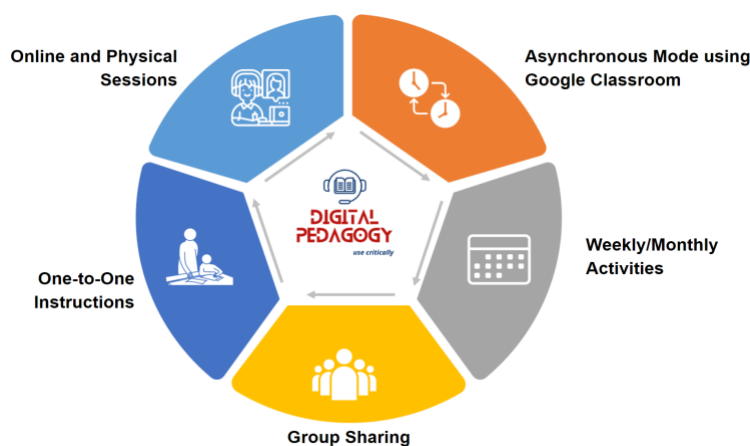


Figure 1: Project execution framework

Theoretical foundation

The theoretical foundation for this study is based on the idea that the use of ICT in education can enhance the quality of learning and teaching, and support the development of 21st-century skills. This concept is supported by research, such as the OECD (2016) report, which found that the effective use of ICT in education can provide access to a wealth of resources, support the personalization of learning, and facilitate the development of critical thinking and problem-solving skills.

Another theoretical foundation for this paper is the importance of teacher ICT competency in enabling the effective use of ICT in the classroom. The UNESCO (n.d.) ICT Competency Framework for Teachers defines ICT competency as the ability to use ICT tools and resources for teaching and learning purposes, including both technical skills and pedagogical skills. Research has shown that positive self-efficacy beliefs, or the belief in one's ability to successfully use ICT in teaching, can increase the extent to which teachers are willing to transfer skills learned during in-service training to the classroom and explore alternative methods of instruction (Bray-Clark & Bates, 2003).

The project was conducted in timeline of:

Task	Start Date	End Date
Preparation	10th Mar 2021	20th Mar 2021
Training	21st Mar 2021	25th Mar 2021
Post training data collection	26th Mar 2021	28th Mar 2021
Post- training data analysis	29th Mar 2021	1st Apr 2021

Table 1: Tibetan Refugee School project timeline

Task	Start Date	End Date
Preparation	15th Sep 2021	24th Sep 2021
Training	25th Sep 2021	27th Sep 2021
Post training data collection	26th Sep 2021	27th Mar 2021
Post- training data analysis	28th Mar 2021	30th Sep 2021

Table 2: Helambu region schools project timelines

Study Approach and Methodology

In the context of this study on the development of ICT competency training for teachers in marginalized community schools and public sector schools in the Himalayan region, possible parameters include:

Geographical scope

The study is focused on the following Study Areas.

Helambu (Himalayan Region)

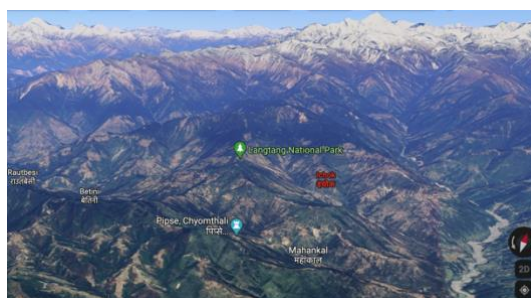


Figure 2: Helambu School Zone

Helambu is a region of highland villages in Nepal, about 80 km from Kathmandu with the population of over 20,000. The location, which is located at an elevation of 1700-2500 meters, attracts visitors from all over the world as a destination for trekking and enjoying nature. However, the economic status of the village remains challenged due to a lack of education and training to improve the livelihood of the people. Aside from the government prioritising health and education in the region, there is a need to raise awareness and financial literacy among locals so that they are aware of available resources and opportunities to improve their lives. Among all the challenges including geography, opportunity, access and availability ICT literacy in Helambu is still in its infancy.

36 teachers from 9 schools participated in the research, which was conducted face to face. The instructors received a 16-hour training session on how to use ICT effectively in the classroom.

Refugee (Tibetan Community Schools)



Figure 3: Tibetan school Zone

Tibetan refugee schools in Nepal situated at the altitude of 700 meters - 3400 meters are educational institutions that have been established to provide education for the Tibetan refugee community in Nepal. In general, these schools face many challenges, such as limited resources, lack of trained teachers, cultural differences, and language barriers. Despite these difficulties, many Tibetan refugee schools in Nepal have made significant efforts to provide quality education to their students, often going above and beyond the minimal standards set by the Nepalese government. They also strive to preserve Tibetan language and culture among the students, which is very important for the Tibetan refugee community. Overall, the education provided by Tibetan refugee schools in Nepal plays a vital role in the lives of the Tibetan refugee community, helping to preserve their culture and language while providing them with the knowledge and skills they need to build a better future.

80 teachers from 5 schools participated in this study, which was conducted face to face. The instructors received a 36-hour training session on how to use ICT effectively in the classroom.

Research method

The quantitative study was conducted in a face to face environment. A pre training survey was conducted to have a better understanding of the current ICT level of teachers. Based on the responses a training program was developed and delivered to meet the need of the participants. On completion post survey was conducted with the participants to evaluate the outcome of the training.



Figure 4: Indoor and outdoor training

Literature Review

Investing in the development of ICT competency among teachers has the potential to enhance the quality of education, particularly in marginalized and underserved communities. According to the UNESCO Institute for Information Technologies in Education (IITE), ICT can facilitate personalized learning, support the development of 21st century skills, and improve teacher effectiveness (UNESCO, n.d.). In the Himalayan region, where access to educational resources and opportunities is often limited, ICT can also provide a means for teachers to access a wider range of educational materials and connect with other educators. However, the implementation of ICT competency training for teachers in the Himalayan region is not without challenges. One major challenge is the lack of infrastructure and resources, such as reliable internet access and computers, in many rural and remote areas. In addition, there may be a lack of teacher readiness and confidence in using ICT in the classroom. It is therefore important to address these challenges in the design and implementation of ICT competency training programs.

The COVID-19 pandemic has led to a need for more in-depth research into various aspects of technology used by the teachers. Thus education and learning has seen a huge digital-shift in the last few years. This paradigm shift in learning after the pandemic has led teachers towards the ultimate need of digitizing, delivering and monitoring the classroom content. Before the pandemic, skills needed towards ICT capabilities of a teacher were less of a priority, mostly in places where geographical and political influences overshadow the agenda. As well, the

pollution of information from the internet has brought more confusion in the mindset of students. Both teachers' digital competence and their competence beliefs related to ICT are important for the successful integration of digital technology in teaching and learning settings (Hobbs, 2017).

A nation's economic growth can occur with increases in economic value generated by its citizens. "New Growth" economic models emphasize the importance of new knowledge, innovation, and the development of human capacity as the sources of sustainable economic growth (UNESCO, n.d.). Studies suggest that positive self efficacy beliefs can increase the extent to which teachers are willing to transfer skills learned during in-service training to the classroom, and can lead teachers to explore alternative and improved methods of instruction (Bray-Clark & Bates, 2003).

The study focuses on different stages of training based on the technological, pedagogical, and content knowledge 'Technological Pedagogical Content Knowledge (TPACK)' framework as proposed by Mishra & Koehler (2006), which was implemented in the projects for rural Nepal. The scope of the projects accomplished involving teachers in the refugee camp and high altitude public schools of rural Nepal will be discussed. Along with the finding of the project which demonstrated that the teachers getting basic training on ICT with high motivation were seen adopting the technology much more quickly. Keeping in mind that the accessibility of broadband internet vs accessibility of hardware act as a nonlinear development dots in rural setup. Further discussion involves various methodology and approaches (e.g. learner centric) implemented in the project towards using the basic ICT tools during the training for the teachers. This approach also supported teachers to develop contents using ICT to identify the right strategy for technology integration toward engaging classroom learning. The overall project successfully concluded with 60 refugee school teachers and 37 public school teacher's participation achieving 100% expected deliverables.

TPACK Model

The TPACK (Technological Pedagogical Content Knowledge) model is a framework for understanding the knowledge and skills that are required for effective teaching with technology. According to the TPACK model, teachers need to have a combination of three types of knowledge in order to effectively integrate technology into their classrooms:

- Technological knowledge
- Pedagogical knowledge
- Content knowledge

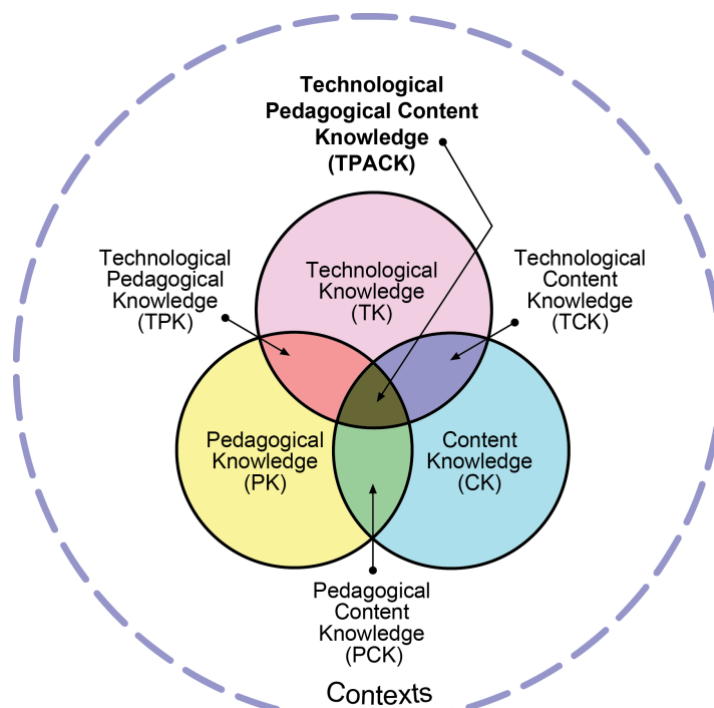


Figure 5: TPACK Model.

The use of ICT in education is becoming increasingly important as technology continues to evolve. There are different levels of ICT integration in education, and these levels are often referred to as the "ICT integration continuum". One such continuum proposed by Majumdar (2013) is:

- 1- Emerging: This level is characterized by becoming aware of ICT, applying productivity tools and purchasing computing infrastructure, literacy and basic skills, typing, and email questions, using presentation software like MS-PowerPoint/Google Slides with Projectors.
- 2- Applying: At this level, teachers learn how to use ICT in subject teaching, enhancing traditional teaching, and using technologies like simulation, virtual science lab, and GeoGebra to facilitate instruction.
- 3- Infusing: This level is characterized by understanding how and when to use ICT, facilitating learning using multi-modal instruction, and using tools such as 4Cs Project work, choices, and support learning approaches.
- 4- Transforming: At this level, teachers are specializing in the use of ICT, creating and managing innovative, open learning spaces and focusing on learner-centered instruction, solving real-world problems not possible in traditional classrooms.

The goal of ICT integration in education is to move towards the higher levels of the continuum as much as possible, which allows educators to take advantage of the full potential of technology to enhance teaching and learning in their classrooms. This four stages of ICT integration for teaching effectiveness involved integration with the curriculum, collaboration between teacher and students, active learning and assessment, and professional development (Majumdar, 2013; Atsoglou & Jimoyiannis, 2012; Mishra & Koehler, 2006).

A meaningful integration of technology in education and refers to the use of technology in a way that enhances and supports the teaching and learning process (Majumdar, 2013). This involves using technology in a way that is relevant and purposeful, rather than simply using it for the sake of using it. Meaningful integration of technology requires that teachers and students have the necessary skills and knowledge to effectively use technology in their teaching and learning activities, and that the technology is used in a way that aligns with the curriculum and educational goals.

Entrepreneurship, Science, Technology, Engineering, Arts, and Mathematics(eSteam) pedagogy is an approach to teaching and learning that integrates entrepreneurship, science, technology, engineering, arts, and mathematics (STEM subjects) in a way that is relevant, meaningful, and engaging for students (Majumdar, 2013). The goal of eSteam pedagogy is to foster the development of 21st century skills, such as problem-solving, critical thinking, and creativity, by providing students with opportunities to apply their knowledge and skills in real-world contexts. eSteam pedagogy may involve the use of technology, such as computers and software, as well as hands-on, experiential learning activities and project-based learning (UNESCO, n.d.). According to the literature that is currently available, such ICT integrated training improves instructors' capacity to effectively implement their teaching methods to meet the demands of 21st-century learners.

Findings

A pre-training survey was conducted among the participants, 36 participants from Helambu based schools and 80 from Tibetan School. Based on this survey, the valid data of 30 participants from each segment of school are being analyzed and it appears that the majority of respondents (20 out of 30) use their camera and video apps on their mobile frequently. Most respondents (10 out of 30) are partially familiar with the hardwares and softwares of a computer, while a smaller number (4 out of 30) are not familiar at all. There is a roughly equal distribution of respondents in terms of internet access, with 19 out of 30 reporting that they have access to the internet on their mobile or computer, 10 out of 30 reporting that they sometimes have access, and 1 out of 30 reporting that they do not have access. Finally, a small number of respondents (8 out of 30) reported that they use their camera and video apps on their mobile, which is not a clear response and may require further clarification.

School	Appointed teachers	Level of education	Years of teaching experience
Helambu	100% - Government Appointment	Bachelors / Masters	11
Tibetan	100% (Government Appointment and funded program included))	High School/ Bachelors	16

Table 3:Teacher appointment status and experience

According to the response received, both schools have instructors who have been selected by the government. Both schools have instructors with a minimum of ten years of teaching experience, from high school to master's degrees.

The following section discusses the pre training survey result using TPACK methodology.

1. Technology knowledge

School	Knowledge of hardware and software	Using applications to learn	Using tools to prepare teaching/ lesson plans
Helambu	27%	11%	77%
Tibetan	42%	42%	27%

Table 4: Technology knowledge and use of technology in classroom

Based on the data collected it is evident that teachers' technological knowledge in the Helambu school, 27% of teachers reported having knowledge of hardware and software, 11% reported using applications to learn, and 77% reported using tools to prepare teaching/lesson plans. In the Tibetan school, 42% of teachers reported having knowledge of hardware and software, 42% reported using applications to learn, and 27% reported using tools to prepare teaching/lesson plans.

2. Pedagogical Knowledge

School	In depth knowledge of Subject /book content delivery	Understands issues in subject matters teaching	Understands student learning
Helambu	Competent	Competent	Competent
Tibetan	Competent	Competent	Competent

Table 5: Pedagogical knowledge

In both Helambu and Tibetan schools, the teachers are described as "competent" in all three areas. This suggests that the teachers in these schools have a strong understanding of the content they are teaching, as well as the issues and challenges that may arise in teaching that content. They also have a good understanding of how students learn, which can help them to design and deliver effective lessons.

3. Content Knowledge

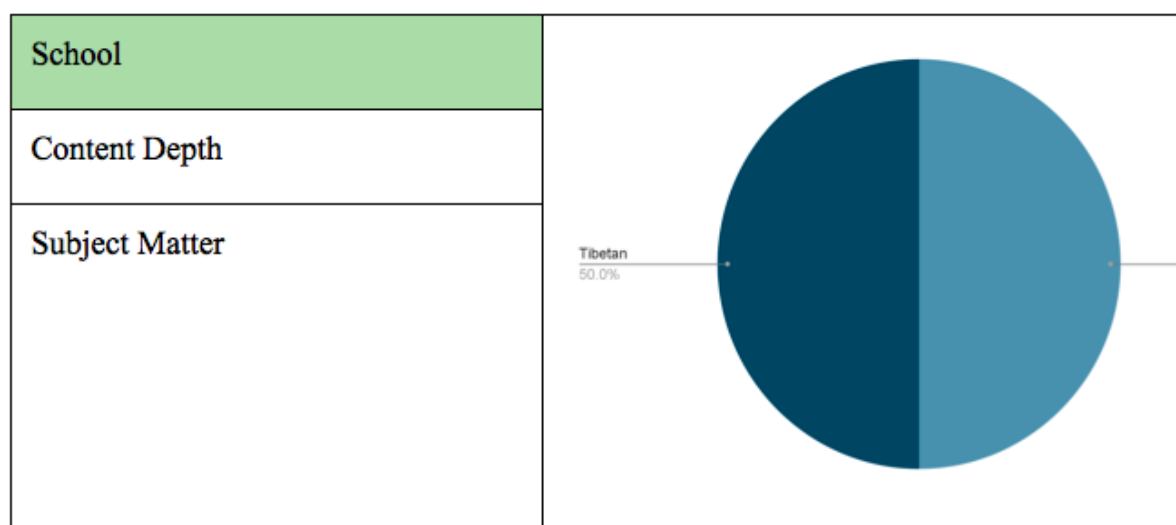


Table 6 : Content knowledge

The data suggests Tibetan and Helambu school perform at 50% in content knowledge, it means that the respondents at these schools are not performing at an optimal level in their understanding and application of the subject matter. It could mean that their scores on tests or assessments in a particular subject, such as science or math, are only averaging 50% and they may lack understanding of the fundamental concepts, principles, and theories of the subject, and may not be able to make connections and analyze information at a deeper level in comparison to other schools or students who perform better. It is important to note that other factors such as access to education, resources, and teaching methods can also affect these performances.

The data collected shows that teachers in the Helambu and Tibetan schools have varying levels of technological knowledge, with 27% and 42% of teachers in the Helambu and Tibetan schools respectively having knowledge of hardware and software. Teachers in both schools are described as "competent" in pedagogical knowledge, having a strong understanding of the content they are teaching, as well as the issues and challenges that may arise in teaching it. However, the data suggests that the teachers in these schools perform at only 50% in content knowledge, indicating that they may lack understanding of the fundamental concepts, principles, and theories of the subject, and may not be able to make connections and analyze information at a deeper level. Other factors such as access to education, resources, and teaching methods may also affect these performances.

Study Outcome

This section compares the results of the pre- and post-surveys to determine the effectiveness of the training program in improving the teachers' ICT skills.

Technology Knowledge

School	Are you comfortable identifying the hardware and software parts of the computer system?	Type of Assessment used	Awareness on cyber security and technology uses
Helambu	87% Said Yes	Classroom based activity task	Adopted by 100%
Tibetan	92% Said Yes	Classroom based activity task	Adopted by 100%

Table7: Technology knowledge

The post survey data suggests that the majority of respondents at both the Helambu and Tibetan schools are comfortable identifying the hardware and software parts of a computer system. The percentage of participants who answered "yes" to the question is 87% in Helambu and 92% in Tibetan school which is a good indication that they have a good understanding about the physical and logical components of a computer system.

It also indicates that the type of assessment used was a classroom-based activity task and it was adopted by 100% of the participants in both Helambu and Tibetan schools. This type of assessment is effective in measuring learners' knowledge and skills because it allows them to apply their understanding in a hands-on and interactive setting.

Additionally, it is reported that both schools have adopted the awareness of cyber security and technology uses, which is a crucial aspect in today's digital age. It is important that participants are aware of the potential risks and how to protect themselves and others from cyber threats and misuse of technology.

It's important to note that this is just a snapshot of a specific number of learners' understanding and it's important to conduct further assessments to ensure a comprehensive understanding of the learners' technology knowledge.

Pedagogical Knowledge

In the context of this study, the pedagogical knowledge is being measured through feasible survey conducted by academic and industrial research group, the survey identifies the teachers' understanding and practices in teaching, it also looked at the strategies they use and the resources they access to support student learning. The survey identified the areas where teachers need additional support or professional development opportunities to improve their pedagogical knowledge and ultimately enhance the students' learning outcomes. Besides pre training resulted in participants being competent in all aspects post training survey identified gaps with the need for additional support in hardware and software accessibility.

Overall the study found that majority of respondents in Helambu and Tibetan schools have a good understanding of the physical and logical components of a computer system and have adopted the awareness of cyber security and technology uses. The study also found that the

pedagogical knowledge of the teachers in these schools need additional support or professional development opportunities to improve their pedagogical knowledge and enhance students' learning outcomes. Additionally, the study suggests that content knowledge remains a crucial area of focus.

Limitation of the study

The overall project is limited with the conclusion with 79+ refugee school teachers and 35+ public school teacher's participation achieving 100% expected deliverables.

Recommendations

In order to effectively develop ICT competency training for teachers in marginalized community schools and public sector schools in the Himalayan region, the following recommendations should be considered:

R1- Identify and address infrastructure and resource barriers: In order to facilitate the effective use of ICT in the classroom, it is important to ensure that teachers have access to reliable internet and appropriate technological resources. This may involve investing in infrastructure development, such as the installation of internet connectivity or the provision of computers, as well as technical support and maintenance.

R2- Focus on teacher readiness and confidence: To ensure the success of ICT competency training programs, it is important to consider the readiness and confidence of teachers in using technology. This may involve providing support and resources for teachers to build their confidence and skills in using ICT, such as online training courses or professional development opportunities.

R3- Provide ongoing support and professional development: ICT competency training should not be a one-time event, but rather an ongoing process of professional development and support. This may involve providing ongoing training and support for teachers to keep up-to-date with the latest technologies and pedagogical approaches, as well as opportunities for collaboration and peer learning.

R4- Incorporate local context and needs: It is important to design ICT competency training programs that are tailored to the specific needs and context of the Himalayan region. This may involve consulting with local educators and community members to identify the specific challenges and opportunities related to the use of ICT in education.

Conclusion

The use of ICT in education has been shown to enhance the quality of learning and teaching, and to support the development of 21st-century skills. However, many teachers, particularly in marginalized and public sector schools in rural areas, lack the necessary ICT competency to effectively use these tools in the classroom. The COVID-19 pandemic has highlighted the need for digital literacy among teachers, and the importance of integrating ICT into teaching and learning practices. The TPACK framework, which focuses on technological, pedagogical, and content knowledge, has been successfully implemented in training programs for teachers in rural Nepal. These programs have shown that teachers who receive basic ICT training with high motivation are able to adopt technology more quickly and

effectively integrate it into their teaching practices. The use of learner-centric approaches has also been found to be effective in supporting teachers to develop content and identify the best strategies for technology integration. Overall, ICT competency training for teachers in marginalized and public sector schools in rural areas can lead to improved learning outcomes for students and the development of sustainable economic growth.

Investing in the development of ICT competency training for teachers in marginalized community schools and public sector schools in the Himalayan region has the potential to enhance the quality of education and support the development of 21st century skills among students. However, it is important to consider and address the challenges and needs of the local context in the design and implementation of ICT competency training programs. It will be interesting to see further projects and studies implemented for teachers widely considering various challenges to achieve education for all.

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Appendix:

1. Pre Training Survey questionnaire

School Name
Teachers Name
Age
Highest Level of Education
Teaching Subject and Grade ?
Type of teaching contract-
Mobile Phone [Teacher Own Mobile phone]
Mobile Phone [Teacher Use Internet from mobile phone]
Mobile Phone [Student/ Parents Own Mobile phone]
Mobile Phone [Student have access to internet at home]
Computer [Does the school has computer]
Computer [Do you use computer at school/home]
Have you ever used ICT/ Multimedia tools like (Projector, Smart Board etc) inclassroom?
Remarks or notes

Question table 1: Pre training preparation survey questions

How often do you use your camera and video apps in your mobile?
Are you familiar with the hardwares and softwares of the computer?
Do you have access to the internet / data packages in your mobile or laptop/ desktop?
If yes, how often do you use the internet?
What do you mostly use the internet for?
Are you familiar with ICT and its practices?
Are you familiar with the offline apps/ Ms Office packages in your mobile?
If yes, have you used it for facilitating your learning and lesson plans?
Have you heard of cyber security or internet ethics?
What do you want to learn in these two days?
Do you know how to use a web browser (Firefox, Chrome or Internet Explorer) to get around the internet?
Do you know how to use a standard word processor such as Microsoft Word, Google Docs, or Pages?

Question table 2: Pre training survey questions

2. Post Training survey questionnaire

Please share one of your best lessons from these session?
Are you comfortable identifying the hardware and software parts of the computer system?
What tools apps do you plan to use for your teaching purposes, mention at least three.
What digital tools do you plan to use for your teaching purpose?
Has the sessions helped you enhance your overall knowledge on ICT?
Would you like to continue with further training on online education, provided there's a stable internet?
Will you practice and share the guidelines of cyber security among your circle?
Has the sessions helped you enhance your overall knowledge on ICT?
Would you like to continue with further training on online education, provided there's a stable internet?
Will you practice and share the guidelines of cyber security among your circle?

Question table 3: Post training survey question

References

- Almerich, G., Orellana, N., Suárez-Rodríguez, J., & Díaz-García, I. (2016). Teachers' information and communication technology competences: A structural approach. *Computers & Education*, 100, 110–125. <https://doi.org/10.1016/j.compedu.2016.05.002>
- Atsoglou, K., & Jimoyiannis, A. (2012). Teachers' Decisions to Use ICT in Classroom Practice: An Investigation Based on Decomposed Theory of Planned Behavior. *International Journal of Digital Literacy and Digital Competence*, 3(2), 20–37. <https://doi.org/10.4018/jdlde.2012040102>
- Becta. (2004). A REVIEW OF THE RESEARCH LITERATURE ON BARRIERS TO THE UPTAKE OF ICT BY TEACHERS. *British Educational Communications and Technology Agency*. https://dera.ioe.ac.uk/1603/1/becta_2004_barrierstouptake_litrev.pdf
- Bray-Clark, N., & Bates, R. (2003). *Self-Efficacy Beliefs and Teacher Effectiveness: Implications for Professional Development*. XXVI(1). <https://files.eric.ed.gov/fulltext/EJ842387.pdf>
- Drent, M., & Meelissen, M. (2008). Which factors obstruct or stimulate teacher educators to use ICT innovatively? *Computers & Education*, 51(1), 187–199. <https://doi.org/10.1016/j.compedu.2007.05.001>
- International Telecommunication Union (ITU). (2020). *Radio Regulations*. <http://handle.itu.int/11.1002/pub/814b0c44-en>
- Mishra, P., & Koehler, M. J. (2006). Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge. *Teachers College Record: The Voice of Scholarship in Education*, 108(6), 1017–1054. <https://doi.org/10.1111/j.1467-9620.2006.00684.x>
- Organisation for Economic Co-operation and Development. (2016). *Innovating Education and Educating for Innovation: The Power of Digital Technologies and Skills*. OECD. <https://doi.org/10.1787/9789264265097-en>
- UNESCO. (n.d.). *UNESCO ICT Competency Framework for Teachers*. <https://www.oercommons.org/hubs/UNESCO#:~:text=The%20UNESCO%20ICT%20Competency%20Framework%20for%20Teachers%20%28ICT-CFT%29,with%20an%20ICT%20in%20Education%20Master%20Plan%20approach>
- UNESCO. (2016). *The Global Information Technology Report 2016: Innovating in the Digital Economy*. World Economic Forum, INSEAD. <https://en.unesco.org/icted/content/global-information-technology-report-2016-innovating-digital-economy>
- Voogt, J. M., Pieters, J. M., & Handelzalts, A. (2016). Teacher collaboration in curriculum design teams: Effects, mechanisms, and conditions. *Educational Research and Evaluation*, 22(3–4), 121–140. <https://doi.org/10.1080/13803611.2016.1247725>

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