Research Article

THE STUDY OF PRIMARY BHUTANESE TEACHERS' PERCEPTIONS AND PRACTICES TOWARD THE USE OF TECHNOLOGY IN TEACHING

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Received: 2022-09-26
Revised: 2022-10-17
Accepted: 2022-10-25

ABSTRACT

This study was to examine the primary Bhutanese teachers' perceptions and practices toward the use of technology in teaching. One hundred and fifteen teachers from 13 primary schools in Tsirang district participated in the study. The survey method was employed to gather the required data. The quantitative data was gathered using survey questionnaires, and the qualitative data was collected using semi-structured online open-ended question interviews. The total analysis score of the studies was 3.7, which was classified as "Agree." Challenges in using ICT in teaching had the lowest mean score of 2.6, indicating that teachers were experiencing a few difficulties. Similarly, the data collected through the semi-structured online open-ended question interviews revealed that teachers' positive attitudes toward incorporating ICT into their daily teaching mattered a lot for the process of lifelong teaching-learning. Therefore, this study recommended that teachers employ interactive ICT tools in their lessons to make their teaching and learning more effective. Further, district-level officials and supervisors should initiate and provide teachers with enough ICT resources and professional development programs on emerging technology.

Keywords: Perceptions, Practices, Technology, Primary Bhutanese Teacher

Introduction

There is a growing need to employ technology in enhancing teaching using information and communication. The chalkboard is being replaced by technology in education. The standard method of educating children all around the world used to be face-to-face teaching in a classroom. However, technology is now heavily incorporated into education. The efficiency of the teachers and the students' academic progress are both directly correlated with the use of technology in the classroom.

According to UNESCO, ICT is integrated into daily life and has a significant impact on education (2015). The potential impact of ICT on teaching and learning is at the center of the debate over ICT in education in many nations. ICT is a tool that is used to promote inclusion by enabling people to access information and knowledge, as well as to make education more relevant and controllable. According to the Ministry of Education of Bhutan (2014), the country's educational practices would change as a result of the usage of ICT in education since it would give people the necessary tools for effective communication.

For instance, using cutting-edge technology in the classroom can increase learning and academic accomplishment (Indrasiene, Dromantiene, & Bielskyte-Simanaviciene, 2015). ICT, then, is a word that describes technology used to electronically transport, process, store, produce, display, share, or exchange data in order to enhance customer service and better communication. Radio, television, video, DVDs, telephones (both fixed and mobile), satellite systems, computer and network hardware, as well as items and services associated with these technologies, such as video conferencing, email, and blogs, are all included in this broad definition of ICT (Alkamel & Chouthaiwale, 2018).

Gyeltshen (2021), conducted a study with 329 middle secondary school teachers in Bhutan and came to the conclusion that using ICT is a key way to encourage innovation. However, it is challenging to include ICT in teaching without a sincere interest from teachers. The digitization of the teaching and learning process in schools is accelerated by teachers. It is up to school administrators to decide whether to integrate ICT into the curriculum

and teaching. However, technological innovation is still lacking due to individual teachers' perceptions and practices.

Primary schools in Bhutan were regarded as the foundational brain development stage for young learners, with fundamental abilities in ICT usage required in their daily classroom teaching and learning process. In reality, the ICT implementation in classroom teaching was minimal, and the researcher could not get access to local research materials to provide concrete justification. Thus, it made the researcher curious to carry out further study to bridge the gap for better performance of the teachers in the usage of ICT tools in teaching in Tsirang, District. Researcher, being noble primary teaching practitioners for the last 19 years, have received ample first-hand experience that the Bhutanese primary teachers in the school are facing difficulties in using ICT tools in their teaching due to many factors. Without a doubt, teachers' usage of ICT in teaching is a recurring problem for many Bhutanese primary teachers, that affect their teaching. Although ICT usage in Bhutanese classroom teaching was introduced in 1980, as of today, Bhutanese scholars have not attempted much to study the usage of ICT in teaching and have limited data for references. Additionally, the researcher, who is a certified elementary level teacher, primarily concentrated on primary teachers, and it is precisely in this context that the researcher aimed to determine the primary Bhutanese teachers' perceptions and practices towards the use of technology in teaching. Thus, the researcher became fascinated by this observation and began looking for novel approaches to narrow the gap. By doing so, the researcher was in a better position to suggest some alternatives and had a clearer understanding of how primary teachers in Bhutan perceived the use of technology in their daily lessons, challenges they encounter in the real world, and how to get the support from the right agency in reskilling teachers in ICT implementation in their daily teaching and creating opportunities for lifelong teaching learning. So, the findings from this study will provide information to administrators and authorities at the district level to provide ICT resources and professional development programs for teachers.

Research Objectives

1. To examine primary Bhutanese teachers' perceptions toward the use of technology in teaching in Tsirang district, Bhutan.

2. To find out the primary Bhutanese teachers' practices towards the use of technology in teaching in Tsirang district, Bhutan.

Significance of the Study

1. It would provide the awareness, abilities readiness and challenges of primary Bhutanese teachers' perceptions and practices toward the use of technology in teaching in Tsirang districts.

2. It would inform the school management and policymakers regarding the need for technical support that is required by the teachers to improve ICT skills of teachers and enhance teaching skills.

Literature Review

The integration of technology into the educational system is a common practice. Technology must be used in regular teaching to make sure that students are ready to compete in a globally competitive market. The general, monastic, and non-formal education sectors make up the current structure of Bhutan's educational system. The most crucial is general education, which has gained widespread acceptance as the official educational unit due to the integration of ICT into teaching. According to Choeda et al. (2016), ICT training should be required for all levels of school teachers because it has a direct impact on the skills of recently graduated teachers, which in turn affects classroom practices all across the nation. In order to improve the quality of education in Bhutan, he suggested that academics at the Royal University of Bhutan (RUB) undergo ICT integration training. In order to satisfy the demands of the 21st-century learning environment. Further, he recommended that ICT skills be developed and taught in teacher preparation programs at colleges. He also urged all teachers to use ICT in their teaching on a regular basis. According to Gyeltshen and Dorji (2020), ICT in Bhutanese education is still viewed as being in the implementation stage, due to a number of limitations. Thus, examining teachers' opinions and usage of ICT in routine teaching was the main focus of this study.

Teachers must be capable of integrating technology into the teaching

and learning processes in order to enhance the learning environment and the academic development of students (Office of Educational Technology, 2016). According to Ertmer (2005), without teachers, the teaching and learning process would not be possible. The way a teacher views the subject matter has a significant impact on how technology is integrated into the learning process. Numerous studies list a number of factors that affect teachers' daily use of technology in their teaching. Regardless of their degree of competence, teachers lack the technical skills and knowledge required to efficiently integrate technology to facilitate teaching and learning.

Anthony, Ghavifekr, Kunjappan, and Ramasamy (2015) found that teachers in the Malaysian state of Melaka faced a number of significant problems, including inadequate accessibility, network connection, technical assistance, lack of adequate training, time constraints, and teacher proficiency. Many studies have identified a variety of factors that affect teachers' use of technology in the classroom. Some of the contributing factors are divergent opinions on the utility of technology, the changing nature of technology, and people's attitudes toward technology (Zhao & Frank, 2003).

Teachers' Perceptions Towards the Use of ICT in Teaching

According to Akram et al.'s (2022), educators have positive attitudes toward integrating technology in the classroom and in learning. They believe that incorporating technology into the classroom enables them to enhance their teaching strategies, provide compelling, participatory learning experiences, and keep students motivated. Those who frequently use technology also engage in more professional development activities and collaborate with their peers than those who don't. Other studies show a connection between teachers' use of technology and their educational principles, such as their philosophies of teaching and learning. If schools wish to change teachers' perceptions, they must develop skilled leaders. Additionally, school administrators should assist certain teachers and staff employees as both office supervisors and personal counselors (Kim, Kim, Lee, Spector, & DeMeester, 2013). Incorporating technology into classrooms along with effective teaching methods can enhance and boost teaching and learning processes, claim Onalan Kurt and Kurt (2020). The nature of education has changed

as a result of technological advancement, and teachers' crucial role in the successful integration of technology into the classroom has grown in importance. According to Dastjerdi (2016), teachers' opinions toward various ICT features, such as the simplicity, usefulness, and effectiveness of using ICT in education, play a significant role in how they use technology. It suggests that teachers who have a more positive outlook on the application of ICT in education have made use of it in their classes. In other words, teachers' use of technology will increase as their perceptions on its use change, and vice versa. The results showed that the use and application of ICT in the classroom are significantly influenced by the availability of ICT in schools, the literacy and informational skills of students and their readiness, and the attitudes of teachers toward using ICT in the teaching-learning process. According to Rwanda (2020), several other developing nations have integrated ICT into their educational systems. In order for every learners to receive the minimum level of education necessary, Rwanda sought to familiarize the general public with the use of ICT. The effectiveness of teacher preparation is determined by a teachers' capacity to integrate ICT into the classroom. Like any other professionals, teacher educators must develop and demonstrate ICT skills if they want to integrate ICT into education effectively (Ministry of Education, Bhutan, 2019). In line with Bariu (2020), ICT infrastructure has the potential to significantly enhance teaching, learning, and evaluation strategies for both teachers and students in a high-quality 21st-century educational system. It is generally understood that educators constantly strive to enhance the ways in which they instruct students, assess student learning, and evaluate themselves.

Teachers Practices Towards the Use of ICT in Teaching

An urge to include ICT in teaching-learning processes inside of classroom practices was evident, according to Ali, Haolader, and Muhammad (2013). Every industry has been affected by ICT. Among the enhancements to the teaching-learning process brought about by ICT are online student registration, instant access to information, a reduction in the workload associated with maintaining hardcopies constantly, networking with resourceful individuals, and e-learning. ICT has become widely used in all aspects of life. ICT is a tool that is used to make

education more relevant and convenient for teachers, as well as to enable citizens to access information and knowledge, which helps to promote inclusiveness. By supplying the necessary platforms for efficient communication, the use of ICT in education would transform the nation's educational processes (Bhutan MoE, 2014). This result is shared by a team of researchers led by Hamilton et al. (2016) Digital technology in the classroom has significantly changed both in elementary education and general education. Digital technology can support creative teaching methods that promote successful knowledge and skill acquisition, especially those that are necessary for today's environment. According to Gebremedhin and Fenta (2015), the availability of resources is one of the most crucial factors when using ICT in teaching and learning.

According to the study's findings, the majority of respondents acknowledged using a laptop and a projector to make their lessons engaging and dynamic for students in the modern classroom. Some of the simple and useful methods they mentioned employing to convey their teachings included Microsoft Word, YouTube, video animation, and PowerPoint presentations. Since Google Classroom is user-friendly and convenient for both teachers and students to create classes and deliver them successfully at any time.

Almost all of the respondents stated that they used it as an online teaching and learning platform. In addition to Google Classroom, the respondents also mentioned using Zoom, Telegram, Messenger, and other social media platforms depending on the accessibility of the students to take online classes.

Conceptual Framework

In this study, there are two variables: an independent variable and a dependent variable. Use of technology was the independent variable, whereas teachers' perceptions and teachers' practices were the dependent variables. Figure 1 below describes the framework of the study.

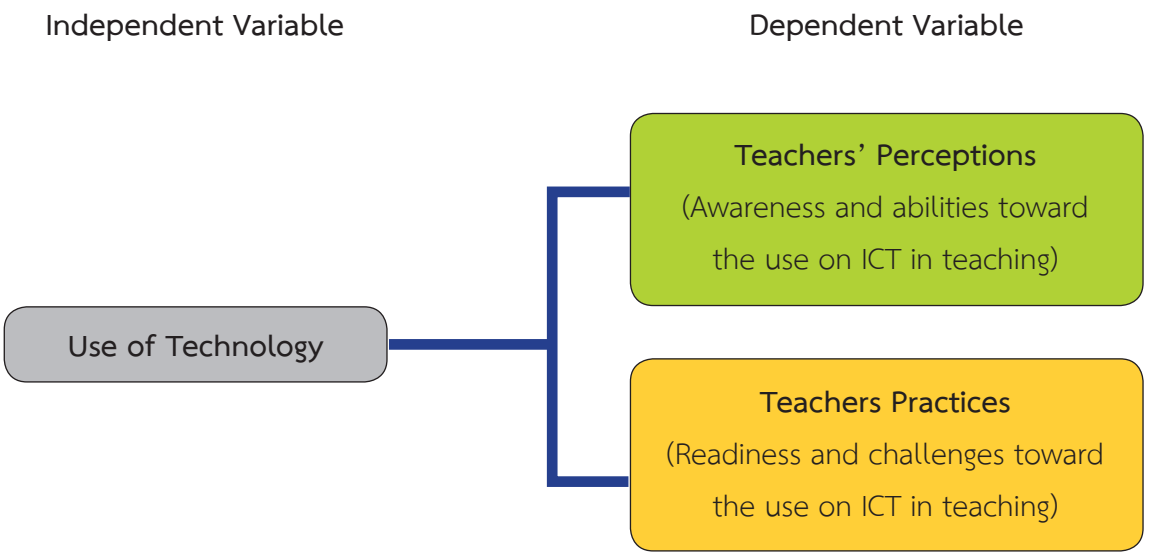


Figure 1 Framework

Methodology

The researcher applied the survey research method to examine the primary Bhutanese teachers' perceptions and practices toward the use of ICT in teaching. Quantitative data was gathered using a survey questionnaire, and qualitative data was gathered using semi-structured online open-ended question interviews. The research design of the study is presented in Figure 2 below.

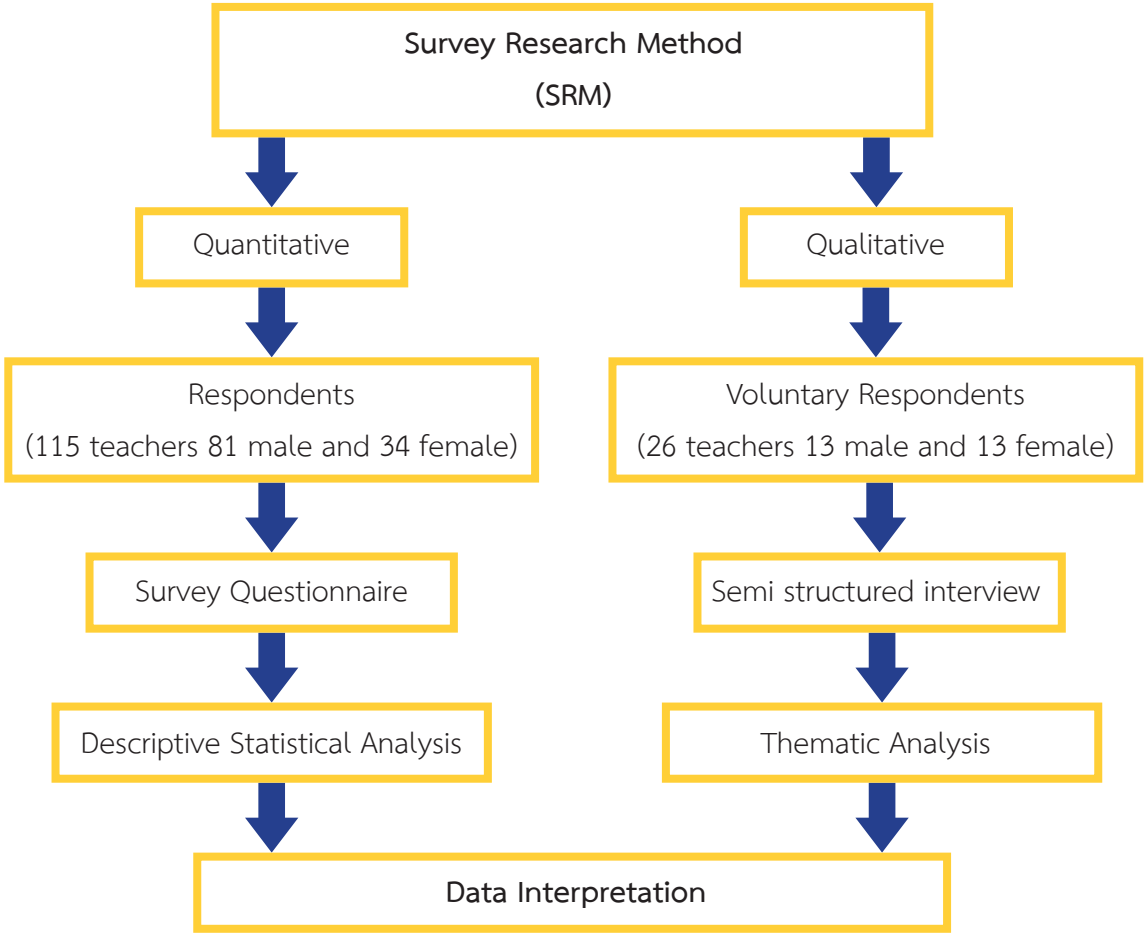


Figure 2 Methodology

A Quantitative and Qualitative Approach

To investigate Bhutanese teachers' perceptions and practices toward the use of technology in teaching, a 5-point Likert scale questionnaire with twenty-three questions was administered by the researcher to gather quantitative data. It was divided into four categories, including nine questions about their awareness on ICT, three questions about their ICT skills; six questions about their readiness to utilize ICT in the classroom; and the other five questions about the challenges they encountered. A total of 115 primary school teachers from 13 primary schools in Tsirang district were the immediate respondents for the quantitative study and 26 volunteer respondents for the qualitative study.

In order to acquire qualitative data for the study and understand more about primary Bhutanese teachers' perceptions and practices toward the use of technology in teaching, semi-structured online open-ended qualitative questions were developed based on the intriguing results from the survey and questions were sent to the individual via individual mail to collect data. A minimum of one male and one female teacher was chosen from each school. The school administrator assisted in the selection of the respondents by using one of the following criteria to select the respondents: Respondent with a high caliber of ICT skill, respondent with a low caliber of ICT skill, respondent having limited ICT resources, respondent having adequate ICT resources, respondent that had rated high in the survey questionnaires, respondent that had rated low in the survey questionnaires, and respondent that had high experiences as a teacher in that particular school.

Validity and Reliability

Three experts verified the validity of the study tools, including a professor from a university in Thailand and two seasoned teachers from Bhutan. Through a thorough examination of subject coverage and relevance, linguistic accuracy and applicability, feedback, and requests for expert opinions, the validity of the questions was ensured. The test was administered online to 30 teachers from different districts in order to assess the reliability of the items after they were validated by three experts. In order to calculate the reliability coefficient, Cronbach's alpha was used. The Cronbach's alpha for the overall questionnaire was 0.07, which clearly indicated that the instruments were reliable for the study.

Data Collection Procedures

The following methods were employed to gather the required information:

1. Proposals for the written approval to conduct the research were solicited from the following agencies: Rangsit University in Thailand, Ministry of Education in Bhutan, Chief District Education officer, Tsirang district, and 13 primary school principals in Tsirang district.

2. With the assistance of the school principals, all the teachers in the schools were informed by emails and phone calls.

3. To collect quantitative data, the researchers conducted an online survey and sent questionnaires to all respondents via their individual email addresses.

4. To gather qualitative information, 26 volunteer teachers were interviewed online with open-ended question interviews.

Conclusion and Discussion

The study's findings demonstrated that primary Bhutanese teachers had favorable opinions on using technology in the classroom. The results showed that the primary teachers in the Tsirang district communicated their personal opinions at a high level about perceptions and practices with the use of ICT in teaching, as indicated by the overall mean score of 3.7. Teachers' ICT ability received the highest score, with a mean of 4.3, followed by their readiness to use ICT in the classroom, with a mean of 3.9 at a high level. Out of the four categories of teachers' views and practices about the use of ICT in teaching, challenges had the lowest mean score of 2.6, indicating that teachers were having some issues despite having a high degree of ICT skills and proficiency. Table 1 provides the detail summary of the study.

Table 1 Summary of the Study

Sl.No.	Opinion Category	Means	SD	Extend of Agreement
1	Teacher awareness on ICT	3.9	0.81	High
2	Teacher ability on ICT	4.3	0.8	Highest
3	Teacher readiness towards the use on ICT	3.9	0.94	High
4	Challenges while using ICT in teaching	2.6	1.8	Moderate
	Average	**3.7**	**1.1**	**High**

The cumulative study of respondents' online open-ended question interviews revealed favorable sentiments about the use of technology in the classroom. The majority of respondents claimed that they believed it was critical to integrate ICT into the classroom because, teaching and learning required technology to be effective in the twenty-first century.

The maximum number of respondents acknowledged using a laptop and a projector to make their teaching engaging and dynamic for students in the 21st-century classroom. Some of the simple and useful methods they mentioned using to convey their lessons were Microsoft Word, PowerPoint presentations, YouTube, and video animation because they were simple to use and convenient for both teachers and students to create lively classes and deliver them successfully at any time. Almost all of the respondents said, they used Google Classroom as an online teaching and learning platform. In addition to Google Classroom, the respondents also mentioned using Zoom, Telegram, Messenger, and other social media platforms depending on the accessibility of the learners to make their teaching and learning more meaningful. Respondents reported that teachers routinely ran behind schedule because they needed to constantly set up the projectors. This was a result of each classroom not having adequate projectors for display. They said that poor internet connectivity and Wi-Fi interfered with their capacity to deliver the lessons. It was fascinating that every subject and class basically demanded stable internet connectivity. At times, they could not deliver their lessons as intended due to poor internet access. These were the few real-world difficulties that primary teachers in Tsirang District faced as they integrated ICT into their regular lessons. Based on the data collected, the overall mean score was 3.7, which revealed that primary teachers in Tsirang district had a positive attitude towards incorporating ICT into their regular lessons. In order to confirm the aforementioned conclusion, Dastjerdi (2016), noted that teachers' perceptions of various ICT features, such as the ease of use, value, and efficacy of using ICT in education, had a big impact on how they used the technology. It demonstrated that educators who viewed the use of ICT in education were more likely to incorporate it into their regular lessons. The findings demonstrated that the availability of ICT in schools, the literacy and informational abilities of teachers, and the attitudes of

teachers toward using ICT in the teaching-learning process had a substantial impact on the use and implementation of ICT in teaching. Additionally, teachers can use interactive ICT technologies in the classroom to engage students and improve teaching and learning.

Along with the great advantages, the interviews also revealed a number of difficulties. The use of ICT in daily teaching was hampered by a lack of ICT resources, such as a projector with a poor Wi-Fi signal and insufficient internet connectivity. This was in parallel to the study carried out by Anthony, Ghavifekr, Kunjappan, and Ramasamy (2015), the usage of ICT tools by teachers, limited accessibility, network connectivity, inadequate technical help, lack of suitable training, time restraints, and teachers' proficiency were also highlighted as comparable perceptions. The results of the study conducted by Choeda et al. (2016) also revealed that the primary problems include a lack of ICT pedagogy training, slow internet, and inconsistent internet service. They came to the conclusion that removing these obstacles will increase teachers' motivation to integrate ICT into their routine teaching.

Suggestions

1. To enhance education for lifelong learning, ICT tools in every subject area need to be supported.

2. To engage students, teachers can use interactive ICT tools in the classroom.

3. To improve services, district-level policymakers and any supervisory authorities must quickly implement additional professional development programs and supply teachers with adequate ICT resources.

Recommendations for future research

This study only included 115 teachers from 13 primary schools in Tsirang district. A comparable study may be conducted with a larger sample size from various regions of the country in order to support and guarantee the credibility of the results drawn from this study.

1. Future studies of this kind may include data from other educational levels in the country, including ECCD, primary, secondary, higher secondary, and college levels.

2. A similar study can also be carried out in subjects like Dzongkha, English, Science, and Social Studies.

3. More research must be done on how parents and students think about using ICT in the classroom.

4. Future studies should be conducted in the form of comparative studies based on the qualifications and teaching experience of teachers.

Onalan Kurt and Kurt (2020) claim that as a result of technological development, the nature of education has changed and that teachers now play a significant role in the successful integration of technology into the classroom.

Thus, the study revealed that the primary teachers in Tsirang district had an appropriate level of ICT proficiency. Teachers were prepared to employ a variety of ICT tools in their daily teaching to enhance their teaching. School administrators should help some teachers integrate technology into classrooms together with efficient teaching approaches that can increase and boost teaching and learning processes, claim Kim, Kim, Lee, Spector, and DeMeester (2013).Therefore, in order to improve the relevance of their teaching-learning and keep up with the evolving learning environment of the twenty-first century, teachers in the Tsirang district urgently needed support and guidance from policymakers, school administrators, and other stakeholders.

REFFERENCES

Akram, H., Aslam, S., Saleem, A. & Parveen, K. (2021). **The challenges of online teaching in COVID-19 pandemic: a case study of public universities in Karachi. Pakistan.** J. Inf. Technol. Educ. Res. 20, 263–282. doi: 10.28945/4784.

Akram, H., Abdelrady, A H., Al-Adwan, A. S. & Ramzan, M. (2022). Teachers' perceptions of technology integration in teaching-learning practices: A systematic review. **Front Psychol, 13**, 920317.

Ali, G., Haolader, F. A., & Muhammad, K. (2013). The Role of ICT to Make Teaching-Learning Effective in Higher Institutions of Learning in Uganda. **International Journal of Innovative Research in Science, Engineering and Technology, 2**(8), 4061-4073

Alkamel, M.A.A. & Chouthaiwale, S.S. (2018). The use of ICT tools in English language teaching and learning: A literature review. **Veda's Journal of English Language and literature, 5**(2), 29-33

Anthony, A., Ghavifekr, S., Kunjappan, T., & Ramasamy,L. (2015). Teaching and Learning with ICT Tools: Issues and Challenges from Teachers' Perceptions. Faculty of Education, University of Malay, Malaysia. **Malaysian Online Journal of Educational Technology, 4**(2), 38-57.

Bariu, T. N. (2020). Status of ICT Infrastructure Used in Teaching and Learning in Secondary Schools in Meru County, Kenya. **European Journal of Interactive Multimedia and Education, 1**(1), e02002. https://doi.org/10.30935/ejimed/8283

Bayram, G. E. (2016). **Teachers' and students' perspectives towards the use of ICT in a Turkish school for pupils with hearing impairment**. University of Warwick https://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.720467

Bentahar, O., & Cameron, R. (2015). Design and implementation of a mixed method research study in project management. **Electronic Journal of Business Research Methods, 13**(1), 3-15.

Choeda, Penjor, T., Dukpa, D., & Zander, P. (2016). The State of Integration of the Virtual Learning Environment and ICT into pedagogy of the Royal University of Bhutan: A descriptive study. **International Journal of Education and Development using information and Communication Technology (IJEDICT), 12**(1), 71-88.

Dastjerdi, N.B. (2016). **Analyzing the Opportunities and Challenges to use of Information and Communication Technology Tools in Teaching-Learning Process.** University of Isfahan, Isfahan, Iran.

Dorji, T. (2021). Integration of ICT in Bhutanese Schools, Common Obstacles, and The Way Forward. **The Druk Journal, 6**(1), 49-54.

Ertmer, P. A. (2005). **Teacher pedagogical beliefs: The final frontier in our quest for technology integration.**

Gebremedhin, M.H., & Fenta, A. A. (2015). **Assessing Teachers' Perception on Integrating ICT in Teaching-Learning Process: The Case of Adwa College. Institute of Geo-Information and Earth Observation Science**. Mekelle University, Mekele, Ethiopia.

Gyeltshen, K., & Dorji, R. (2020). **Higher education in Bhutan policy, current status, And challenges.** Referee Work Entry Higher Education in Bhutan.

Gyeltshen, L. (2012). **Principals' Technology Leadership Behavior and Teachers' Use of Information and Communication Technology (ICT) in Bhutan.**

Hamilton, E. R., Rosenberg, J. M., & Akcaoglu, M. (2016). The substitution augmentation modification redefinition (SAMR) model: A critical review and suggestions for its use. **TechTrends, 60**(5), 433–441.

Indrasiene, V., Dromantiene, L., & Bielskyte-Simanaviciene, E. (2015). Use of information and communication technology in the study process: Teachers' experience. **Social lines Technologijos, 5**(1),7–21.

Kim, C., Kim, M., Lee, C., Spector, J. M., & DeMeester, K. (2013). Teacher beliefs and technology integration. **Teaching and Teacher Education, 28,** 76-85.

Ministry of Education, Bhutan. (2014). **Isherig Education ICT Master Plan 2014-2018, Ministry of Education.**

Ministry of Education, Bhutan. (2019). **Isherig Education ICT Master Plan 2019-2023, Ministry of Education.**

Office of Educational Technology. (2016). **Every student succeeds act: Supporting teacher's in creating Future Ready classrooms.** Retrieved from: https://tech.ed.gov/essay

Onalan, K., & Kurt, G. (2020). Exploring Turkish EFL teachers' perceptions of the factors affecting technology integration: A case study. **Dil ve Dilbilimi Çalışmaları Dergisi, 16**(2), 626 - 646. https://doi.org/10.17263/jlls.759264

Rwanda Vision, 2020. (2017). **Ministry of finance and economic planning, republic of Rwanda.** Available at http://www.nur.ac.rw/IMG/pdf/Vision_2020.

UNESCO. (2015). **ICT in Education in Sub-Saharan Africa, A comparative analysis of basic e - readiness in schools**. (25).