EDUTREND
Journal of Emerging Issues and Trends in Education

Volume-2 | Issue-2| May-2025 | https://doi.org/10.59110/edutrend.622

Research Article

Online Teaching Preparedness Among Nepali EFL Educators: Determinants unveiled

Bhuban Bahadur Bohara
Tribhuvan University, Sanothimi Campus, Bhaktapur, Nepal
shahilekwala@gmail.com

ABSTRACT
This study examined the preparedness of Nepali teachers of English as a Foreign Language to teach online. It considered various factors, including demographic (gender, age, and education) and professional contexts (school location—rural vs. urban, teaching level—basic vs. secondary, employment status—permanent, temporary, relief grant quota, institutional, or school type—institutional vs. community), along with their ability to reconfigure content prepared for conventional teaching to online teaching. An online survey of 236 EFL school teachers was analyzed using SPSS 20.0, with findings presented through tables, a heat map, and bar diagrams. Results indicated that the preparedness determinants include ICT skill training, school type (institutional vs. community), school location (urban vs. rural), job nature, and academic qualification. The findings also showed training and institutional context as driving forces behind EFL teachers' digital preparedness.

Keywords: *Digital Pedagogy; ICT Integration in EFL; Online Teaching; Technology in Education; Virtual Learning*

ARTICLE HISTORY
Received: 07.05.2025
Accepted: 25.05.2025
Published: 31.05.2025

1. Introduction

The integration of ICT into the teaching-learning process has become a common practice in recent years, helping teachers meet students' learning needs through new technological approaches rather than traditional ones (Ghavifekr & Rosdy, 2015). Teachers are now expected to utilize ICT as a teaching aid to promote active, self-directed, and constructive learning (Luhamya et al., 2017). Despite the rapid expansion of the internet, virtual learning remains a luxury, particularly in rural areas, due to inadequate infrastructure (Upadhyay et al., 2021). Recently, it has emerged as a sudden alternative to face-to-face classes, especially during the global pandemic, posing challenges for all stakeholders: learners, educators, and parents (Collado et al., 2024). With technological advancements, teachers face a crucial choice: either upgrade their skills or risk becoming outdated (Rashid et al., 2021). Many teachers value face-to-face interactions with students, as they can assess each student's expressions and adjust teaching strategies accordingly. They fear that shifting to virtual learning might diminish the quality of teacher-student connections and hamper engagement. This concern was validated during the transition to virtual learning, which, among other challenges, made it difficult to sustain the same level of engagement and adaptability (Gao & Shi, 2023; Nepal & Atreya, 2020). Against this backdrop, it is vital to investigate teachers' readiness for virtual teaching, as it is one of the key determinants of students' success (Mayo & Bradley, 2023; Damien & Claire, 2022).

The integration of ICT in the teaching-learning process has become a common practice in recent years, supporting teachers to meet students' learning needs with new technological approaches as opposed to traditional ones (Ghavifekr & Rosdy, 2015). It is expected of a teacher to utilize ICT as a teaching aid, in particular, to make active

learning, self-learning, and constructive learning more effective (Luhamya et al., 2017). Despite the rapid expansion of the internet, virtual learning remains a luxury, particularly in rural areas, due to inadequate infrastructure (Upadhyay et al., 2021). In recent days, it emerged as a sudden alternative to face-to-face classes, particularly in the time of a global pandemic, posing challenges for all stakeholders: learners, educators, and parents. With the advancement in technologies, teachers have to encounter a crucial bifurcation: either upgrade their skills or risk being outdated. Many teachers believe in face-to-face interactions with students, where they can assess each student's expression and adjust their teaching strategies accordingly. They fear that shifting to virtual learning might spoil the quality of the connection with their students and hamper engagement. This fear was proven right during the move toward virtual learning that, among other things, made it difficult to sustain the same engagement and adaptability (Gao & Shi, 2023; Nepal & Atreya, 2020). Against this backdrop, it is vital to look into the aspect of teachers' readiness for virtual teaching, as it is one of the key determinants of students' success (Mayo & Bradley, 2023; Damien & Claire, 2022).

Teacher preparedness generally refers to the pedagogical and content knowledge derived from academic programmes that aim to cultivate quality and effective teaching-learning strategies alongside content knowledge and practical competence (Holmes, 2011; Hagger & McIntyre, 2006). Universities worldwide offer diverse teacher education programs to prepare future educators. Such programs encompass skills for teachers' professional development, ensuring their graduates can enter classrooms confidently and adeptly manage the complexities of teaching (Kiamba & Mutua, 2017). As teacher preparedness is critical for professional development, most novice teachers undergo intensive teacher education programs (Akdemir, 2019). In Nepal, such teacher education courses are mainly delivered by the universities. Since 1948, when the first Basic Education Teacher Training Center in Kathmandu was established to train primary school teachers, teacher education and training have remained a prime concern of authorities (Awasthi, 2010). These courses are supposed to equip graduates with the required content knowledge and pedagogical skills.

Recently, the integration of ICTs in pedagogy has been acknowledged as an essential and unavoidable component of effective teaching. After the unprecedented onset of COVID-19, which rendered the traditional chalk-and-talk teaching method ineffective, ICT integration into education became a pressing need. This necessitated a shift to technology-integrated instruction, requiring a fundamental change in existing pedagogical practices (Thapaliya et al., 2023; Al-Awidi & Aldhafeeri, 2017). As a result, teachers began to embrace the integration of ICT into pedagogy as a significant practice, even though they had previously viewed it as external and imposed (Watson, 2001).

In other words, the digital skills that were once seen as supplementary became essential during that period, including in Nepal, where the adoption of virtual classes for school teaching gained momentum in the post-COVID-19 period, despite challenges such as limited internet access, affordability, and the persistence of a significant digital divide that hampers the equitable use of technology in education (Nepal & Atreya, 2020, Damarin, 2002) creating digital inequalities (Shah et al., 2025). To bridge this gap, teachers need to be digitally prepared. As digital literacy has become an urgent necessity, particularly in emergencies, teachers' preparedness for virtual classes is essential for achieving the desired outcomes. This study aims to assess the preparedness of English teachers in Nepal to implement online teaching in school-level education, especially during emergencies. The research focuses on teachers' responses to assess their preparedness for teaching online and their ability for ICT integration, which "brings about powerful learning environments and helps students to deal with knowledge in active, self-directed and constructive ways (Luhamya et al., 2017, p. 21)."

During emergencies, when public life is restricted, education is also adversely affected (Shah et al., 2025). However, it can resume in an online format despite disruptions. This underlines the successful integration of ICT into the education system, which is a complex task that not only requires the technology but also the curriculum, pedagogy, institutional promptness, teachers' skills, long-term funding, government policy on ICT in schools, and so on (Enu et al., 2018). However, this study is limited to examining the preparedness of English teachers for online teaching and its determining factors, offering insights that can help policymakers take immediate measures to enhance the effectiveness of online classes. This study is significant because, despite several studies on teachers' preparedness, such as Akdemir (2019), Al-Awidi and Aldhafeeri (2017), Holmes (2011), Kiamba and Mutua (2017), Hasyim et al. (2024), etc., none of them addresses the context of teachers' preparedness in Nepal.

2. Method

An online survey was conducted for this study. Like surveys administered by an interviewer who records responses on paper (Callegaro et al., 2015), online surveys are reliable and cost-effective methods of data collection (Madariaga et al., 2017). They are recognized for their richness, efficiency, and flexibility (Evans & Mathur, 2005). Despite these advantages, online surveys raise concerns about the voluntary participation of respondents, which can compromise the sample's representativeness (Hooker & de Zúñiga, 2017). Therefore, great care is needed in distributing the survey link. While online surveys have certain limitations, such as coverage bias, self-selection bias, and low or no response rates, they also offer benefits such as cost efficiency, broader reach, convenience, and flexibility (Sue & Ritter, 2007; Callegaro et al., 2015). For data collection, an email containing the survey link was sent to 360 teachers, and to mitigate the shortcomings of online surveys, additional follow-up requests and notifications were made (Sammut et al., 2021). By the time the intervention began, 236 responses had been received and were utilized in the study. The statistical analysis of the responses was performed using SPSS 20.0 and Julius AI, an AI assistant for data analysis that employs Python programming as a tool for data analysis and visualization, making it suitable for researchers without data science expertise (Kumar et al., 2025).

3. Results and Discussion

In this section, the statistical significance of teachers' preparedness with (i) the gender of the respondents, (ii) their age, (iii) the highest academic qualifications of the respondents, (iv) their training in basic ICT skills (v) level of school education they teach, (vi) type of school they teach, and (vii) location of the school (urban or rural) has been calculated.

3.1 The Demographic and Professional Details of the Respondents

This section includes the demographic and professional information of the respondents consolidated in two tables: demographic characteristics (age, gender, and academic qualifications) and professional characteristics (level of teaching, basic ICT training, school type, local body type, and nature of job).

Table 1. Demographic Characteristics of Respondents

Variable	Category	Frequency	Percent	Cumulative Percent
Age (in Years)	20–29	49	20.8	20.8
	30–39	109	46.2	66.9
	40–49	61	25.8	92.8

	50 and above	17	7.2	100
Gender	Male	184	78	78
	Female	52	22	100
Academic Qualification	Master's Degree	164	69.5	69.5
	Bachelor's Degree	52	22	91.5
	Above Master's	12	5.1	96.6
	Class 12 or less	8	3.4	100
Total		236	100	

Table 1 shows that nearly half of the survey respondents (46.6%; n=109) were from the 30-39 age group, followed by those in the 40-49 age group (26.1%; n=61). Similarly, 20.9 percent (n=49) of respondents were from the 20-29 age group. Only 6.4 percent (n=15) of respondents were over 50 years old. In addition, more than three-fourths (78.6%; i.e., n=184) of the survey participants were male, while slightly less than one-fourth (22%; i.e., n=52) were female. Therefore, most respondents who completed the questionnaire were in the 30-40 age group, and a significant majority (78.6%) of them were male. In conclusion, the survey respondents were predominantly male teachers aged 30-49, indicating a workforce largely composed of middle-aged men.

Table 2. Professional Characteristics of Respondents

Variable	**Category**	**Frequency**	**Percent**	**Cumulative Percent**
Level of Teaching	Basic	73	30.9	30.9
	Secondary	163	69.1	100
Basic ICT Training	Yes	144	61	61
	No	92	39	100
Type of School	Community Schools	167	70.8	70.8
	Institutional Schools	69	29.2	100
Local Body Type	Metropolitan City	32	13.6	13.6
	Sub-metropolitan City	31	13.1	26.7
	Municipality	138	58.5	85.2
	Rural Municipality	35	14.8	100
Nature of Job	Institutional	69	29.2	29.2
	Permanent	114	48.3	77.5
	Relief Grant Quota	27	11.4	89
	Temporary	26	11	100
Total		236	100	

Table 2 provides the professional details of the survey participants. Here, two-thirds of the teachers (69.1%, n = 163) were secondary-level teachers, while the remaining 30.9% (n = 73) were basic-level teachers. Similarly, 70.8% (n = 167) were community school teachers, while 29.2% (n = 69) were institutional school teachers. Out of the 236 respondents, a clear majority—over three-fifths (61%, n = 144)—had received some form of ICT training that could be used in online teaching. Regarding local governing bodies, most of the teachers who participated in the study were teaching in municipal territories (58.5%, n = 138). Additionally, 13.6% (n = 32) taught in metropolitan city territories, and 13.1% (n = 31) were involved in sub-metropolitan city schools. In contrast, only 14.8% (n = 35) of respondents were teaching in rural municipality schools. Thus, the table indicates that nearly 85% of the teachers who participated in the survey came from urban or suburban schools. The participants were also asked about the nature of their employment. In total, nearly half (48.3%, n = 114) of the respondents held permanent positions, while about 29.2% (n = 69) were teaching at institutional schools.

Additionally, 11.4% of the participants (n = 27) were from the Relief Grant quota, whereas about 11% (n = 26) were temporary teachers. The results suggest that most of the surveyed teachers who worked at the secondary level of education had received some form of ICT training, primarily in community schools located in urban or suburban municipalities, with nearly half being permanent staff. Therefore, the respondents represented a professionally stable, predominantly urban-based teaching workforce.

Regarding the educational background of the respondents, most held a master's degree (69.5%, n = 164). Similarly, 22% (n = 52) of the respondents held a bachelor's degree. Twelve of them (5.1%) held a degree above the master's level, and 3.4% (n = 8) had completed education up to grade 12 or below.

4.2 Teachers' Preparedness

Teachers' role is critical in encouraging learners towards the use of the internet in education, as more and more children move towards the use of the internet for almost every facet of their lives (Tsai, 2012). The teachers should be competent with skills as well as initiative to fulfill this role. Accordingly, respondents were consulted about their preparedness for online teaching and their capability to integrate Information and Communication Technologies (ICTs) in the classroom, with their adaptability of traditional content for online delivery. The responses are presented below:

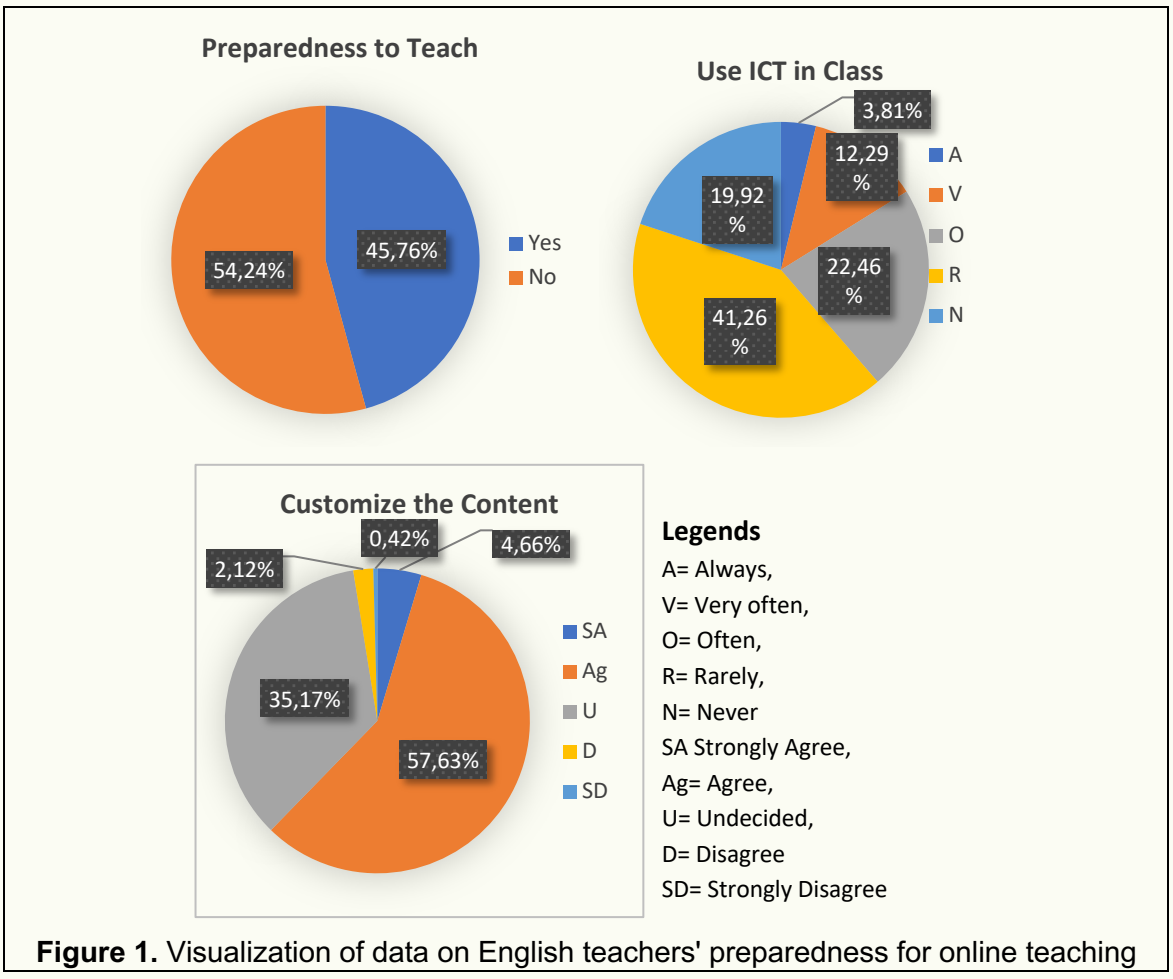

Figure 1. Visualization of data on English teachers' preparedness for online teaching

As illustrated in Figure 1, among the 236 English teachers surveyed, just over half (54.2%) admitted they were not prepared to teach, while 45.8% expressed confidence in their readiness. The frequency of ICT tool usage in classrooms varied notably: 29.7% reported using them very frequently, 22.5% occasionally, and 41.26% rarely. In terms of

the frequency of ICT tool usage in online classrooms, teachers reported varying levels of use: 29.7% reported using tools very frequently, 22.5% occasionally, and 41.26% rarely. Only 12.3% of teachers stated they "always" used ICT tools in instruction, while 3.8% stated they "never" used them. When asked if they felt they could customize content for online teaching, 57.6% agreed with the statement, while 35.2% strongly agreed. Additionally, 4.7% were unsure, 2.1% disagreed, and only 0.4% strongly disagreed. These descriptive findings provided the basis for examining whether teacher factors—such as experience, professional learning, or access to technology—impacted the readiness and adaptability of English teachers for online teaching and learning.

4.3. Determining Factors of English Teachers' Preparedness for Online Teaching

This section conducts a bivariate analysis to examine the relationship between dependent and independent variables using various statistical tools in SPSS. In quantitative research, "bivariate analysis usually aims to examine the empirical relationship between two variables" (Jung, 2019, p. 962). This analysis identifies the causal relationship between dependent and independent variables using statistical tools. Such analyses determine whether an association exists, the strength of the association, or whether there are differences between two variables (Cui & Greatorex, 2014).

In this inquiry, the age of the respondents, their gender, the type of local governing body they teach under, the type of school (institutional or community), the nature of their job (permanent, temporary, or institutional), the level they teach (basic or secondary), their highest academic qualification, and ICT training were the independent variables, while respondents' preparedness to teach, their ability to use ICT in the classroom, and their ability to customize content for online teaching were the dependent variables.

4.4. The Causal Relationship Between Dependent and Independent Variables

The causal relationship between both types of variables was measured to determine statistical associations. The chi-square test was used to assess the association between dependent and independent variables, with a level of significance set at p=0.05.

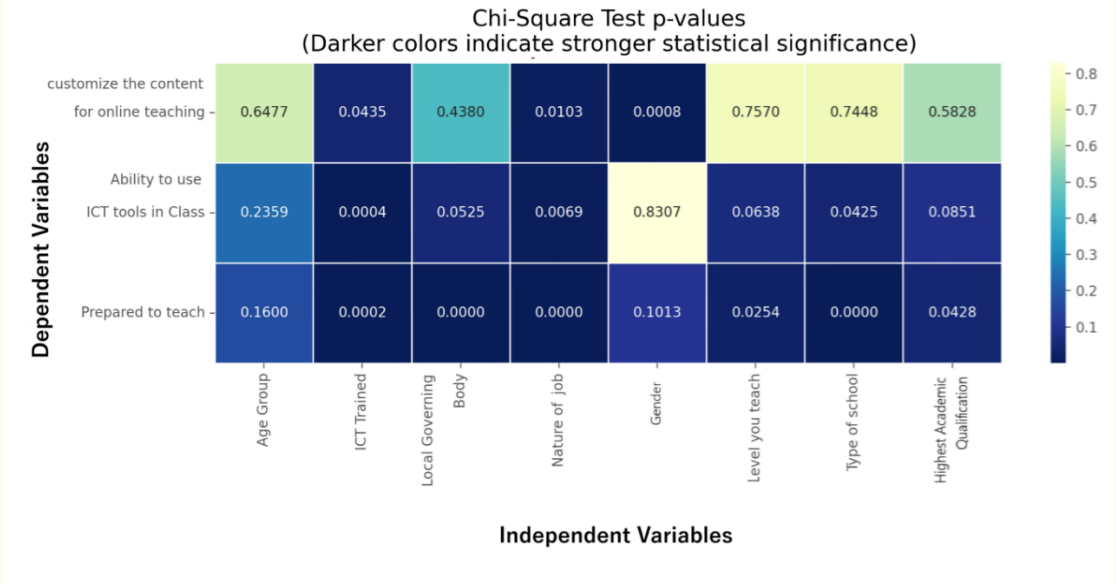

Figure 2. Statistical Association Heat Map Between Dependent and Independent Variables

Following the Chi-Square Test, the associations between the dependent variables—preparedness to teach, ability to use ICT tools in class, and ability to customize content for online teaching—and independent variables such as age group, ICT training, governing body, nature of the job, level of teaching, type of school, and highest academic qualification were visualized in a heat map of p-values, where darker colors indicate stronger statistical significance ($p < 0.05$). In the case of preparedness to teach, strong associations were observed with ICT training, (p=0.0002), governing body (whether the teacher teaches in an urban or a rural area, p=0.0000); nature of the job; i.e., permanent, or temporary (p= 0.0000); type of school, i.e.; institutional or community (p= 0.0000); and highest academic qualification (p= 0.0428), and weak associations were observed with age group (p=0.1600); and the level of teaching (p=0.1013). Similarly, the ability to teach using ICT tools in class was significantly related to ICT training (p=0.0004); nature of the job (p=0.0525); and level of teaching (p=0.0069), while no significant associations were found with age group (p= 0.2359); governing body (p= 0.8307); type of school (p= 0.0638); or highest academic qualification (p=0.0851). Moreover, the ability to customize content for online teaching was significantly associated only with the level of teaching (p=0.0008), while no major associations were seen with age group p=0.6477); ICT training (p= 0.0435); governing body (p= 0.4380); nature of the job (p=0.1013); type of school (p=0.7570); and highest academic qualification (p= 0.5828). Findings imply that whereas ICT training, nature of the job, and type of school were strong factors predicting preparedness for online teaching in English teachers, the ability to customize content online was highly dependent on the level of teaching, indicating divergent influences of these factors along different dimensions of preparedness.

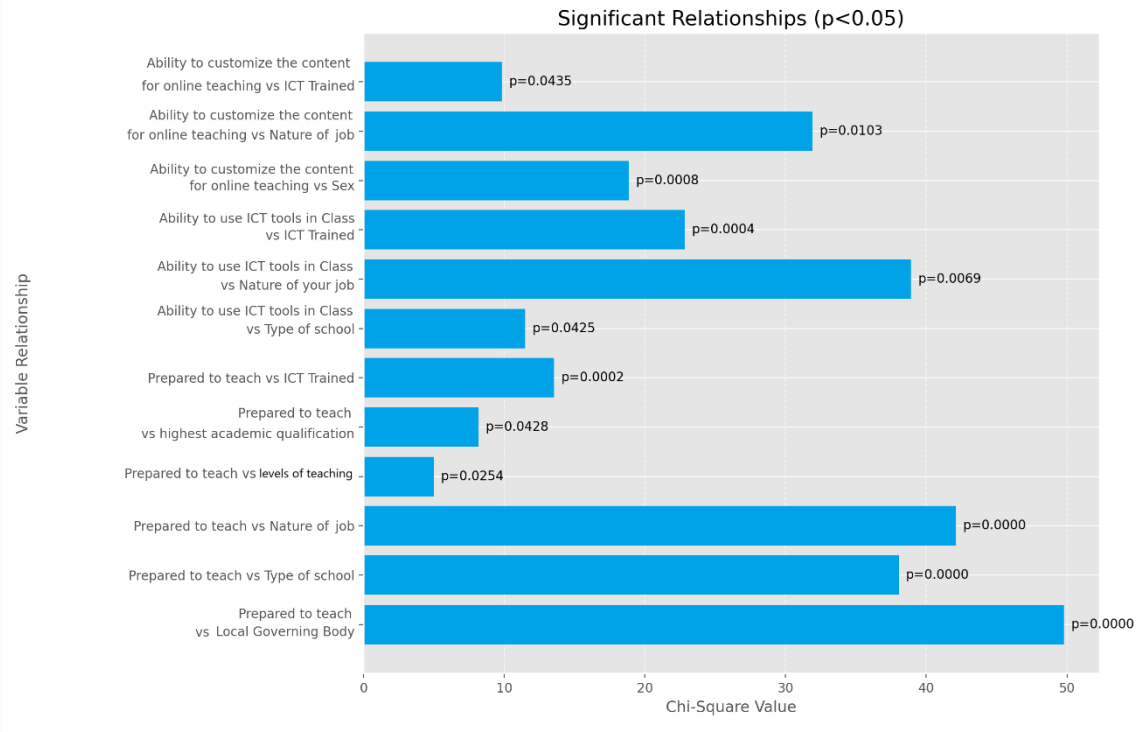

Figure 3. Bar Chart of Significant Associations Between Dependent and Independent Variables

Further, to complement the heat map analysis, a bar chart is presented, focusing solely on the significant associations ($p < 0.05$). In the bar chart, the most important associations disclosed through analysis involved several key factors that contributed to

the preparedness of English teachers to teach online. Preparedness to teach online is strongly correlated with the school location (urban or rural), meaning the geographic setting of the school affects teachers' preparedness. This is also expressed in Shah et al. (2025), who acknowledge geographical location as a key determining factor of the digital access of the learners, along with their attitudinal factors and economic backgrounds. Similarly, it correlates with the type of school, nature of the job, ICT training, and academic qualification, indicating that these factors significantly affect their preparedness to teach online. Likewise, the ability to use ICT tools for classroom application is strongly associated with the permanent or temporary nature of teachers' job, their training in ICT, and community and institutional types of school, while content customization for online teaching is strongly correlated with the level they teach, nature of the job, and training in ICT.

These associations underscore ICT training and school type as vital factors affecting English teachers' preparedness as well as their ability to utilize and adapt ICT tools and content. However, while the bar chart displays these significant relationships, it does not indicate which categories within each independent variable (e.g., urban-rural, permanent-temporary) are more closely or otherwise associated with the dependent variables, and this is manifested in Table 3 below.

To address this gap, Table 3 provides a list of categories in each independent variable that are more strongly associated with the dependent variables expressed in percentage. For example, urban teachers were found to be more prepared than their rural counterparts for online teaching (53.4% vs. 40.0%), and those with ICT training were more prepared (58.7%), more skilled at ICT use (47.1% use tools very frequently or always), and more able to adapt content (69.6% agree/strongly agree) than those without training (29.6%, 12.2%, and 43.9%, respectively). Additionally, teachers in institutional schools were rated better (68.6%) and more frequent users of ICT tools (48.6% very frequently/always) than community school teachers (37.3% and 25.9% respectively). This provides yet another example of how school type influences the readiness set for online teaching. This table complements the heat map and bar chart by detailing the specific categories driving the significant associations, offering a deeper understanding of the factors affecting English teachers' preparedness for online teaching.

Table 3. Key Factors Shaping Online Teaching Readiness

Variables		**Stronger Category (Effect)**
Dependent	**Independent**	
Preparedness to teach online	School location	Urban (53.4% prepared) vs. Rural (40.0%)
Preparedness to teach online	Type of school	Institutional (68.6% prepared) vs. Community (37.3%)
Preparedness to teach online	Nature of the job	Relief Grant Quota (62.5% prepared) vs. Permanent (41.4%), Temporary (48.4%)
Preparedness to teach online	ICT training	Trained (58.7% prepared) vs. Not trained (29.6%)
Preparedness to teach online	Academic qualification	Above Master's (61.5% prepared) vs. Master's (47.5%), Bachelor's (44.0%), Class 12 or less (30.0%)
Ability to use ICT tools in class	Nature of the job	Permanent (34.4% very frequently/always) vs. Relief Grant Quota (29.2%), Temporary (29.0%)

Ability to use ICT tools in class	Training in ICT	Trained (47.1% very frequently/always) vs. Not trained (12.2%)
Ability to use ICT tools in class	Type of school	Institutional (48.6% very frequently/always) vs. Community (25.9%)
Ability to customize content	Level of teaching	Secondary (67.6% agree/strongly agree) vs. Basic (47.0%)
Ability to customize content	Nature of the job	Temporary (64.5% agree/strongly agree) vs. Permanent (61.1%), Relief Grant Quota (47.9%)
Ability to customize content	ICT training	Trained (69.6% agree/strongly agree) vs. Not trained (43.9%)

Note. *Percentages reflect the proportion of teachers who responded as prepared, used ICT tools very frequently or always, or agreed/strongly agreed to customizing content.*

A concise overview of findings is provided in Table 4, listing all significant associations on the bar chart that summarizes relationships between independent and dependent variables. This table further affirms the insights from the heat map—a tool used for data visualization that uses color gradients or grayscale to represent values in a table or matrix, with the color pattern changing based on data variations— which presented significant associations, and the bar chart— a standard tool for graphic representation of proportion or quantity within whole category— which listed the key factors involved (Elzer et al., 2010, Sosulski, 2018). ICT training, for example, is seen to affect all three aspects of online teaching readiness—ICT tool use, content adaptation, and preparedness, while the type of schools and nature of the job also recur in several of the dependent variables. This summary table serves as a quick reference to the relationships influencing English teachers' online teaching preparedness.

Table 4. Summary of Significant Associations

Variables		**Direction of Association**
Dependent	**Independent**	
Preparedness to teach online	School location	Urban teachers are more prepared than rural teachers
	Type of school	Institutional school teachers are more prepared than community school teachers
	Nature of the job	Relief Grant Quota teachers are more prepared than permanent or temporary teachers
	ICT training	Trained teachers are more prepared than untrained teachers
	Academic qualification	Teachers with above Master's are more prepared than those with lower qualifications
Ability to use ICT tools in class	Nature of the job	Permanent teachers use ICT tools more frequently than Relief Grant Quota or temporary
	ICT training	Trained teachers use ICT tools more frequently than untrained
	Type of school	Institutional teachers use ICT tools more frequently than community

Ability to customize content	Level of teaching	Secondary-level teachers are more likely to customize than basic-level teachers
	Nature of the job	Temporary teachers are more likely to customize than permanent or Relief Grant Quota
	ICT training	Trained teachers are more likely to customize than untrained ones

4. Conclusion

The results of the study on the preparedness of EFL teachers in Nepal, assessed through the lens of demographic and professional contexts, present a multifaceted picture. The pervasive influence of ICT in all aspects of life has made teachers' preparedness for digital pedagogy an essential requirement. However, emergencies such as the COVID-19 crisis have accelerated this discussion, underscoring the unavoidable shift toward emerging forms of educational delivery in classrooms (Hasyim et al., 2024). Yet, the finding that 54.2 percent of the teachers admitted to feeling unprepared for online teaching reflects a significant gap that needs to be bridged if the quality of education is to be maintained and safeguarded, particularly under emergency conditions (Shah et al., 2025).

Findings indicate that a digital divide exists, creating unequal opportunities in teachers' content delivery in classrooms, and advocate for strong and accessible professional development programs to equip teachers with the necessary digital skills (Nepal & Atreya, 2020; Damarin, 2002). This disparity in teachers' preparedness affects the extent to which they can utilize ICT for pedagogical benefits, such as increasing motivation, assisting in recalling lessons, and providing systematic feedback (Enu et al., 2018). Moreover, the study reveals that disparities associated with the digital divide expose the unequal distribution of digital skills among teachers (Upadhyay et al., 2021), which are influenced by multiple factors.

To address the gap in teacher readiness for online teaching, policy interventions are necessary alongside individual and school-level efforts. Strong prioritization of ICT infrastructure, especially in rural areas, and the incorporation of digital literacy training in teacher education will address diverse needs across school types, employment categories, and school locations. These efforts will enhance teachers' digital literacy, thereby ensuring greater resilience and equity in Nepal's education system. Immediate and long-term policy initiatives are essential to support effective online teaching, ensuring that EFL teachers are well-equipped to handle digital pedagogy challenges and deliver quality education during adverse times.

References

Akdemir, Ö. A. (2019). Student teachers' preparedness to teach: The case of Turkey. *International Education Studies, 12*(3), 90–96. https://doi.org/10.5539/ies.v12n3p90

Al-Awidi, H., & Aldhafeeri, F. (2017). Teachers' readiness to implement digital curriculum in Kuwaiti schools. *Journal of Information Technology Education: Research, 16*, 105–126. https://www.informingscience.org/Publications/3685

Awasthi, J. R. (2010). Teacher education with special reference to English language teaching in Nepal. *Journal of NELTA, 8*(1–2), 17–28. https://doi.org/10.3126/nelta.v8i1.3377

Callegaro, M., Manfreda, K. L., & Vehovar, V. (2015). *Web survey methodology*. Sage Publications Ltd.

Cui, C. C., & Greatorex, M. (2014). Bivariate analysis. In C. L. (Ed.), *Wiley encyclopedia of management*. John Wiley & Sons, Ltd. https://doi.org/10.1002/9781118785317.weom090351

Damarin, S. K. (2002). 'Digital divide' versus digital differences: Principles for equitable use of technology in education. *Educational Technology, 40*(4), 17–22. http://www.jstor.org/stable/44428620

Damien, N., & Claire, M. M. (2022). Influence of teachers' preparedness on students' academic performance in public secondary schools in Rwanda. *Journal of Education*, *5*(2), 53–71. https://doi.org/10.53819/81018102t5069

Elzer, S., Carberry, S., & Zukerman, I. (2010). The automated understanding of simple bar charts. *Artificial Intelligence, 175*, 526–555. https://doi.org/10.1016/j.artint.2010.10.003

Enu, J., Nkum, D., Ninsin, E., Diabor, C. A., & Korsah, D. P. (2018). Teachers' ICT skills and ICT usage in the classroom: The case of basic school teachers in Ghana. *Journal of Education and Practice, 9*(20), 35–38. https://www.iiste.org/Journals/index.php/JEP/article/download/43378/44693

Evans, J. R., & Mathur, A. (2005). The value of online surveys. *Internet Research, 15*(2), 195–219. https://doi.org/10.1007/s11135-005-8081-8

Ghavifekr, S., & Rosdy, W. A. W. (2015). Teaching and learning with technology: Effectiveness of ICT integration in schools. *International Journal of Research in Education and Science (IJRES), 1*(2), 175–191. https://files.eric.ed.gov/fulltext/EJ1105224.pdf

Hagger, H., & McIntyre, D. (2006). *Learning teaching from teachers: Realising the potential of school-based teacher education*. Open University Press.

Hasyim, N., Arismunandar, N., Butarbutar, R., Ramli, A. M., & Nur, I. D. M. (2024). Mind mapping of teachers' readiness for online teaching and learning: A reflective study of urban and suburban areas. *Cogent Education, 11*(1). https://doi.org/10.1080/2331186x.2023.2292864

Holmes, S. R. (2011). *Teacher preparedness for teaching and assessing depth of knowledge* (Publication No. 448) [Doctoral dissertation, The University of Southern Mississippi]. Aquila. https://aquila.usm.edu/dissertations/448

Hooker, C. M., & deZúñiga, H. G. (2017). Survey methods, online. In J. Matthes (Ed.), *The international encyclopedia of communication research methods* (pp. 1–7). John Wiley & Sons, Inc. https://doi.org/10.1002/9781118901731.iecrm0244

Jung, Y. M. (2019). Data analysis in quantitative research. In P. L. (Ed.), *Handbook of research methods in health social sciences* (pp. 955–969). Springer.

Kiamba, E. W., & Mutua, F. (2017). A critical review of the effect of teacher preparedness on students' academic achievement: A research agenda. *Scholarly Research Journal for Interdisciplinary Studies, 4*(37), 8790–8798. http://oaji.net/articles/2017/1174-1522064089.pdf

Kumar, I., Yadav, N., & Verma, A. (2025). Navigating artificial intelligence in scientific manuscript writing: Tips and traps. *Indian Journal of Radiology and Imaging, 35*(S1), S178–S186. https://doi.org/10.1055/s-0044-1800801

Luhamya, A., Bakkabulindi, F. E., & Muyinda, P. B. (2017). Integration of ICT in teaching and learning: A review of theories. *Makerere Journal of Higher Education, 9*(1), 21–36. https://doi.org/10.4314/majohe.v9i1.2

Madariaga, L., Nussbaum, M., Burq, I., Marañón, F., Salazar, D., Maldonado, L., & Naranjo, M. A. (2017). Online survey: A national study with school principals. *Computers in Human Behavior, 74*, 35–44. https://doi.org/10.1016/j.chb.2017.03.067

Mayo, C. L., & Bradley, F. (2023). The impact of teacher preparedness and professional development on Fourth-Grade students' science achievement. *Journal of Research Initiatives*, *8*(2), 5. https://digitalcommons.uncfsu.edu/jri/vol8/iss2/5

Nepal, B., & Atreya, A. (2020). Online medical education in Nepal: Barking a wrong tree. *Journal of Lumbini Medical College, 8*(1), 141–143. https://doi.org/10.22502/jlmc.v8i1.325

Sammut, R., Griscti, O., & Norman, I. J. (2021). Strategies to improve response rates to web surveys: A literature review. *International Journal of Nursing Studies, 123*, Article 104058. https://doi.org/10.1016/j.ijnurstu.2021.104058

Shah, R. K., Paneru, N. R., & Bohara, B. B. (2024). Digital inclusion struggles: Virtual learning experiences of English education students at Tribhuvan University, Nepal. *Philip Roth Studies, 20*(2). https://doi.org/10.5281/zenodo.15074503

Sosulski, K. (2018). *Data visualization made simple: Insights into becoming visual*. Routledge.

Sue, V. M., & Ritter, L. A. (2007). *Conducting online surveys*. Sage Publications.

Thapaliya, M., Adhikari, S., & Rana, L. (2023). Opportunity in COVID-19 crisis: Moving away from chalk and talk to technology-integrated teaching in Nepalese higher education institutions. *E-Learning and Digital Media, 21*(1), 87–105. https://doi.org/10.1177/20427530231153944

Tsai, C.-W. (2012). The role of teacher's initiation in online pedagogy. *Education and Training, 54*(6), 456–471. https://doi.org/10.1108/00400911211254253

UNESCO. (2020, August 18). *COVID-19 impact on education*. https://en.unesco.org/covid19/educationresponse

Upadhyay, H. P., Koirala, P., & Sedain, P. (2021). University students' attitude towards virtual learning during COVID-19 pandemic in Nepal. *Journal of Chitwan Medical College, 11*(3), 11–15. https://doi.org/10.54530/jcmc.496

Watson, D. M. (2001). Pedagogy before technology: Re-thinking the relationship between ICT and teaching. *Education and Information Technologies, 6*(4), 251–266. https://doi.org/10.1023/A:1012976702296

World Bank. (2020, April 7). The Government of Nepal and the World Bank sign $29 million financing agreement for Nepal's COVID-19 (Coronavirus) response [Press release]. https://www.worldbank.org/en/news/press-release/2020/04/03/world-bank-fast-tracks-29-million-for-nepal-covid-19-coronavirus-response

Yadav, S. (2023). Digital skills of teachers: A necessity for the technology-enabled human resource of the education sector in the fast transformation. In E.

Podovšovnik, T. D. Giuseppe, & F. Corona (Eds.), *Handbook of research on establishing digital competencies in the pursuit of online learning* (pp. 187–207). IGI Global. https://doi.org/10.4018/978-1-6684-7010-7.ch010

Collado, Z., Pantaleta, F., Landagan, M., Rescober, A., Baral, G., Villareal, M., Banaria, D., & Cortez, C. (2024). Switching to virtual classes: exploring teacher readiness under the 'new normal'. Technology, Pedagogy and Education, 33, 187 - 199. https://doi.org/10.1080/1475939X.2024.2305341.

Rashid, A., Shukor, N., Tasir, Z., & Na, K. (2021). Teachers' perceptions and readiness toward the implementation of virtual learning environment. International Journal of Evaluation and Research in Education (IJERE). https://doi.org/10.11591/IJERE.V10I1.21014.