Application of Technology in Economics Teaching: Teachers' Perspectives

Bishnu Maya Joshi[1*]
Mahendra Ratna Campus, Tahachal
Tribhuvan University Nepal
*Correspondence: Joshibishnu92@gmail.com

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Abstract

The key indicator of educational outcome is directed by teachers' skills regarding to content, pedagogy and technology. Teachers with positive attitude, academic level and high skills really play better role in educational field. The intrinsic influences of teachers to apply innovative technology in classroom plays vital role for educational advancement. Application of ICT in teaching-learning process is more essential and complex in developing countries' context like Nepal. The objective of this study is to identify the relationship between the teachers' demographic characteristics and the application of ICT in teaching-learning process. A case study approach was used in this research to investigate the relationship between teachers' demographic characteristics and ICT application in teaching-learning process of economics classroom. This study found application of ICT in pedagogical purpose is guided by teachers' demographic feature like gender, qualification and teaching experiences.

Keywords*: ICT, Pedagogy, Teachers, Demographic Characteristics, Quantitative*

Introduction

Teaching-learning activities and outcome of learners is mainly guided by teachers' knowledge and teaching skills (Xu, 2012). Teachers with positive attitude and high skills really play better role in educational field. However, the learner's readiness and dedication heavily influenced the outcome but the main key indicator of educational outcome is directed by teachers' skills regarding to content, pedagogy and technology(McKnight et al., 2016). Currently teacher's content knowledge without technological skills consider as partially impair to provide reliable and contemporary knowledge to learners(Andyani, Setyosari, Wiyono, & Djatmika, 2020; Koh, 2019; Stoilescu, 2015; Stronge, 2018). Researches have shown however there is rigorously change the teaching-learning strategy from teachers' center to student center but still not prevalent in various educational institutions. To provide the better knowledge to learners first of all teachers need to capable in diverse aspect of teaching-learning process i. e. content, pedagogy, and technology in this 21st century, because the needs of 21st century' learners are different and complex.

The intrinsic influences of teachers to apply innovative technology in classroom plays vital role for educational advancement. Though most of the teachers are kept positive perception regarding the use of ICT in pedagogy but there is differences on the basis of their gender, teaching experiences, and level of education(Douglass, 2020; Kundu, Bej, & Dey, 2020; Lin, Wang, & Lin, 2012; Mlambo, Rambe, & Schlebusch, 2020; Wel, Piau, Kannan, & Moulod, 2016). In current time, especially in COVID pandemic teachers faced the challenges in their profession due to transformation in teaching-learning process from face to face to digital mode. Application of ICT in teaching became inevitable cause of this pandemic.(Mynaříková & Novotný, 2021). Various researches have shown their result the well application of IC in teaching-learning, although there are differences in attitude of teachers' administrators, and other stake holders as well as occurrence and gratification in using(Pombo et al., 2016).

The advancement of technology has created challenges to everyone in their professional as well as personal work (Iivari, Sharma, & Ventä-Olkkonen, 2020). It brings new opportunities and challenges specially in educational field. Learners of this 21-century age are highly capable in technology to perform in every work so to teach them by integrating ICT is not an easy task. Globalization and liberalization adopted by several countries all over the world increase the competition on every work i.e. engage the job or to work in any field. In this context teachers need to be updated to fit in class by embedding the knowledge of content and skills of pedagogy and technology(Vandeyar, 2020) (Dabrowski, Nietschke, Taylor-Guy, & Chase, 2020; Daniela, 2019). Only use of chalk and talk in class like conventional teaching becomes outdated in recent period. Teachers need to be update in technology and other contemporary teaching strategies for successful teaching (Irrinki, 2021).

Continuously development of digital world in all over the world create easiness and complex to human being. Digitalization in economy, digitalization in governance, digitalization in transportation, digitalization in education, digitalization in infrastructures, digitalization in energy and so on demands the ICT skill manpower for lively hood in this

advance society. Knowledge and skill of recent technology provide the easy excess of anywhere whether people live anywhere(Daniela, 2019; Fontanos, Gonzales, Lucasan, & Ocampo, 2020; Karagiannidis, Politis, & Karasavvidis, 2014). People can observe and grab the job opportunities, learning opportunities, business opportunities, and consumption opportunities of anywhere by using technology. For this purpose, first of all they need to skillful in modern technology. Educational field is responsible to provide the ICT skill to learners by integrating in pedagogical way. Here the main pillar of education field are teachers(Blundell, Lee, & Nykvist, 2020; Singhavi & Basargekar, 2019). So we have to focus on them whether they are capable or not, interested or not for apply the ICT in their teaching process.

Among the many challenges of developing countries, increase the technology capability on its nationals is one like Nepal. In the context of globalization, joined in WTO and adopt liberal economic policy the technological advancement is the key challenge for Nepal. To produce the high technological capable labor force, there is impossible without educational sector, specially from higher education. To minimize the teachers' personal characteristic for effectively apply of technology in teaching process is essential in recent time. Due to the initial stage of technological development and apply of it on teaching-earning process policy makers, educators, planners and researchers need to careful to effectively use of technology in teaching process. So this research may helpful for his purpose.

Educational field need to bear the challenges to produce the technological skilled manpower for every field(Prais & Prais, 1995). Academicians can help to achieve the opportunities of modern era through the skillful integration of technology in classroom i.e. virtual as well as face to face mode. Instructors can provide broaden knowledge of content and more than the content to provide the way of finding of knowledge of content from various sources by searching through internet(Karagiannidis et al., 2014; Stein & Sim Kwong, 2020; Vandeyar, 2020). Teachers becomes facilitators through providers by using ICT in teaching-learning process(Shoraevna et al., 2021). However, there are lots of opportunities of ICT application in pedagogical way, educators perceived many challenges in this process.

Academic institutions have less ICT infrastructures, there is less opportunities of training for teachers, and less supportive role of managements (Kaluyu & Ndiku, 2020; Liesa-Orús, Latorre-Cosculluela, Vázquez-Toledo, & Sierra-Sánchez, 2020; Singhavi & Basargekar, 2019; Warren, 2020). So educationist essential to reduce the challenges and need to create the favorable situation for ICT application in teaching-learning process.

Application of ICT in teaching-learning process is more essential and complex in developing countries' context. In one hand there is need to improve the quality of education to compete with developed countries' manpower, on the other hand there is less availabilities of infrastructures, training facilities and ICT skills of teachers themselves. Developing countries also suffered by power supply problem like Nepal(Asad, Hussain, Wadho, Khand, & Churi, 2020; Cha, Park, & Seo, 2020; Singhavi & Basargekar, 2019). So developing countries need to focus more to formulate ICT related plans and policies to promote the quality of overall education. Like other developing countries, Nepal also need to focus in ICT application in education sector to improve skills of the modern technology on its manpower. To embedded the ICT skills to students first of all teachers becomes capable for this(Shobhakhar & Chandra, 2021). In this context, the responsibility of higher education is going to produce high quality of future generations. Among the faculties of higher education, education faculty's' role becomes high to produce ICT friendly teachers for school level. So Faculty of education should be taken more attention to produce highly skilled manpower with technological knowledge, because the main responsibility of this faculty is to produce qualified teachers on the basis of need. For this purpose, there is essential of technological excellence in higher education's teachers.

Economics is the main subject of higher education in faculty of education. The manpower of this subject can engage in worldwide context if they acquired excellent subject knowledge and technological skills. Economics is the branch of social studies subject and it is compulsory subject in school level currently in Nepal. Economics educators can contribute in overall economic development of country. Not only their home country but in all over the world if they grab the technological skills. The key source to provide the technology to learners are teachers. So economics teachers in university level need to competent in technology in this 21st century(Zusman, 2005). The teaching skills of teachers obviously affected by their age, educational status, teaching experience(Ali, 2019; Ifinedo, Saarela, & Hämäläinen, 2019; Singhavi & Basargekar, 2019; Wel et al., 2016). So, researcher was motivated to investigate whether the demographic feature of teachers affect he application of technology in teaching-learning process or not.

Objectives of the Study

The objective of this study is to identify the relationship between the teachers' demographic characteristics and the application of ICT in teaching-learning process.

Research Questions

To fulfil the objectives of this study, the researcher set up the following research questions:

- What is the relationship between teachers' gender and their perceptions on ICT application in pedagogical purpose?
- Is teacher's' qualification determine their ICT skills?
- How the teaching experiences of teachers and their ICT perceptions and skill are interrelated?

Methods of Study

A case study approach was used in this research study to investigate the relationship between teachers' demographic characteristics and ICT application in teaching-learning process of economics classroom. A case study is an intensive study of a single unit for generalize across a larger set of units. As a case, a country may function as a case, a unit, a population or a case study(Gerring, 2004). A quantitative research method was used to conduct this study. Quantitative research method deals with quantifying and analyzing variables in order to obtain results(Apuke, 2017; Reaves, 1992; Vogt, 2011). Research was stablished on primary sources of data. Primary source of dada are those which are gathered by researcher first hand (Rabianski, 2003).Data were gathered through the closed structure interview with all economics teachers of Mahendra Ratna Campus, Tahachal. This research was conducted from 2078/01/15 to2078/02/28.

Result and Discussion

This section examines the results obtain during the study. This study focused on three characteristics of teachers to analyze the use of ICT in teaching-learning process. These characteristics are discussed here on the basis of collected information.

Perceptions of teachers on the use of ICT in Pedagogy Basis of Gender

Analysis of teacher's perception on the basis of gender regarding the use of ICT is based on the acquired information which is given in the table 1. Result shown female hundred percent female teachers respond to agree in every bullet which shows there is consistency in all aspect of all female teachers. On the other hand, male teachers respond less in neutral as well strongly disagree with high in agree. This shows there is variation in perception. His result is similar to the finding of the study of Bervell, Ahiatrogah, Laryea, and Essilfie (2013). This study found higher than of female teachers than male teachers, however here was no statically significant.Table 1. *Teacher's Perception on Use of Technology with the Basis of Gender (in percentage)*

Perceptions of use of technology	Gender	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
ICT is effective teaching tool.	M		75	25		
	F		100			
ICT enables me to reach my students more efficiently	M		66.7	22.2		11.1
	F		100			
ICT enables me to address different learning styles better	M		75	12.5		12.5
	F		100			
ICT enables me to provide more individualized feedback.	M		55.6	44.4		
	F		100			
ICT enables me to address individual students' interests better.	M		77.8	22.2		
	F		100			
ICT enables students to be more creative.	M		88.9	11.1		
	F		100			

Similar to use of ICT in gender basis ICT skills of female teachers seems to be in mild level i.e. not very low or high level. Contrary in the skills in data bases all female teachers have the skills in small extent and satisfactory level. But in the case of male teachers there is diverse in skills between absent the skills to very high-level skills. This result is contrast with the finding of (Ilomäki, 2011). Ilomäki (2011) found there were less ICT skills of female teachers and students with comparison to male teachers and students.

Table 2. *ICT Skills of Teachers on the basis of Gender (in percentage)*

Use of ICT	Gender	I can't use it	I can use it to a small extent	I can use it satisfactorily	I can use it well	I can use it very well
Word processor	M	11.1		33.3	44.4	11.1
(e.g. Word)	F			33.3	66.7	
Spreadsheets (e.g.	M	14.3	28.6	28.6	28.6	
Excel)	F			33.3	66.7	
Presentation (e.g.	M		22.2	11.1	55.6	11.1
PowerPoint)	F			33.3	66.7	
Email	M		11.1	11.1	55.6	22.2
	F			33.3	66.7	
Search engines (eg.	M	11.1		33.3	44.4	11.1
google)	F		33.3		66.7	
Databases	M		66.7	22.2		11.1
	F		72.7	18.2		9.1

Perceptions of teachers on the use of ICT in Pedagogy with the Basis of Qualification

Use of technology in pedagogical purpose is determined by the educational qualification of teachers. In able 3 fifty percent teachers having master's degree shown agree and fifty percent shown neutral position on all bullet on the use of technology besides "ICT address different learning styles better. On the other hand, teachers having M. phil. And Ph.D. shown hundred percent agree response in all bullet besides reach to students more efficiently. So higher level of education guided to apply technology in better way.

Table 3. *Teachers Perceptions on the use of Technology with the Basis of Qualification (in percentage)*

Perceptions of use of technology	Qualification	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
ICT is effective teaching	Maser		50	50		
tool.	M.Phil.		100			
	Ph.D.		100			
ICT enables me to reach	Maser		50	50		
my students more	M.Phil.		85.7	14.3		
efficiently	Ph.D.		100			
ICT enables me to address	Maser		75	25		
different learning styles	M.Phil.		100			
better	Ph.D.	100				
ICT enables me to provide	Maser		50	50		
more individualized	M.Phil.		71.4	28.6		
feedback.	Ph.D.		100			
ICT enables me to address	Maser		50	50		
individual students'	M.Phil.		100			
interests better.	Ph.D.		100			
ICT enables students to be	Maser		75	25		
more creative.	M.Phil.		100			
	Ph.D.		100			

Qualification of teachers determine significantly their ICT skill in pedagogical purpose. Result shows there is positive relationship between qualification and their ICT skill. In table 4 hundred percent teachers having Ph.D. degree shows well skills in all ICT skills, then M.Phil. qualification shows better skills in ICT with comparison to master's degree. In this context we can say higher the educational level guided the better ICT skill for pedagogical purpose.

Table 4. *ICT Skills of Teachers on the basis of Qualification*

Use of ICT	Qualification	I can't use it	I can use it to a small extent	I can use it satisfactorily	I can use it well	I can use it very well
Word processor (e.g. Word)	Maser	25		50	25	
	M.Phil.			28.6	57.1	14.3
	Ph.D.				100	
Spreadsheets (e.g. Excel)	Maser	25	25	25	25	
	M.Phil.		20	40	40	
	Ph.D.				100	
Presentation (e.g. PowerPoint)	Maser		50	25	25	
	M.Phil.			14.3	71.4	14.3
	Ph.D.				100	
Email	Maser		25	25	25	25
	M.Phil.			14.3	71.4	14.3
	Ph.D.				100	
Search engines (eg. google)	Maser	25	25	25	25	
	M.Phil.			28.6	57.1	14.3
	Ph.D.				100	
Databases	Maser		75	25		
	M.Phil.		83.3			16.7
	Ph.D.			100		

Perceptions of teachers on the use of ICT in Pedagogy Basis of Teaching experience

This study analyses the teachers' experiences in years and their ICT use perception as well. Figure 1 clearly shows the relationship between the teacher's experience and their perception regarding the use of technology. Among the groups highest mean value is gain those teachers whose experience having above twenty years and lowest value having experience between six to ten years. This graph provides the positive perception increases with years of experiences. This finding is contrast with the finding of Erdoğan Tezci (2009). He found high positive attitude regarding ICT use in less experience teachers.

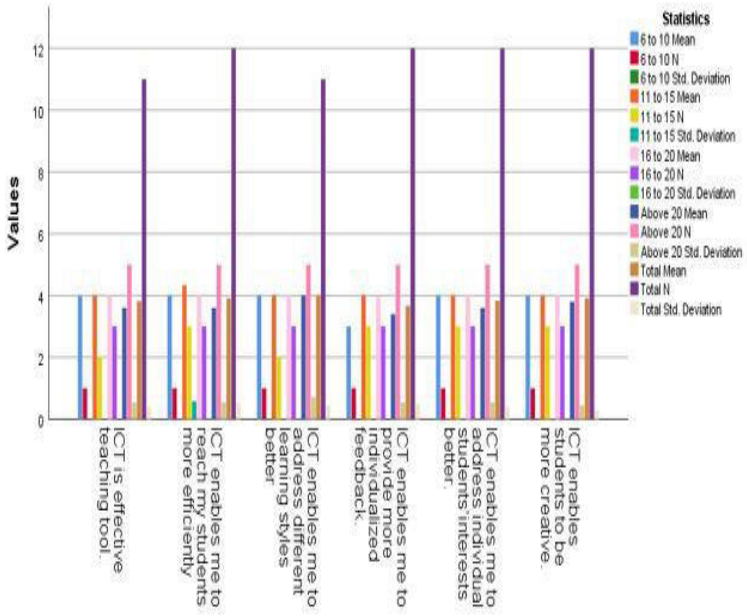

Figure 1. Teacher's Perception on Use of Technology with the Basis of Teaching Experience

In figure 2, ICT skills of teachers having between sixteen to twenty years of experiences is shown in greater mean value in all bullets. The lowest mean value is shown of having above twenty years of experience. On the other hand, the value of having experience between six to ten years of experience is also seems to low. Most of the studies found there was no significant differences among the teachers in ICT using on the basis ofteaching experiences(Semerci & Aydin, 2018; Erdoğan Tezci, 2010)

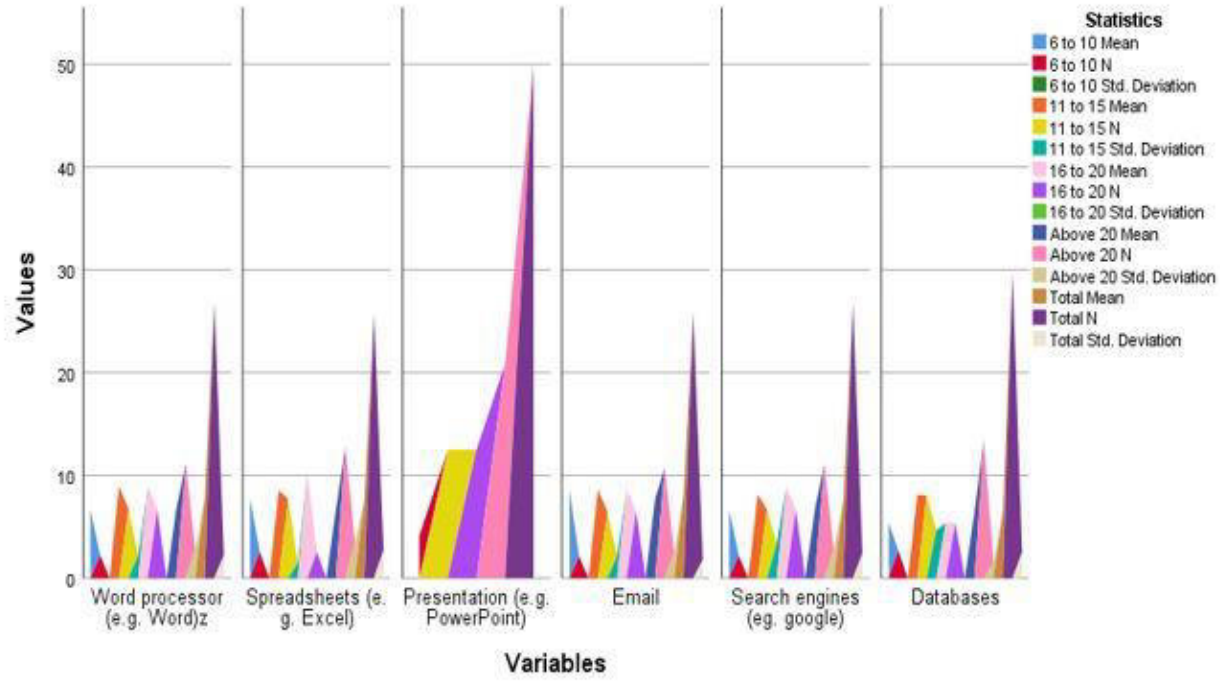

Figure 2. ICT Skills of Teachers on the basis of Teaching Experiences

Conclusion

Teachers' demographic characteristics determined the ICT application in pedagogical purposes. In this study female teachers showed the mild perception regarding the use of ICT in teaching-learning. On the other hand, male teachers ranged from lowest to highest range. This study showed higher the ICT skills with higher level of qualification. Regarding the perception on ICT application and ICT skills teachers having mid teaching experience, not in initial or ending phases showed higher level of performance. This study clearly represents the teacher's ICT attitude with their characteristics. Future study will fruitful in the other factors to determine the application of ICT in pedagogical field. Present research fulfils the dearth of empirical study in the relationship between the teachers' characteristics with ICT application.

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