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Teacher and Student's Perspective on Effectiveness of Use of ICT in Students' Learning: Cases from the Kathmandu, Nepal

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Abstract
This is the age of information because 'information is power'. Right information is important in right time with proper use which may give the right decision. Information Communication and Technology (ICT) is used for the information collection, storing and dissemination. ICT gives the knowledge on various issues for learners. Nepalese schools are using the ICT for teaching and learning. Basically, schools have one separate subject of computer from Preschool as their level of understanding and need. The teachers are also using the ICT in their teaching so, the study aims to explore the effectiveness of use of ICT in student learning from the teacher and student's perspective. The study was conducted among the 666 students and teachers of secondary level public and private school of Kathmandu district. The study found that the students and teachers felt the significant effect of ICT in enhancing the understanding ability, effective learning, motivating the students, preparation of class note and assignments finally scoring the good mark in exam. There was similar experience of both public and private school in this regards. There is need to identify the available facilities of ICT in rural schools and its way of application in teaching and learning.

Keywords: Effectiveness, ICT, Learning, Perspective, Student, Teacher

1. Introduction
ICT is the abbreviation for Information Communication and Technology which is in use for the various purposes in personal and professional life. Schools are using it for teaching, learning and school management. It supports to make work easy and faster than manual work. Technical familiarity of teachers can support to enhance the technical performance of students. The UNESCO stated that ICT competency standards for teachers go further, describing three approaches: technological literacy, knowledge deepening, and knowledge creation. These approaches are seen as part of a development continuum, and each approach has different implications for education reform and improvement, plus different implications for changes in the components of the education system: Pedagogy, teacher practice and professional development, curriculum and assessment, and school organization and administration. ICT plays a unique, but complementary role in each of these approaches, with new technologies requiring new teacher roles, new pedagogies, and new strands to teacher education (UNESCO, 2008). In conjunction with preparing students for the current digital era, teachers are seen as the key players in using ICT in their daily classrooms. This is due to the capability of ICT in providing dynamic and proactive teaching-learning environment (Arnseth & Halevy, 2010) Technologies play an important role in training programme of teachers. Students'' accesses knowledge and information through TV, digital media, cable network, internet and social media i. e. Facebook, Twitter, Whatsapp, Linkedinn, Igo, Line, Wechat etc (Bhattacharjee & Deb, 2016, p. 2). Today's student generation has been portrayed as net generation or digital natives, indicating that they have lived their whole lives with different technologies (Tapscott, 2008; Prensky, 2001). Students of the net generation are assumed to be ready to work collaboratively and to be able to use different ICT tools, especially different online environments (Oblinger, 2005; Hartman, Dziuban, & Brophy-Ellison, 2007). These assumed abilities of today's student's suit well

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With collaborative learning with ICT (Stahl, 2003; Harasim, 2000).Social software contains several features that can be used for supporting students' collaborative learning online and in face-to-face teaching situations (Cress & Kimmerle, 2008; Dron, 2007; Ferdig, 2007; Alexander, 2006). Social software contains elements that provide users with an active role as creators and publishers of contents, users are able to produce materials online and to provide feedback of each other's' work and ideas. Social software provides possibilities especially for communicating and collaborating (Alexander, 2006; Boyd, 2003). Pedagogical content knowledge has been developed further to include a view of using ICT in teaching, resulting in the concept of technological pedagogical content knowledge (TPCK) (Mishra & Koehler, 2006; Koehler & Mishra, 2009). Technological pedagogical content knowledge provides insight into the ways that teachers employ ICT to transform their content knowledge in a form that is easy to comprehend In the Nepalese school, use of ICT is increasing day by day because of the growing competition of private schools. Both public and private schools are conscious on better quality of students and overall school performances. Nepal government has also given priority in implementation of ICT program in each school. The use of ICT in teacher training in Nepal was initiated with radio based distance education system in 1980. Its focus was to enhance the professional capabilities of under SLC in service primary teachers. Later on, in 1993, as per the Government policy, every primary teacher was supposed to undergo 10 month training. The 10 month training package was split into 4 modules of 2.5 month each of which the second and the third modules were imparted through the distance mode. When Teacher Training Project was implemented in 2002 multi-purpose media centers were constructed in Educational Training Centers with a focus on media based teacher education system. ICT policy of the Government is developed and ICT was given a high priority in education, especially in teacher training. ICT labs are being developed in 5 development regions of the country and Master Trainers are being prepared. ICT can play a vital role not only in meeting the local situation and coordinating inter-sectoral needs of disadvantaged population but also in enhancing teaching learning environment and teaching learning outcome (Dixit, 2009, p. 1). So, considering the importance of ICT, the study has explored the perception of teacher and students on effectiveness of use of ICT in teaching and learning.

2. Material & Method

The study is based on the descriptive as well as exploratory research design. The study has collected the quantitative data from the structured questionnaire survey. The study was conducted among the 666 students and teachers of secondary level school of Kathmandu district, Nepal. Simple random sampling technique was adopted to select the student and teachers. The study pre-informed the schools about the purpose of study and written consent was taken from the students and teachers. The collected data were analyzed from the statistical software (SPSS, Version 20). The statistical model, frequency table and Chi-Square test were done to see the interrelationship between the students and teachers in their response. The data are presented in the tabular form.

3. Result & Discussion

The demographic data shows that in total there were 49.8% male followed by 50.2% female participated in the study. Among them the numbers of male teachers were of 45.5% and female teachers were 54.5%. This leads the interest of more female than male teachers as a whole. Whereas in the case of students both gender 50.4 % male & 49.6% female were found somewhat equal to participate in this study.

3.1 Factor Analysis

The factor analysis is one statistical process which reduces the large numbers of variables into fewer variables. It is much like cluster analysis involves grouping similar cases; factor analysis involves grouping similar variables into dimensions. There were only five variables measured in this study so it has been grouped into single dimension. The minimum.3 was considered as factor loading value for the further analysis. The below five variables have meet the requirement (3 value).

Table 1: Factor Analysis

KMO and Bartlett's Test[a]		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.857
Bartlett's Test of Sphericity	Approx. Chi-Square	5316.460
	Df	561
	Sig.	.000
Effectiveness of ICT		**Factor Loading**
Enhance the ability of understanding in class by the use of ICT		.330
Helps to understand lesson fast & fulfill the student's requirement by ICT use		.505
Preparation of class lesson & homework too with ICT use		1.199
Increase interest and motivate to learn with ICT use		.603
ICT will make easy to earn marks		.316

Source: Field Survey 2017

3.2 Enhance the ability of understanding in class using ICT

The study has explored the knowledge about the effect of use of ICT to enhance the ability of understanding lesson in the classroom teaching. Researcher surveyed different schools and collected data shows that 2.1% had strongly

disagreed, 1.2% disagreed against the statement and 1.1% were kept them neutral against the statement. 45 % gave their positive responses and 50.7 % strongly agreed with it in total. These data suggested that the ability of student will become higher in learning lesson by the teacher in the classroom teaching by using ICT with the computer. The results shows that the perception of teachers and students of both public and private schools was found similar because

everybody believe that there was significant contribution of ICT to enhance the capacity of understanding the lesson taught in classroom. This statement is supported by Finger & Trinidad, with this view that the use of ICT in teaching will enhance the learning process and maximizes the students' abilities in active learning (Finger & Trinidad, 2002; Jorge, Gutiérrez, Garcia, A., & Diaz, 2003; Jamieson-Proctor, et al., 2013).

Table 2: Enhance the ability of understanding in class using ICT

			Type of school								
			Public			**Private**			**Total**		
			Respondent type		**Total**	**Respondent type**		**Total**	**Respondent type**		**Total**
			Teacher	**Student**		**Teacher**	**Student**		**Teacher**	**Student**	
Enhance the ability of understanding in class using ICT	Strongly Disagree	Count	4	7	11	0	3	3	4	10	14
		%	7.5%	2.6%	3.4%	0.0%	1.0%	0.9%	4.4%	1.7%	2.1%
	Disagree	Count	0	5	5	0	3	3	0	8	8
		%	0.0%	1.8%	1.5%	0.0%	1.0%	0.9%	0.0%	1.4%	1.2%
	Neutral	Count	0	4	4	0	3	3	0	7	7
		%	0.0%	1.5%	1.2%	0.0%	1.0%	0.9%	0.0%	1.2%	1.1%
	Agree	Count	21	123	144	17	138	155	38	261	299
		%	39.6%	44.9%	44.0%	44.7%	46.0%	45.9%	41.8%	45.5%	45.0%
	Strongly Agree	Count	28	135	163	21	153	174	49	288	337
		%	52.8%	49.3%	49.8%	55.3%	51.0%	51.5%	53.8%	50.2%	50.7%
Total		Count	53	274	327	38	300	338	91	574	665
		%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Pearson Chi-Square			Asymp. Sig. (2-sided) =.246			Asymp. Sig. (2-sided) =.866			Asymp. Sig. (2-sided) =.244		

Source: Field Survey 2017

The data above mentioned statistical analysis of Pearson Chi-Square test described that there is no significant association between teacher and student of public school, private school and in total as the value of P in the test are.246, 866 &.244 respectively because these values are greater than the standard level of significant P=.05. It clearly indicates the similarity in their perception. They believed that proper use of ICT would be more effective to improve the learning of students. The class teachers would use the power point presentation in teaching as well as teachers should teach about the searching of information by using the internet. The different source of journal articles and books can give a lot of knowledge on the specific topic which support to widen the knowledge of students as well as teachers.

3.3 Helps to understand and react fast in learning
Computer skill one which make the collection, store, editing, analyzing and reporting become faster than the manual work. Copy & paste of test, searching from

website, listening from Youtube, watching videos are the techniques which make the learning fast. Today's children collect the much international information of teaching, learning and social events from online Medias. The positive utilization of such Medias and its information definitely enhance the knowledge.

One of the important concerns of this study was to know the effect of use of ICT in learning the ability of lesson understanding in the classroom enrich and can react fast in classroom interaction with other and with teacher too. Therefore researcher surveyed different schools and collected the as followings 3.5 % had strongly disagreed, 2 % disagreed against the statement and 1.1% were kept them neutral against the statement. 58.6 % gave their positive responses and 35 % strongly agreed with it in total. These data suggested that the ability of student will become higher in understanding lesson in the classroom by using ICT with the computer and can interact faster with other person.

Table 3: Helps to understand and react fast in learning

			Type of school								
			Public			**Private**			**Total**		
			Respondent type		**Total**	**Respondent type**		**Total**	**Respondent type**		**Total**
			Teacher	**Student**		**Teacher**	**Student**		**Teacher**	**Student**	
Helps to understand and react fast	Strongly Disagree	Count	2	10	12	0	11	11	2	21	23
		%	3.8%	3.6%	3.7%	0.0%	3.7%	3.2%	2.2%	3.7%	3.5%
	Disagree	Count	1	7	8	1	4	5	2	11	13
		%	1.9%	2.6%	2.4%	2.6%	1.3%	1.5%	2.2%	1.9%	2.0%
	Neutral	Count	0	5	5	0	2	2	0	7	7
		%	0.0%	1.8%	1.5%	0.0%	0.7%	0.6%	0.0%	1.2%	1.1%

			Teacher	Student	Total	Teacher	Student	Total	Teacher	Student	Total
	Agree	Count	29	154	183	18	189	207	47	343	390
		%	54.7%	56.2%	56.0%	47.4%	62.8%	61.1%	51.6%	59.7%	58.6%
	Strongly Agree	Count	21	98	119	19	95	114	40	193	233
		%	39.6%	35.8%	36.4%	50.0%	31.6%	33.6%	44.0%	33.6%	35.0%
Total		Count	53	274	327	38	301	339	91	575	666
		%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Pearson Chi-Square			Asymp. Sig. (2-sided) =.870			Asymp. Sig. (2-sided) =.149			Asymp. Sig. (2-sided) =.297		

Source: Field Survey 2017

The data above mentioned data of Chi Square test described that there is no significant association between teacher and student of public school and private school as the value of P in the test are.870,.149 and.297 in total because these data are greater than the standard level of significant P=.05. The study of Bottinio (2003) and Sharma (2003) also support this statement saying that use of ICT improves the perception and understanding of the world of the student. It can improve performance, teaching, administration, and develops relevant skills in the disadvantaged communities. In addition to this statement Young (2003) writes that process of adoption of ICT is not a single step; but it is ongoing and continuous steps that fully support teaching and learning and information sources.

3.4 Use of computer for preparation of class lesson & homework

Now, most of school has provision of online assignments and submission which need adequate knowledge of ICT. Student should have knowledge of MS-word, MS-excel, Power Point Presentation and web searching to prepare the class note and assignment. Teachers also provide the homework to improve the study habit of students.

The study measured the practice of computer use at home that student did their homework with computer's help and in school classroom they got support by computer use. Therefore researcher surveyed different schools and collected data shows that 10.5 % had strongly disagreed, 13.1 % disagreed against the statement and 1.1% respondents were kept them neutral against the statement. 50.3 % gave their positive responses and 22 % strongly agreed with it in total. These data suggested that the ability of student added while doing homework at home and able to prepared class lesson in the classroom by using ICT.

Table 4: Use of Computer for preparation of class lesson and homework

			Type of school								
			Public			Private			Total		
			Respondent type		Total	Respondent type		Total	Respondent type		Total
			Teacher	Student		Teacher	Student		Teacher	Student	
Use of computer for preparation of class lesson & homework	Strongly Disagree	Count	5	39	44	7	19	26	12	58	70
		%	9.4%	14.3%	13.5%	18.4%	6.3%	7.7%	13.2%	10.1%	10.5%
	Disagree	Count	6	41	47	6	34	40	12	75	87
		%	11.3%	15.1%	14.5%	15.8%	11.3%	11.8%	13.2%	13.1%	13.1%
	Neutral	Count	2	6	8	2	12	14	4	18	22
		%	3.8%	2.2%	2.5%	5.3%	4.0%	4.1%	4.4%	3.1%	3.3%
	Agree	Count	26	122	148	16	170	186	42	292	334
		%	49.1%	44.9%	45.5%	42.1%	56.5%	54.9%	46.2%	51.0%	50.3%
	Strongly Agree	Count	14	64	78	7	66	73	21	130	151
		%	26.4%	23.5%	24.0%	18.4%	21.9%	21.5%	23.1%	22.7%	22.7%
Total		Count	53	272	325	38	301	339	91	573	664
		%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Pearson Chi-Square			Asymp. Sig. (2-sided) =.738			Asymp. Sig. (2-sided) =.071			Asymp. Sig.(2-sided) =.837		

Source: Field Survey 2017

In total, more than 70% respondents believed that use of computer could be beneficial for the preparation of assignments and class note. It saves the time of manual writing and physical visit of library. Students and teacher both can develop the electronic study materials which can be easily shared through the email as well as can be read online too without investing time in printing. The data above mentioned on Chi Square test described that there is no significant association between teacher and student of public school and private school as the value of P in the test are.738,.071 respectively and.837 in total because these values are greater than the standard level of significant

P=.05. Perceptually, both students and teachers of public and private school have similar experience about the use of ICT in preparation of assignments and class note. They all have common believe that it could make work easy.

The finding is supported by some previous literatures too. According to Bhatta (2008, pp. 8-9) presented his view in this statement that effective use of ICT can also help the teacher in teaching learning process by improving the efficiency of school administration in area such as making school improvement plans and tracking student progress. In addition to this Whelan (2008) suggested that capacity building, curriculum development, infrastructure policy,

and government support are required in order to lower student barriers and improve the effectiveness of ICT use in the classroom.

3.5 Increase interest and motivate in learning by the use of computer

It is the general practice of all human being that any new technology becomes the issue of interest and all want to know about it in detail. Similarly, the use of ICT is very new knowledge for the many new schools of all areas. In Nepalese context, still many schools of rural areas have no access of ICT; basically use of computer in classroom teaching. Due to financial problem and lack of trained human resource, they are still practicing the manual teaching and learning. Interested student have to go in separate training center to learn about the use of computer

and other technical devises (email, internet, web search). Students become more motivated if they will have the opportunity to learn the new technology whereas teachers also become interested to use ICT in teaching.

The study asked the respondents about their experience about the effect of use of ICT the computer to motivate and take interest in learning and understanding different subject. The data presented in the Table 5 shows that in total, 3.3 % had strongly disagreed, 1.8 % disagreed against the statement and 1.1% was kept them neutral against the statement. 54.8 % gave their positive responses and 39 % strongly agreed with it. These data suggested that the using ICT computer can easily motivated to learn different subjects and kept the respondent very much involved with the lesson in the classroom.

Table 5: Increase interest and motivate in learning by the use of computer

			Type of school								
			Public			Private			Total		
			Respondent type		Total	Respondent type		Total	Respondent type		Total
			Teacher	Student		Teacher	Student		Teacher	Student	
Increase interest and motivate in learning	Strongly Disagree	Count	2	12	14	1	7	8	3	19	22
		%	3.8%	4.4%	4.3%	2.6%	2.3%	2.4%	3.3%	3.3%	3.3%
	Disagree	Count	1	3	4	2	6	8	3	9	12
		%	1.9%	1.1%	1.2%	5.3%	2.0%	2.4%	3.3%	1.6%	1.8%
	Neutral	Count	1	1	2	2	3	5	3	4	7
		%	1.9%	0.4%	0.6%	5.3%	1.0%	1.5%	3.3%	0.7%	1.1%
	Agree	Count	28	156	184	20	161	181	48	317	365
		%	52.8%	56.9%	56.3%	52.6%	53.5%	53.4%	52.7%	55.1%	54.8%
	Strongly Agree	Count	21	102	123	13	124	137	34	226	260
		%	39.6%	37.2%	37.6%	34.2%	41.2%	40.4%	37.4%	39.3%	39.0%
Total		Count	53	274	327	38	301	339	91	575	666
		Respondent type %	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Pearson Chi-Square		Asymp. Sig.(2-sided) =.709			Asymp. Sig.(2-sided) =.190			Asymp. Sig. (2-sided) =.163			

Source: Field Survey 2017

The data above mentioned on chi square test described that there is no significant association The data above mentioned on chi square test described that there is no significant association between teacher and student of public school and private school as the value of P in the test are.709,.190 and.163 in total because these data are greater than the standard level of significant P=.05. Grebe & Grebe (2007) also suggested supporting this statement that ICT use can help students to develop the competencies needed for the current globalization. It can help students to develop their skills, boost up their motivation and wider their knowledge & information (Husain, Morgan, & Al-Jumeily, 2011).

3.6 Easy to earn marks by the use of ICT

The effect of ICT in teaching and learning can be measured from the final score of students' exam. Good result and sustainable knowledge of ICT in long run are the ultimate

aim of learning. So, in this connection, the study has collected the opinion and experience of students and teachers regarding the effect of ICT to earn the better mark in exam. ICT is pure technical skill which teaches one person to collect the knowledge from various technical sources (internet, online journal, website, email).

The result shows that 3.6 % had strongly disagreed, 5% disagreed against the statement and 2.7% were kept them neutral in the question about their experience on effect of ICT in earning the mark in exam. 61.9 % gave their positive responses and 26.9 % strongly agreed with it in total. In general, they agreed that ICT can support to earn the mark in exam. These data suggested that the ability of student will increase to score higher marks by using ICT for the lesson to understand clearly at home as well as in classroom at school.

Table 6: Easy to earn the mark by the use of ICT

			Type of school								
			Public			Private			Total		
			Respondent type		Total	Respondent type		Total	Respondent type		Total
			Teacher	Student		Teacher	Student		Teacher	Student	
Easy to earn marks by the use of ICT	Strongly Disagree	Count	2	13	15	0	9	9	2	22	24
		%	3.8%	4.7%	4.6%	0.0%	3.0%	2.7%	2.2%	3.8%	3.6%
	Disagree	Count	1	19	20	0	13	13	1	32	33
		%	1.9%	6.9%	6.1%	0.0%	4.3%	3.8%	1.1%	5.6%	5.0%
	Neutral	Count	3	4	7	1	10	11	4	14	18
		%	5.7%	1.5%	2.1%	2.6%	3.3%	3.2%	4.4%	2.4%	2.7%
	Agree	Count	34	154	188	19	205	224	53	359	412
		%	64.2%	56.2%	57.5%	50.0%	68.1%	66.1%	58.2%	62.4%	61.9%
	Strongly Agree	Count	13	84	97	18	64	82	31	148	179
		%	24.5%	30.7%	29.7%	47.4%	21.3%	24.2%	34.1%	25.7%	26.9%
Total		Count	53	274	327	38	301	339	91	575	666
		%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Pearson Chi-Square			Asymp. Sig. (2-sided) =.155			Asymp. Sig. (2-sided) =.007			Asymp. Sig. (2-sided) =.130		

Source: Field Survey 2017

The data above mentioned on Chi Square test described that there is no significant association between teacher and student of public school and private school as the value of P in the test are.155, and.130 in total because these data are greater than the standard level of significant P=.05. Whereas in data result of test of private school shows that there is significant association between teacher and student as value of P=.007 which is less than standard significant level of P=.05. Some of the students of private school have different perception than the teacher that they do not believe on the effect of ICT in earning the score in exam.

Though, the importance of ICT is increasing day by day in all areas of knowledge. ICT is one effective source for the educational learning and knowledge transform. Rosen & Michelle (1995) also gave their views in this concern that the role of technology & learning is rapidly becoming one of the most important and widely discussed issues in contemporary education (Theiler, 2000). The result of primary data as well as secondary studies both shows the importance of ICT for better performance of students.

Conclusion

The study found that the use of ICT is more effective in learning of students because the teachers and students of public and private school of Kathmandu believe that the use of ICT enhance the technical skill and knowledge of students to prepare the assignment, class note, power point presentation which may motivate the students for learning and finally impact in their overall performances. A technically literate can collect much information through the use of online media on the specific topic so that they can gather wider knowledge to answer the specific question with empirical as well as theoretical logic. The ICT is the new technology for the many students and teachers of Nepalese schools so it is the new interest areas also. It motivates the students and teachers in teaching and learning. Teachers and students believes that technically literate students can obtain the good mark in exam too so it could be promoted in all schools as the government policy of Nepal. There is need to study the available facilities of

ICT in rural schools and its way of application in teaching and learning.

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