ABILITY OF TEACHER TRAINEES TO USE TECHNOLOGY

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Abstract

This paper aims to analyse the ability of Teacher Trainees to use the technology. The population of the research work comprised of all the teacher trainees of Hemwati Nandan Bhuguna Garhwal University, enrolled in 1st semester students for session 2021-2023. A sample of 85 teacher trainees studying in B. Ed 1st semester of Rath Mahavidyalay, Paithani, (affiliated to H.N.B. Garhwal University) was selected through the Purposive Sampling technique. The objective of the research was to study the ability of teacher trainees in using technology. The data obtained from 85 respondents was analyzed through percentage and Mann Whitney U-test. The findings revealed that 47% of the Teacher Trainees were beginners, 18.8% heard about it, 17.64% knew the basics, 11.7% were Proficient, and 4.7% were advanced in the usage of technology. The findings also revealed that the gender, stream, qualification, and medium of Teacher Trainees affect the ability to use the technology.

Keywords- Teacher Trainees, Ability, and Technology

Introduction

The era we are living in, is the era of rapid development in the field of science and technology. With increasing efficiency and scope of scientific and technological advancements, people are provided with a reliable way to boost productivity and performance. Today, the entire world is greatly influenced by the increasing use of technology and is highly depended on it. It has now become important for impactful, better and scientific teaching methodology, making the field of education progressive. Education

plays a crucial role in imparting knowledge, development of human behaviour, thinking and understanding. These elaborated aims of education are better achieved with the help of technology using computers, internet, laptops, smart boards, smartphones, and smart classes etc. This advancement in technology has marvellous potential, flexibility, and student centric approach such that a child can harness unlimited knowledge and information according to ones' own convenience, ability, and interest. Therefore, in almost all the sectors of education, the requirement of a teacher is of transmitting knowledge through optimum use of technology. With advancing technology and their easy application, accessibility and new possibilities in teaching and learning process have increased. Digital learning and online classes are displacing the boundaries of traditional classrooms. Many of these developments would have a significant effect on teacher education programs and systems.

This technology invites learners to be more independent and the curricula to be more dynamic. Teachers need to complement their content and pedagogy expertise by availing online facilities. The use of technology effectively requires a change in classroom practice, motivating teachers to develop their ability to use technology. Teachers also need to familiarize themselves with the possibilities, approaches, and applications of technology facilitating the process of teaching and learning. Along with these technologies, computer projections also have the potential of making the processes of teaching, learning, and training more efficient and cost-effective. It has opened up new possibilities of reaching out to all the sections of society, including the still unreached disadvantaged groups and children with special needs.

The increasing use of technologies has brought changes in the modes and methods of instructional processes which are becoming more learner-centered. New interactive relationships among teachers, learners, and technologies are emerging. So that in Teacher Education Programs at the pre-service and service levels have included the technologies as an important component of the teaching-learning environment to enhance effective transactions. The technology-related practices equip the Teacher Trainees with the skills of operating and maintaining hardware, acquiring and utilizing software of different kinds, i.e., structured textual materials, teaching aids, audios and videos, cassettes, multi-media, CD-ROMs and sharing information through networking in collaborative and participative methods. The application of technology in the educational setting has to be cultivated, promoted and nurtured.

Teachers and educators need to develop new understanding, approaches and ability in pupil-teachers. Their proficiency in these areas would help them in making teaching effective. For this, the Teacher Education Institutions are required to take leadership in using and promoting Teacher Trainees centric information and technology. Teachers of educational technology can achieve diversity in knowledge by getting the best benefits in education, as well as laying the foundation of the future intellectual society of the nation.

Objectives

1. To study the ability of teacher trainees in using technology.
2. To compare the ability of teacher trainees in using technology on the basis of gender, stream, qualification and medium.

Hypotheses

$H_0 1$ There is no significant difference in the ability of teacher trainees to use technology on the basis of gender (Male/Female).

$H_0 2$ There is no significant difference in the ability of teacher trainees to use technology on the basis of subject (Arts/Science).

$H_0 3$ There is no significant difference in the ability of teacher trainees to use technology on the basis of qualification (Graduates (UG), Postgraduates (PG).

$H_0 4$ There is no significant difference in the ability of teacher trainees to use technology on the basis of medium (Hindi/ English).

Review of the Related Literature

Yusuf (2011) worked on "Student-Teachers' Competence and Attitude towards Information and Communication Technology: A Case Study in a Nigerian University". This study examined empirically student-teachers competence and attitude towards information and communication technology. Gender influence on their competence and attitude were also examined. The 382 student-teachers Participated from the Faculty of Education, University of Ilorin, Nigeria. The data was collected through a questionnaire and analyzed with the help of percentages, means, and chi-square statistics. The findings revealed that the majority of the student-teachers had a positive attitude towards the use of ICT and they were competent in the use of a few basic ICT tools. Overall, no significant difference was established between male and female student teachers' attitudes and use of ICT.

Jita (2016) worked on "Pre-service teachers' competence to teach science through information and communication technologies in South Africa". The main objective of this

paper was to find the self-perception of competence by pre-service teachers to use ICTs for teaching science content. The study was done by mix method approach. For quantitative research 103 final year, pre-service teachers filled the questionnaire on their competence to use ICTs for teaching and 21 of them participated in focus group interviews. The results exposed that in comparison to technology-related knowledge fields, pre-service teachers seem to be more knowledgeable in non-technology-related skills. There are major differences in their ICT competencies.

Khateeb & A.M. (2017) studied "Measuring Digital Competence and ICT Literacy: An Exploratory Study of In-Service English Language Teachers in the Context of Saudi Arabia". The purpose of this research was to measure in-service English language teachers' digital competence, particularly for the enhancement of teaching English as a second/foreign language in the schools of Saudi Arabia. This paper investigated the research question: to what an extent are English language teachers in Saudi Arabia digitally competent and in what aspects? A quantitative approach was used and 110 teachers (Male and Female) participated in the survey. As per the findings of this study, the majority of teachers were found to be insufficiently digitally competent in comparison to the level and standards necessary to be an excellent digital teacher in the twenty-first century.

Martín, et. al. (2020) studied "Digital competence of early childhood education teachers: attitude, knowledge, and use of ICT". The main objective of the research was to find out how young students self-evaluate their digital competence. A non-experimental and descriptive quantitative methodology was followed and the data was collected through an electronic survey. The 308 prospective teachers participated in this study. T-test and Pearson's r-test were used for data analysis. The results showed that the learners self-evaluate their attitude towards -ICT as favourable and they described their approach to them as moderate, and their understanding of them as limited. It became obvious that they lacked the necessary digital skills to be considered "digital natives," as well as the capacity to use ICT in their academic or professional lives.

METHODOLOGY AND METHODS

Research Design

This study is a descriptive with quantitative research approach involving normative survey technique to know the ability of Teacher Trainees to use technology.

Population

The population of this study comprises of B. Ed teacher trainees studying in Hemvati Nandan Bahuguna Garhwal (A Central) University , Srinagar Garhwal, Uttrakhand, India.

Research Method and Sampling Technique

The method used in this study is the survey method and the data was collected through online questionnaires. A representative sample of 85 teacher-trainees was selected from Rath College, Paithani (an affiliated college of H.N.B. Garhwal (A Central) University). The population of the study was 1st semester teacher-trainees (B. Ed. interns) for session 2021-2023. The selection of sample was done by purposively selecting Rath College, Paithani for the research study. In due course of the research, the online questionnaires were sent to 108 teacher-trainees out of which 85 teacher-trainees responded successfully by filling the questionnaire properly.

Tools

A self-made questionnaire was used to collect the data from the sample. The face validity and content validity were ascertained by referring eight experts from the Department of Education, H.N.B. Garhwal University, and the reliability of the scale of Pupil-teachers ability to use Technology was established by the Cronbach-Alpha method which was found 0.97.

Statistics used

Non-parametric statistics was used to draw results. The significance of the difference was analyzed by comparing two independent samples through Mann Whitney U-test.

FINDINGS

Descriptive Analysis

The study included a total of 85 Teacher-trainees from Rath College, Paithani, B. Ed.,1st Semester. The sample was further categorized on the basis of gender, stream, qualification and medium. There were 23 male Teacher-trainees (27%) and 62 female Teacher-trainees (73%) (B. Ed interns). Stream-wise, the total number of respondents in art stream were 48 (56%) and in total 37 respondents in science stream (44%). Qualification-wise, in total, 26 (31%) were graduates(UG) while 59 (69%) were postgraduates(PG). On the basis of medium of education, 22 Teacher-trainees were English medium (26%) while 63 were Hindi Medium (74%). The descriptive analysis profile of the respondents is shown in table and graph given below (Table1 and Graph i, ii,iii & iv).

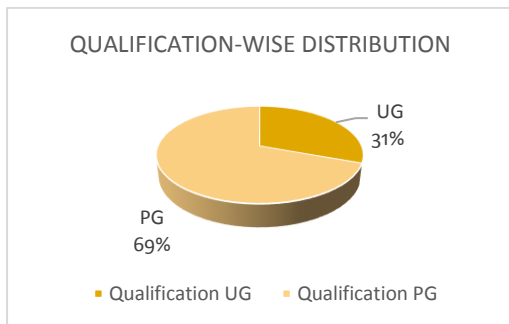**Table 1: Descriptive Profile Analysis of the Sample**

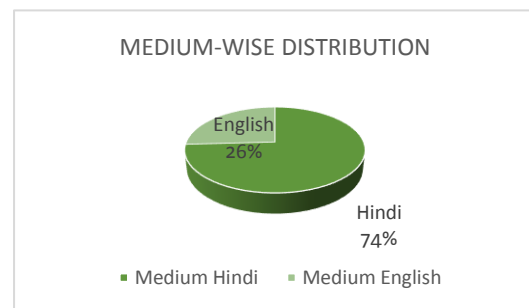| Sample	Gender		Stream		Qualification		Medium	
	Male	Female	Arts	Science	UG	PG	Hindi	English
	23	62	48	37	26	59	63	22
Total	85		85		85		85	
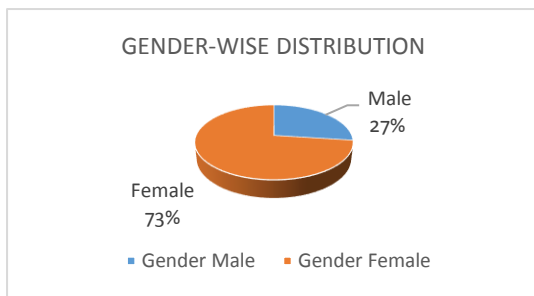
Graph-i Male and Female Teacher Trainees
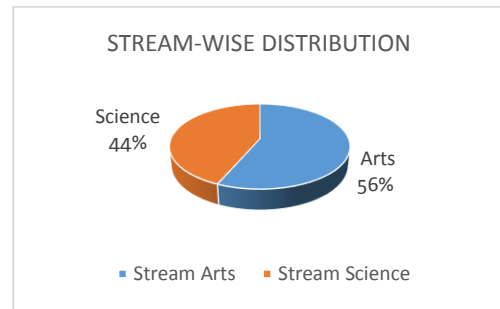
Graph-ii Science and Arts Teacher Trainees

Graph-iii UG and PG Teacher Trainees

Graph-iv English Medium and Hindi Medium Teacher Trainees

Objective no-1: To study the abilities of Teacher-trainees for the use of technology.

The objective of the study was to study the abilities of Teacher-trainees for the use of technology. The data were analysed with the help of percentage and results are given Table 2.

Table 2: Abilities of Teacher Trainees for use of technology

Abilities of Teacher Trainees for use of technology (in percentage)	Hear About	Beginner	Basic	Proficient	Advance
Abilities of Teacher Trainees for use of technology	18.8%	47%	17.64%	11.7%	4.7%
Male Teacher Trainees Abilities for use of technology	13.04%	17.39%	17.39%	34.78%	17.39%
Female Teacher Trainees Abilities for use of technology	20.96%	56.45%	19.35%	3.22%	0%
Science Teacher Trainees Abilities for use of technology	10.81%	29.72%	32.43%	16.21%	10.81%
Arts Teacher Trainees Abilities for use of technology	25%	60.41%	6.25%	8.33%	0%
UG Teacher Trainees Abilities for use of technology	26.92%	61.53%	3.84%	7.69%	0%
PG Teacher Trainees Abilities for use of technology	15.25%	40.67%	23.72%	13.55%	6.77%
Hindi Medium Teacher Trainees Abilities for use of technology	20.63%	58.73%	11.11%	6.34%	3.17%
English Medium Teacher Trainees Abilities for use of technology	13.63%	13.63%	36.36%	27.27%	9.09%

From Table 2, it can be seen that the Abilities of Teacher-trainees for the use of technology is divided into 5 categories that is Hear About (just familiar), Beginner (I am learning now), Basic (I've done it before but I need help), Proficient (can work without anyone's help), and Advance (Can train others). All Teacher-trainees ability to use technology (in percentage) is: Hear About 18.8%, Beginner 47%, Basic 17.64%, Proficient 11.7%, and Advance 4.7%. Male Teacher-trainees ability to use technology (in percentage) is: Hear About 13.04%, Beginner 17.39%, Basic 17.39%, Proficient 34.78%, and Advance 17.39%. Female Teacher-trainees ability to use technology (in percentage) is: Hear About 20.96%, Beginner 56.45%, Basic 19.35%, Proficient 3.22%, and Advance 0%. Science Teacher-trainees ability to use technology (in percentage) is: Hear About 10.81%, Beginner 29.72%, Basic 32.43%, Proficient 16.21%, and Advance 10.81%. Arts Teacher-trainees ability to use technology (in percentage) is: Hear About 25%, Beginner 60.41%, Basic 6.25%, Proficient 8.33%, and Advance 0%. UG Teacher-trainees ability to use technology (in percentage) is: Hear About

26.92%, Beginner 61.53%, Basic 3.84%, Proficient 7.69%, and Advance 0%. PG Teacher-trainees ability to use technology (in percentage) is: Hear About 15.25%, Beginner 40.67%, Basic 23.72%, Proficient 13.55%, and Advance 6.77%. English medium Teacher-trainees ability to use technology (in percentage) is: Hear About 13.63%, Beginner 13.63%, Basic 36.36%, Proficient 27.27%, and Advance 9.09%. Hindi medium Teacher-trainees ability to use technology (in percentage) is: Hear About 20.63%, Beginner 58.73%, Basic 11.11%, Proficient 6.34%, and Advance 3.17%.

Inferential Analysis

H01: There is no significant difference in the ability of Teacher-trainees to use technology on the basis of gender.

Table 3: Difference in the abilities of male and female Teacher-trainees to use technology

Gender	N	Mean Rank	Sum of Ranks	Mann Whitney U	Wilcoxon W	Z	Asymp Sig. (2Tailed)
Male	23	60..15	1383.50	318.50	2271.50	-3.90	.000**
Female	62	36.64	2271.50				
Total	85						

Significant at 0.01**

The output (Table 3) shows a significant difference in the ability of male and female Teacher-trainees to use technology. The male rank scores of the male (N=23) and females (N=62) are 60.15 and 36.64 respectively. The test statistics U=318.50, z=-3.903, p<0.01. Therefore, it can be concluded that male Teacher-trainees and female Teacher-trainees differ significantly in their ability to use technology. Hence, null hypothesis H_01 is rejected at 0.01 level of significance.

H02 There is no significant difference in the ability of Teacher-trainees to use technology on the basis of subject (Arts/science).

Table 4: Difference in the abilities of science and arts stream Teacher-trainees to use technology.

Stream	N	Mean Rank	Sum of Ranks	Mann Whitney U	Wilcoxon W	Z	Asymp Sig. (2Tailed)
Science	37	53.49	1979.00	500.00	1676.50	-3.44	.001**
Arts	48	34.92	1676.50				
Total	85						

*Significant at 0.01***

The output (Table 4) shows a significant difference in the ability of Arts and Science stream Teacher-trainees to use technology. The mean rank scores of the Art stream Teacher-trainees (N=48) and Science stream Teacher-trainees (N=37) are 34.92 and 53.49 respectively. The test statistics U=500.00, z= -3.44, p<0.01. Therefore, it can be concluded that Art stream Teacher-trainees and Science stream Teacher-trainees significantly differ in their ability to use technology. Hence, null hypothesis H_02 is rejected.

H03 There is no significant difference in the ability of Teacher-trainees to use technology on the basis of their qualification (UG/PG).

Table 5: Difference in the abilities of Teacher-trainees to use technology on the basis of their qualification.

Qualification	N	Mean Rank	Sum of Ranks	Mann Whitney U	Wilcoxon W	Z	Asymp Sig. (2Tailed)
UG	26	31.92	830.00	479.00	830.00	-2.74	.006**
PG	59	47.88	2825.00				
Total	85						

*Significant at 0.01***

The output (Table 5) shows insignificant difference in the ability of undergraduate and postgraduate Teacher-trainees to use technology. The mean rank scores of the undergraduate Teacher-trainees (N=26) and postgraduate Teacher-trainees (N=59) are 31.92 and 47.88 respectively. The test statistics U=479.00, z=-2.74, p<0.01. Therefore, it can be concluded

that undergraduate Teacher-trainees and postgraduate Teacher-trainees differ significantly from each other in their ability to use technology. Hence, null hypothesis $H_0 3$ rejected.

H04 There is no significant difference in the ability of Teacher-trainees to use technology on the basis of medium (Hindi/ English).

Table 6: Difference in the abilities of Hindi and English medium Teacher-trainees to use technology.

Medium	N	Mean Rank	Sum of Ranks	Mann Whitney U	Wilcoxon W	Z	Asymp. Sig. (2Tailed)
English	22	57.82	1272.00	367.00	2383.00	-3.27	.001**
Hindi	63	37.83	2383.00				
Total	85						

Significant at 0.01**

The output (Table 6) shows a significant difference in the ability of Hindi and English medium Teacher-trainees to use technology. The mean rank scores of the Hindi medium Teacher-trainees (N=63) and English medium Teacher-trainees (N=22) are 37.83 and 57.82 respectively. The test statistics U=367.00, z=-3.27, p<0.01. Therefore, it can be concluded that Hindi medium Teacher-trainees and English medium Teacher-trainees significantly differ in their abilities to use technology. Hence, null hypothesis $H_0 4$ is rejected.

Discussion and Conclusions

From the above analysis and discussion, it can be concluded that majority of Teacher-trainees studying in the teacher education course were beginners in their abilities to use technology however a very few (around 4.7%) were proficient in using technology which implies that their ability to use technology is low. The result findings are close to the finding of Khateeb (2017) who found that the majority of teachers were not adequately digitally competent according to the level and standards required to be good digital teachers for 21st century.

On comparing different aspects it was also found that male Teacher-trainees have better abilities to use of technology than female teacher-trainees which implies that still females are far below in using technology in the hills and it needs immediate intervention in propagating technical education among females. The difference may also be attributed to the social and economic causes. The hills of Uttarakhand are still educationally and economically backward and female education is comparatively low. In some cases parents may not be willing to

educate their girl child being traditionally biased. The findings are against and non-conforming to the findings of Yusuf (2011) who found no difference between male and female student teachers' in their attitudes and use of ICT. The reason for differences in the findings may be attributed to the locality, geographical settings in which studies are conducted.

Ability of Science stream Teacher-trainees to use technology is found to be better than that of Arts stream Teacher-trainees. The stream-wise differences are visible in the use of technology also. Generally, art stream students are considered to be poor in their performance and unequal to science stream students in many aspects, which is also reflected here.

Considering the levels of education, postgraduate Teacher-trainees stand equal to graduate teacher trainees in their use of technology. There was difference observed in their use of technology. The results may be attributed to the growth and advancement of technology in education.

English medium Teacher-trainees significantly differ from Hindi medium Teacher-trainees in their abilities to use technology. The mean difference shows a vast gap in their abilities which may be attributed positively to the medium in which they received their education at different levels. No doubt, the nation deals with linguistics diversity amidst of which private institutions tends to impart variety of knowledge in English alone. English medium schools provide computer facilities to their children which enables them to become efficient in use of technology.

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