Research Article

Reflection of Pre-Service Teachers on usage of Information and Communication Technology during the School Internship of Bachelor of Education Programme

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Abstract

This paper analyses the knowledge and practice of Information and Communication Technology (ICT) of pre-service teachers and explores their experience of using ICT during their school internship in a 2-year Bachelor of Education (B.Ed.) programme. A descriptive survey design was employed. The sample consisted of 107 pre-service teachers from the Regional Institute of Education, Bhubaneswar, sampled through the convenience sampling technique. The achievement test, observation schedule, and focus group discussion were used to collect the data. An independent sample t-test and percentage analysis was applied to analyse the data. Findings of the study revealed that both male and female pre-service teachers were found to have uniform ICT knowledge as well as practice. In other words, the results of this study showed gender equality in terms of ICT knowledge and practice. Pre-service teachers benefitted significantly from ICT use during their school internship. The paper concludes with educational implications. The outcomes of the study will be useful in the implementation of ICT for quality training for pre-service teachers as well as in-service teachers of the country.

Keywords: Teacher Education, Pre-Service Teachers, ICT, School Internship, Gender

Introduction

An internship is essential in the Bachelor of Education (B.Ed.) programme as it links theoretical knowledge with practical applications (Gupta, 2020). An internship gives pre-service teachers real-world teaching experience, allowing them to apply pedagogical strategies appropriately. These experiences provide invaluable insights into the dynamic and multifaceted nature of education for aspiring teachers. This hands-on experience helps pre-service teachers better understanding of classroom dynamics, school students' needs, and effective instructional methods. Furthermore, it prepares them to adapt to various learning environments. The direct interaction of pre-service teachers with school students helps to enhance effective communication, classroom management, and the ability to tailor teaching-learning approaches. Interns learn how to navigate the challenges and rewards of teaching while developing resilience and problem-solving skills. The school internship period serves as a period of reflection for B.Ed. students, encouraging them to evaluate and refine their teaching philosophy. Interns can identify their strengths and weaknesses related to various teaching methodologies in different educational settings (NCTE, 2014 & 2017).

According to the National Policy on Education (1986), an internship model for teacher training may be adopted, as it is firmly based on the primary value of actual field experience in a realistic situation and on developing teaching skills through practice over time. According to the Yashpal Committee Report on Learning without

Burden (1993), these programmes should emphasise enabling trainees to develop the ability for self-learning and independent thinking. Further, the National Education Policy (2020) states that "the inclusion of research and internships in the undergraduate curriculum, faculty career management systems that give due weight to research, and the governance and regulatory changes that encourage an environment of research and innovation—these aspects are extremely critical for developing a research mindset in the country (p. 46)". At the same time, the pandemic has forced us to enter the digital realm. Allo (2020) reported that students had a positive attitude towards online learning during the coronavirus pandemic, considering it helpful and valuable during the crisis created by the pandemic. Furthermore, Huang et al. (2020) identified seven essential aspects that form the foundation of online education and play an important role in optimising learning during the pandemic situation. Sun et al. (2020) found that students believe teachers should know how to continue their lectures in the online environment rather than simply transferring the information that was previously taught traditionally and that they should provide an adequate number of projects and assignments. Furthermore, e-learning is very important in the e-learning process to personalise and adapt courses to their needs (Babu & Sridevi, 2018). Online learning saves time and money (Sadeghi, 2019).

Today, information and communication technology (ICT) has a major impact on our society. The use of ICT as a teaching tool has grown so necessary for teachers that many regard it as an extraordinary teaching sidekick capable of shaping teaching and learning in the digital age (Akaadom & Gorni, 2023). According to the United Nations Division for the Advancement of Women (2005), gender equality is one of the important concerns regarding the use of ICT in various fields across the world. The use of ICT must be appropriate for addressing the difficulties and reducing the inequalities and injustices that shape impoverished people (Donnell & Sweetman, 2018). The utilisation of ICT to achieve gender equality in education and employment may start a never-ending process of positive reinforcing impact feedback between gender equality in employment and economic growth, leading to even more progress in both (Mishra & Kiran, 2015). The status of Indian women in terms of access, utilisation, and consequences of ICT technologies has been reported, where a large gender digital divide is evident in women's lower level of access and usage of ICT compared to men due to socioeconomic factors related to structure, psychological nature, and political impediments (Singh et al. 2019).

Rationale

Teachers require ICT skills and knowledge in this age of information explosion. Teachers who can grasp the use of ICT will reap enormous benefits and, of course, deepen their interest in technology issues. School internships are an opportunity for the younger generation of pre-service teacher educators to acquire knowledge and competency through rigorous practice of their knowledge and skills (Sumintono et al. 2012). When compared to male secondary school teachers, female secondary school teachers had less ICT knowledge, skills, and applications (Mustafa, 2014). The researchers reported very minor disparities in ICT literacy between males and females in middle adolescence (Gnambs, 2021). Recently, Shah and Krishnan (2023) reported that over the years, there have been correlations between ICT, gender inequality, and wealth inequality. From the above rationale, it

may be noticed that less research has been undertaken to study the influence of gender on the ICT knowledge and practice of pre-service teachers of B.Ed. programme. Thus, the existing research gap motivated the researchers to conduct the research to determine the knowledge and practice of ICT of pre-service teachers during their school internship in a 2-year Bachelor of Education **(**B.Ed.) programme. Further, an attempt is made to study the influence of gender on the knowledge and practice of ICT by the participants. Pre-service teachers are provided ICT knowledge and practice during the pre-service teacher education programme which can be applied during their school internship. For this study, the following objectives and hypotheses were formulated:

Objectives

i. To compare mean score of ICT knowledge of male and female pre-service teachers

ii. To compare mean score of ICT practice of male and female pre-service teachers

iii. To study the overall experience of pre-service teachers using ICT during their school internship

iv. To find out the pre-service teachers' challenges in implementing the syllabus during their school internship

Hypotheses

i. There is no significant difference in mean score of ICT knowledge of male and female pre-service teachers

ii. There is no significant difference in mean score of ICT practice of male and female pre-service teachers

Methods

Design: Descriptive survey research was employed in this study.

Population and Sample: All pre-service teachers of the Regional Institute of Education, Bhubaneswar, a constituent unit of NCERT, were selected as population. The sample for this study comprised 107 pre-service teachers (male = 33 and female = 74) of third semester of 2-year B.Ed. programme selected through convenience sampling technique.

Tools and techniques used for capturing the data: Following tools and techniques developed by the researchers were used for collecting the data.

i. **An achievement test:** Comprised of 50 multiple-choice items with one mark for each correct response and zero for each wrong response. Its reliability coefficient of 0.85 was computed by the split-half method.

ii. **Observation schedule:** After establishing the categories and codes, an observation schedule was developed. The structured rubric was scored based on the level at which the sample was performed.

iii. **Focus Group Discussion (FGD):** In this case, thematic analysis was used. The steps were transcribing and analysing the FGD data to uncover themes, patterns, and insights. To interpret the information gathered, employ qualitative analytic tools. Coding, categorising, and summarising the data.

iv. **Interview and feedback from the Cooperating Teachers and Institute Supervisor:** These were used for data legitimation and cross-validating what came from the other sources.

Procedure of data collection: Pre-service teachers of the third semester

of the 2-year B.Ed. programme of RIE Bhubaneswar during the session 2021-2023 completed a school internship programme for 16 weeks during the third semester at different Jawahar Navodaya Vidyalayas under the jurisdiction of Regional Institute of Education, Bhubaneswar. For assessing the ICT knowledge of pre-service teachers, an achievement test comprising of 50 multiple-choice items, each with one mark for correct response and zero mark for wrong or no response, with a reliability of 0.85, was administered to the participants before going to the internship programme. An observation schedule was applied to them to assess their ICT practice in the classroom during the internship. Focus Group Discussion (FGD) was used for collecting information about their experience acquired during the school internship after returning from the internship. Institute Supervisors and Cooperating School Teachers were also interviewed to triangulate the information. By engaging in a face-to-face conversation, researchers established a rapport with interviewees, creating a comfortable and open environment conducive to sharing personal experiences and insights. The researcher deeply realized the same as the interviews of the visiting faculties (supervisor-teacher from Regional Institute of Education, Bhubaneswar) conducted many issues that did not open starkly on the surface and lay hidden cropped up along with the other challenges the students faced and the learning outcomes being established.

Techniques used for data analysis: Assumptions underlying the normality were tested and data were seemed to be normality distributed. For analysing the data, an independent sample t-test and percentage analysis was applied through SPSS and Excel, respectively.

Results

(i) Gender-wise comparison of mean scores of ICT knowledge of pre-service teachers

The first objective was to compare the mean scores of ICT knowledge of male and female pre-service teachers. The data were analysed with the help of an independent sample t-test, and the results are given in Table 1.

Table-1: Gender-wise Mean (M) , SD, N and t –value of pre-service teachers in ICT knowledge

Gender	M	SD	N	t-value	Remark
Male	28.67	9.12	33	1.2	Not Significant
Female	30.93	8.48	74		

From Table 1, it can be seen that the t-value is 1.2, which is not significant. It indicates that there is no significant difference in mean scores of ICT knowledge between male and female pre-service teachers. Thus, the null hypothesis**,** that there is no significant difference in mean scores of ICT knowledge between male and female pre-service teachers, is not rejected. Therefore, it may be said that ICT knowledge of pre-service teachers were found to be gender independent.

(ii) Gender-wise comparison of mean scores of ICT practice of pre-service teachers

The second objective was to compare the mean scores of ICT practice of male and female pre-service teachers. The data were analysed with the help of an independent sample t-test, and the results are given in Table 2.

Table-2: Gender-wise Mean (M) , SD, N and t –value of pre-service teachers in ICT practice

Gender	M	SD	N	t-value	Remark
Male	34.91	2.47	33	1.48	Not Significant
Female	34.24	1.99	74		

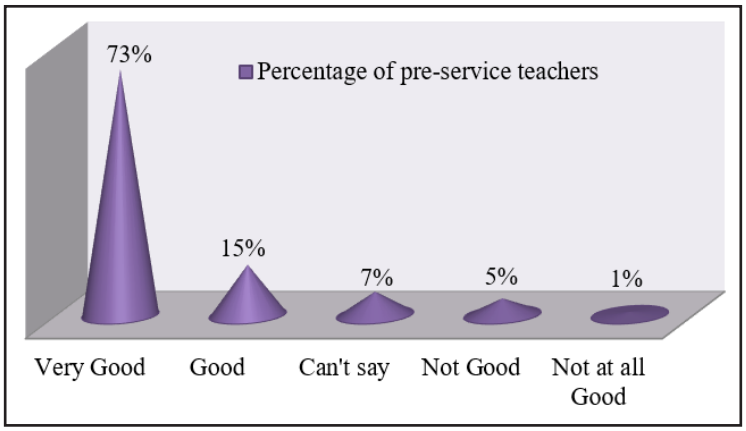
From Table 2, it can be seen that the t-value is 1.48, which is not significant. It implies that there is no significant difference in the mean scores of ICT practice between male and female pre-service teachers. Thus, the null hypothesis**,** that **t**here is no significant difference in mean scores of ICT practice between male and female pre-service teachers, is not rejected. Therefore, it may be said that both male and female pre-service teachers were found to have uniform ICT practice.

(iii) Overall experience of pre-service teachers using ICT during their school internship

The overall experience of pre-service teachers has been reflected in two parts:

Part I: Responses of pre-service teachers using ICT during their school internship has been given in Figure 1.

Figure-1: Responses of pre-service teachers for practising ICT during their school internship

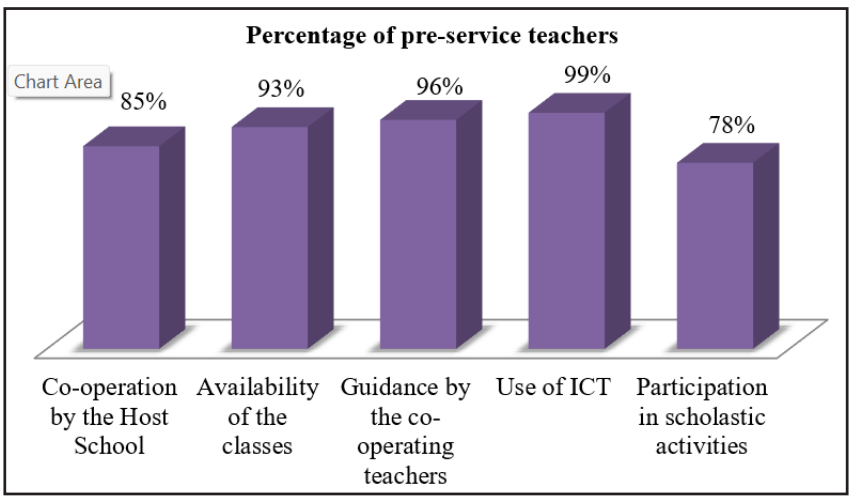


From Figure 1, it is evident that the majority of respondents, 73 per cent, had a very positive internship experience. This suggests that a significant proportion of pre-service teachers found the internship to be not only satisfactory but also noteworthy. This category's high percentage indicates that participants have a generally positive attitude. A sizable but smaller proportion (15 per cent) of respondents rated their internship experience as "good." While not as high as the "Very Good" category, many pre-service teachers had a positive overall experience during their internship. Almost 7 per cent of respondents selected the option "can't say." This could indicate that this group of pre-service teachers is experiencing uncertainty or mixed emotions. It could be due to various factors, such as a lack of a clear-cut positive or negative experience

or a neutral perception of their internship. A smaller proportion of respondents (5 per cent) had a less favourable experience, classifying it as "not good". While this is a small sample, it does highlight a subset of pre-service teachers who encountered difficulties or concerns during their internship that influenced their perception. A small proportion of 1 per cent rated their internship experience as "not at all good". This suggests that a very small percentage of pre-service teachers had an overwhelmingly negative impression of their internship, implying that the experience fell far short of some expectations. Hence, from the above discussion, it can be said that most of the pre-service teachers had acquired positive experience from school internship.

Part II: The experience of the pre-service teachers regarding various aspects has been presented in Figure 2.

Figure-2: The experience of the pre-service teachers regarding various aspects



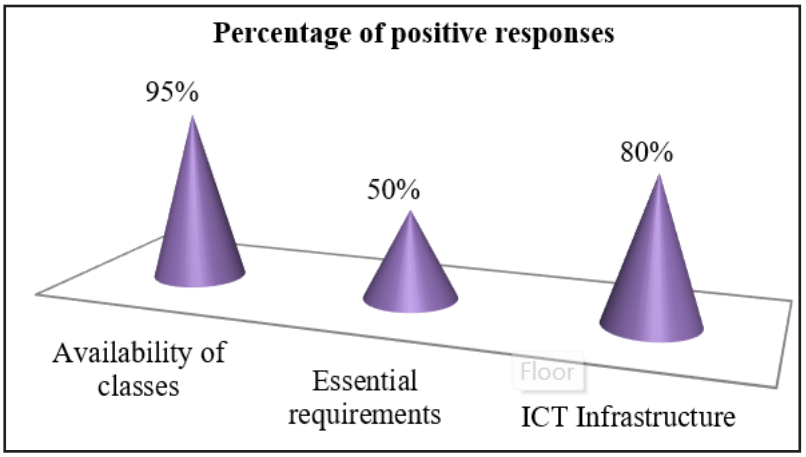
From Figure 2, it can be seen that 85 per cent of pre-service teachers reported that the host school cooperated during internship. This indicates that the vast majority received support, collaboration, and a welcoming environment from the school where they completed their internship. A notable high percentage, 93 per cent, expressed satisfaction with availability of classes for transaction of lesson. This indicates that the majority of students found the class schedule and accessibility to be beneficial to their internship experience. A 96 per cent positive response indicates that the cooperating teachers provided significant guidance during the internship. This high level of supervision and mentoring is critical for pre-service teachers' professional development. A remarkable 99 per cent indicates that pre-service teachers accessed and used ICT during their internship. This reflects a modern, technology-enhanced approach to teaching and learning. The majority,

78 per cent, reported positive experiences participating in scholastic activities during internship. This suggests that a sizable proportion of pre-service teachers had the opportunity to participate in other curricular activities at school, enhancing their overall educational experience. As a result, it can be summarised that most pre-service teachers had a positive internship experience.

(iv) Challenges of implementing the syllabus by Pre-service teachers during school internship

The parameter-wise percentage of positive responses collected from pre-service teachers has been displayed in Figure 3.

Figure-3: Parameter-wise percentage of positive responses collected from pre-service teacher



From Figure 3, it can be observed that the exceptionally high percentage (95 per cent) indicates a strong consensus among pre-service teachers that classes were readily available during their internship. This suggests that the scheduling and organisation of classes were well-structured and accessible, facilitating a conducive learning environment. The positive response reflects a vital aspect of a successful internship, where pre-service teachers can actively engage in classroom activities and gain practical teaching experience. Furthermore, the 50 per cent rating for essential requirements suggests a mixed perception among pre-service teachers regarding fulfilling necessary elements during their internship. This could imply an equal division of respondents who feel that basic requirements were adequately met and those who think otherwise. Further investigation is needed to identify specific elements categorised as "essential requirements" and understand the factors contributing to the perceived satisfaction or dissatisfaction. The 80 per cent rating for ICT infrastructure indicates a relatively positive perception among pre-service teachers regarding the availability and usability of ICT during their school internship. This suggests that a significant majority had access to technological tools and resources that can contribute to

effective teaching practices. The positive response underscores the importance of integrating technology into education, aligning with contemporary teaching methods.

Discussions

Findings of the present study revealed that male and female pre-service teachers were found to have the same ICT knowledge. Their knowledge of ICT was noticed to be independent of gender. ICT practice seemed to be similar in the case of male and female pre-service teachers as evident from the study. These findings are consistent with the previous studies (Alkhasawneh & Alanazy, 2015; Koohang, 1986 and Unegbu et al., 2019). Findings from the study indicated that pre-service teachers acquired positive and enriching professional development experiences during the internship. Further, it was also found that the use of ICT knowledge and practice contributed to improve their teaching skills and competencies, which are consistent with the earlier studies (Bhat & Bashir, 2018; Sharma, 2022). The high percentages across various aspects, from host school cooperation to ICT use and guidance by cooperating teachers, indicate a generally positive and enriching professional development experience during the internship.

Delimitations

This study was delimited to students of B.Ed. Programme of Regional Institute of Education, Bhubaneswar, Odisha, a constituent unit of NCERT. Students in the third semester of B.Ed. (Session: 2021-2023). School internships were conducted at Jawahar Navodaya Vidyalayas under the jurisdiction of the Regional Institute of Education, Bhubaneswar. Only two levels of gender, namely male and female, were considered in the present study.

Educational implications

Findings of this research demonstrated that for developing effective teachers, ICT knowledge and practices are of significant importance in terms of planning, monitoring, assessment, and evaluation of various activities undertaken during the school internship. Effective practices of ICT may be implemented for improving the learning environment in schools as well as in teacher education institutions for teaching and learning abstract concepts of various subjects through animation, simulation and other innovative strategies. Practices of ICT might be used in organising different curricular and other curricular activities efficiently and keeping their records for the future. Further, knowledge and practices of ICT may be applied for survey research in the field of teacher education as well as for the accountability of all institutions. Moreover, the skills of ICT might be implemented for providing research and innovations on various dimensions of teacher education.

Conclusion

The outcomes of the study revealed that both male and female pre-service teachers were found to be independent of gender in terms of ICT knowledge and practice during their school internship. In other words, the *findings of this study revealed gender equality in terms of ICT knowledge and practices,* which is one of the most important concerns in the world. The school internship facilitates pre-service teachers performing their best in ICT usage. As a result, the internship enables students and teaching staff to monitor student-teachers and track emerging technologies and their live applications. Internship experiences help in evaluating the teacher's ability, promote socialisation within the profession, stimulate the development

of teaching-learning concepts, provide a safe field for experimentation, allow insight into new perspectives, and increase motivation to continue learning and reflecting. The results of this study therefore recommend that internship programmes are essential for preparing teachers with the skills and competencies of the modern world. Thus, effective knowledge and practices of ICT might be implemented in monitoring and coordinating various teacher education programmes regarding its development at the national and international levels.

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