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Information communication technology use in post-graduate diploma in education at Tribhuvan University

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Abstract: The application of ICT in education has made education accessible and affordable and has introduced a new way of learning through digital platforms. Tribhuvan University, Faculty of Education, Dean's Office, has introduced a Post Graduate Diploma (PGD) programme in education. The programme has been introduced as an alternative to the university's traditional One Year Bachelor of Education. The blended teaching method is employed in this programme. The main objective of this research is to analyse the use of information communication technology (ICT) in the Post-Graduate Diploma course at Tribhuvan University, with specific objectives that include analysing the economic benefits of ICT use and exploring its affordability for Post-Graduate Diploma students. The study employed a mixed-methods research design. The study population consisted of all PGDE students enrolled at Tribhuvan University. A questionnaire and an interview were conducted to collect data and information. The research data was analysed in two stages. In the first stage, primary data and information for quantitative analysis were collected using a pre-structured questionnaire and were analysed using simple statistical tools. In the second stage, the qualitative data and information were derived from key informant interviews (faculty members and campus chiefs). The majority of the respondents reported that ICT use in PGDE made education more accessible to students from rural and remote areas. Some respondents viewed ICT tools as remaining challenging to them because of language limitations, as digital platforms are English-oriented.

Keywords: Economics education, ICT access, PGD programme

Abstrak: Penerapan TIK dalam pendidikan telah membuat pendidikan menjadi mudah diakses dan terjangkau serta telah memperkenalkan cara belajar baru melalui platform digital. Universitas Tribhuvan, Fakultas Pendidikan, Kantor Dekan, telah memperkenalkan program Diploma Pascasarjana (PGD) dalam pendidikan. Program ini telah diperkenalkan sebagai alternatif dari Sarjana Pendidikan Satu Tahun tradisional universitas. Metode pengajaran campuran digunakan dalam program ini. Tujuan utama dari penelitian ini adalah untuk menganalisis penggunaan teknologi komunikasi informasi (TIK) dalam kursus Diploma Pascasarjana di Universitas Tribhuvan, dengan tujuan khusus yang mencakup analisis manfaat ekonomi dari penggunaan TIK dan mengeksplorasi keterjangkauannya bagi mahasiswa Diploma Pascasarjana. Penelitian ini menggunakan desain penelitian metode campuran. Populasi penelitian terdiri dari semua mahasiswa PGDE yang terdaftar di Universitas Tribhuvan. Kuesioner dan wawancara dilakukan untuk mengumpulkan data dan informasi. Data penelitian dianalisis dalam dua tahap. Pada tahap pertama, data primer dan informasi untuk analisis kuantitatif dikumpulkan menggunakan kuesioner yang telah terstruktur sebelumnya dan dianalisis menggunakan alat statistik sederhana. Pada tahap kedua, data dan informasi kualitatif diperoleh dari wawancara dengan informan kunci (anggota fakultas dan pimpinan kampus). Mayoritas responden melaporkan bahwa penggunaan TIK di PGDE membuat pendidikan lebih mudah diakses oleh mahasiswa dari daerah pedesaan dan terpencil. Beberapa responden menganggap perangkat TIK masih menjadi tantangan bagi mereka karena keterbatasan bahasa, karena platform digital berorientasi pada bahasa Inggris.

Kata kunci: Pendidikan ekonomi, akses TIK, program PGD

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INTRODUCTION

In the 21st century ICT based pedagogy in education has revolutionized the traditional pedagogy. The appropriate use of ICTs can promote the paradigmatic shift in both content and pedagogy that is the core of education reform and promote problem-based learning. As teaching and learning shifts from the teacher-centered approach to a learner-centered approach the teacher acts as facilitator, mentor and coach. So, educational institutions are shifting towards new techniques of teaching enhanced by ICTs (Dita et al., 2023; Mbodila and Kikunga, 2012; Setyantoko et al., 2023)

The Tribhuvan University, as the oldest and largest university in Nepal, was established in 1959, 2016 B.S., with the purpose of upgrading higher education and research within the country. It was named after King Tribhuvan, the modernizer of Nepal. As a national university, it was established to provide easy access to high-quality education for Nepalese learners. The university played a vital role in shaping modern Nepal's education system, producing competent professionals, researchers, and scholars. It became ultimately the large body for policy development, designing curriculum, and bringing changes into educational fields in the country. TU also advocated for professional institutions and a technical college established under the affiliation of it. It has remained a central institution for teacher training and educational research in Nepal since its establishment. It has been preparing qualified teachers to serve in the educational institutions of Nepal.

Faculty of Education at Tribhuvan University has a rich history as Nepal's leading institution for teacher education. It was one of the earliest faculties of Tribhuvan University, established in 1954 (2011 BS), with the purpose of preparing qualified teachers who could extend their services in the educational institutions of Nepal. Initially, it was designed to produce secondary and higher secondary teachers, thus helping in national education development. Given the increasing demand for trained educators, the faculty has continued to expand its academic programs and campuses across Nepal: Bachelor's, Master's, M.Phil., and Ph.D. programs in education, respectively. The faculty has immensely contributed towards the implementation of teacher training programs, curriculum development, and education research. The CDE at Kirtipur is the central hub for higher education and research in education, while the faculty governs several constituent and affiliated campuses across Nepal, making education more accessible. Besides, it has collaborated with national and international organizations to improve teacher training, curriculum design, and educational policies in Nepal. It continues today to be the training place for teachers, educational leaders, and researchers in specialized programs, such as curriculum studies, educational planning, inclusive education, and ICT in Education.

The significant change taking place in Information and Communication Technologies (ICTs) greatly influences how universities carry out their functions in teaching, learning, and research, particularly in terms of knowledge creation, distribution, and utilization. This requires innovative approach in the teaching methods and the instructional strategies employed within the current educational system (Alam, 2016). Tribhuvan University has been continuously upgrading the integration of ICT into its academic and administrative works from time to time to raise the quality of education, research, and efficiency of the institution as a whole. Since digital transformation is gaining momentum, TU has introduced various ICT-related programs, digital services, and e-learning platforms and opportunities to modernize higher education in the country. Its efforts in the integration of ICT are

gradually transforming Tribhuvan University into a digitally advanced, research-driven university that meets global education standards.

TU Academic Council decided to terminate the One-Year B.Ed Program in 2021. In 2023, Post-Graduate Diploma in Education has been developed and introduced as a replacement for the traditional one-year B.Ed. program. This initiative is structured into three semesters (eighteen-month). The curriculum covers various educational disciplines. The program is offered through Central Department of Education and 13 constituent campuses of TU. The programme utilizes a blended learning approach, combining online and face-to-face learning.

Use of ICT tools in education offers the opportunities to learners to learn and practice 21st century skills. ICT use in teaching offers effective teaching and learning, and it also allowing the instructors to visualize pedagogical environment. ICT assists the teachers in planning their lesson, so that students acquire knowledge at each stage of learning. ICT tools such as the internet and interactive multimedia constitute a pressing agenda for future learning to be appropriately imbibed into normal learning and pedagogy (Ratheeswari, 2018). The study revealed that using technological aids appropriately brings a lot of benefits to teachers and learners that help them to solve their learning problems and find methods to use what they have learned in ways that are effective and meaningful (Bhusal, 2020).

The integration of ICT resources does not entail the substitution of conventional resources, but rather the emergence of hybrid models in which both resource types are beneficial. In classrooms equipped with extensive digital technology, educators typically integrate it into their work alongside conventional educational resources, such as textbooks and blackboards. A direct correlation exists, or seemingly exists, between a teacher's proficiency as a digital citizen and their professional conduct with ICT in the classroom. The greater the teacher's skill and participation as a digital citizen, the more extensive the pedagogical use of technologies in the classroom (Área-Moreira et al. 2016).

The research indicates that educational production does not support the notion that teachers and students can interchangeably utilize computer-assisted learning and traditional learning at any level with equivalent outcomes. A hybrid strategy may represent the most effective alternative for educational institutions and learners (Bouilheres et al., 2020; Mintii, 2023). This technique may maintain student engagement while also exposing them to more advantageous learning approaches or merely result in frequent transitions among activities (Bettinger et al, 2020).

The research showed that university professors utilize digital libraries to enhance their knowledge and expertise. The computer labs in the university lack sufficient computers. The study found that the use of ICT tools by teachers could enhance their motivation and efficiency but they hesitate to use them. So, the universities should offer adequate teacher training resources, ICT-related programs, and experts to enhance their technical skills utilizing contemporary information and communication technologies (Zaheer et al., 2021).

The research focuses on three elements: the investigation of the resources utilized by educators; the difficulties in adopting ICTs; and potential strategies to address the circumstances from the viewpoints informed by the teachers' experiences. The results show that the educators employed ICTs such as laptops, mobile phones, multimedia projectors, websites, Facebook groups, PowerPoint presentations, and printers to improve the teaching

and learning process. The research identified various challenges, including excessive workloads, time limitations, maintenance problems, inconsistent electricity supply, insufficient ICT resources, and financial constraints. The educators utilized different ideas such as targeted ICT application, personal computer usage, lobbying with senior officials, organizing workshops, and securing dependable electricity and internet access to address the situations. To integrate ICTs in education and address those obstacles, the research suggests emphasizing teacher training initiatives, securing stable and dependable internet connectivity, ensuring a continuous power supply, offering sufficient financial assistance, and establishing systematic monitoring and evaluation processes. By implementing these suggestions, teachers in rural Nepal may improve their teaching effectiveness through better ICT integration, thus providing enhanced learning experiences for students in English Language Teaching (ELT) classrooms (Joshi & Ayer, 2024).

The ICT education policy established by the Nepalese government highlights the importance of enhancing teachers' ICT skills and proposes that integrating ICT will change conventional teaching methods to more student-focused approaches. The case study highlighted the absence of a well-defined strategy for executing the ICT education policy and financing the ICT infrastructure and the professional growth of university faculty to incorporate ICT in teacher education. In this instance, the Faculty of Education at the university, which lacks financial support from the government and the institution for the ICT in education initiative, obtained funding from an international organization to establish ICT infrastructure and deliver ICT training for educators and other personnel. It is contended that, to implement the policy effectively, additional sustainable methods must be created to supply teachers with ICT resources and to educate them on utilizing ICT in their teaching practices (Arifuddin et al., 2025; Chandio, 2021; Dwigustini et al., 2024; Rana & Rana, 2020; Salsabila & Suharto, 2025)

Enhancing quality in education is a crucial concern, especially now as everything is becoming globalized. The conventional pedagogy method of education, as old as formal instruction, encompasses the guided transfer of knowledge from teacher as wise individual to student as receptacle. This approach typically relies on ready-made learning resources, established time limits, and evaluation tasks and standards set by educators. However, studies indicate that the effective application of ICTs can trigger the fundamental change in both content and teaching methods that is central to educational reform in the 21st century and encourage problem-based learning. This paper provides an overview of conventional teaching methods and their limitations; it also addresses the new teaching methods made possible by Information Communication Technology (ICTs) and organizes various approaches observed in the use of ICTs in education. As education transitions from a teacher-centered approach to a learner-centered one, the teacher transforms from the sole authoritative voice to becoming a facilitator, mentor, and coach; shifting from performer on stage to guide alongside students. Consequently, numerous institutions in the 21st century are adopting novel teaching methods supported by ICTs to encourage problem-based learning as a remedy for environments where the teacher is the sole speaker and provides directives, resulting in minimal student involvement (Mbodila and Kikunga, 2012).

The Information Technology Policy-2000 had set the information technology strategies to accomplish the objectives of rapid development and expansion of information technology in a fair and competitive environment. To include computer education in

curriculum from the school level and enhance professional efficiency through the use of information technology are among them. The policies set to implement these strategies were using information technology to e-education, expanding technology in rural areas, including computer education in the school level curriculum so as to broaden its scope (The Information Technology Policy, 2000).

General objective is of this research is to analyze information communication technology (ICT) use in Post-Graduate Diploma course in Tribhuvan University. The specific objectives are: (1) to analyze economic benefits of information and communication technology use in post-graduate diploma course in Tribhuvan University; (2) yo explore affordability of ICT use to post-graduate diploma student in Tribhuvan University.

Most of the literatures in the Nepalese context, are focused on all level of ICT access to teacher, and are mostly found in qualitative or quantitative methodological approaches. Students' affordability, adoption and readiness to use ICT are equally important in teaching at university level, mainly in PGD programme in TU that utilizes a blended learning approach, combining online and face-to-face learning. So, present study tries to bridge this research gap and focuses on affordability, adoption and readiness of PGDE students towards ICT and it employs mixed methods approach. The present work attempts to seek the answers of the research questions: (1) what are PGD students' experiences regarding ICT use for teaching PGD level?; (2) whether use of ICT is affordable to PGD level students?. The study is limited to PGDE program of Tribhuvan University. It is mainly focused to student's perspective.

METHOD

This study has based on sequential mixed methods research design. Mixed methods research design uses qualitative and quantitative data collection and analysis. So, in this research quantitative data were collected and analysed first, and then qualitative data were collected and analysed. Finally, qualitative results were used to justify and strengthen the quantitative results (Cresswell, 2014). This study was carried out in 1243 PGDE students of Tribhuvan University.

The population of the study covers total PGDE students of TU. The study employed census method that included total of 1243 PGDE students of TU for quantitative data. For qualitative data Key Informants Interviews with 12 concerned authorities that include faculty members, ICT Coordinators and concerned Campus Chiefs.

Questionnaire survey was applied to collect quantitative data and information from the respondents, so as to find out right information as output. Qualitative data and information were collected through KII from 12 concerned authorities that include faculty members, ICT Coordinators and concerned Campus Chiefs.

The research data was analyzed in two stages. In the first stage, the information is related to personal interviews of students. These students could adequately express their experiences regarding ICT use in PGDE Programme. In the second stage, the data and information were derived from close ended survey questionnaire. This study is based on the Technology Acceptance Model (TAM) (Davis, 1989), that focuses on perceived ease of technology use in educational sector. Perceived ease is analyzed from both the sides: teachers and the students.

RESULTS AND DISCUSSION

Table 1. Entrance pass first batch of PGDE

	1	2	3	4	5	6	7	8	9	10	11	12	Total
B M Campus, Chitwan	-	6	-	-	-	7	-	3	-	-	1	27	44
B M Campus, Butwal	21	6	-	-	-	-	2	4	-	1	29	25	88
Central Department of Education	2	6	-	1	2	2	2	1	1	-	13	14	44
Dadeldhura Campus, Dadeldhura	-	-	-	-	-	1	-	1	-	-	-	-	2
Dhankuta Multiple Campus, Dhankuta	-	1	-	-		7	-	1	-	-	-	12	21
M M C, Nepalgunj	-	2	3	-	-	10	-	1	-	-	-	-	16
M R Campus, Tahachal	15	8	3	-	-	8	2	7	-	-	20	19	82
M R M Campus, Ilam	-	1	2	-	-	-	-	-	-	-	-	8	11
Prithvi Narayan Campus, Pokhara	7	12	-	-	-	3	2	2	1	-	11	14	52
S. S. M. Y. Multiple Campus, Siraha	-	6	22	-	-	37	38	6	-	-	-	-	109
Sanothimi Campus, Bhaktapur	6	6	2	1	-	3	3	2	-	-	15	20	58
Surkhet (Education) Campus, Surkhet	-	-	-	-	-	1	3	-	-	-	-	11	15
Thakur Ram Multiple Campus, Birgunj	2	2	6	-	-	8	2	-	-	-	1	-	21
Grand Total	53	56	38	2	2	87	54	28	2	1	90	150	563

Source: faculty of Education, Dean's Office, TU, 2025

Note:
1. Economics Education
2. English Education
3. Health and Physical Education
4. Inclusive Education
5. ICT Education
6. Instructional Planning and Mgmt
7. Mathematics Education
8. Nepali Education
9. Political Science Education
10. Population Education
11. Science Education
12. Social Studies Education

Table 2. 1st semester of PGDE

	1	2	3	4	5	6	7	8	9	Total
Birendra Multiple Campus, Chitwan									31	31
Butwal Multiple Campus, Butwal	11	8						38		57
Central Department of Education, University Campus, TU		1		3	3	3		15	6	31
Dhankuta Multiple Campus, Dhankuta						3			9	12
Mahendra Ratna Campus, Tahachal	14	2	4	2		4	4	21	15	66
Mahendra Ratna Multiple Campus, Ilam					10					10
Prithvi Narayan Campus, Pokhara		10			15			20	6	51
S. S. M. Y. Multiple Campus, Siraha			21			48				69
Sanothimi Campus, Bhaktapur	11	8						9	11	39
Surkhet (Education) Campus, Surkhet									11	11
Grand Total	36	29	25	5	28	58	4	103	89	377

Source: faculty of Education, Dean's Office, TU, 2025

Table 3. 2nd semester PGDE

	1	2	3	4	5	6	7	8	9	Total
Birendra Multiple Campus, Chitwan	-	-	-	-	-	-	-	-	28	28
Butwal Multiple Campus, Butwal	11	4	-	-	-	-	-	32		47
Central Department of Education, University Campus, TU	-	1	-	2	3	3	-	9	5	23
Dhankuta Multiple Campus, Dhankuta	-	-	-	-	-	3	-	-	6	9
Mahendra Ratna Campus, Tahachal	10	2	2	2	-	4	4	18	11	53
Mahendra Ratna Multiple Campus, Ilam	-	-	-	-	7	-	-	-	-	7
Prithvi Narayan Campus, Pokhara	-	9	-	-	13	-	-	14	5	41
S. S. M. Y. Multiple Campus, Siraha	-	-	19	-	-	41	-	-	-	60
Sanothimi Campus, Bhaktapur	8	8	-	-	-	-	-	7	8	31
Surkhet (Education) Campus, Surkhet	-	-	-	-	-	-	-	-	4	4
Grand Total	29	24	21	4	23	51	4	80	67	303

Source: faculty of Education, Dean's Office, TU, 2025

Note for Table 2 and 3:

1. Economics Education
2. English Education
3. Health Education
4. ICT Education
5. Instructional Planning and Management
6. Mathematics Education
7. Nepali Education
8. Science Education
9. Social Studies Education

Students with consistent access to ICT tools achieved better academic performance and better engaged. The effectiveness of learning lies when the learners meaningfully engaged through collaborative, project-based, and technology-supported activities (Kearsley & Shneiderman, 1998). Majority of the students favored blended learning which combines ace-to-face and online instruction. They reported that, it offered flexibility and access to extra educational resources. The research also showed that ICT based teaching methods helped to enhance students' analytical and problem-solving abilities. Almost all the students were of the opinion that ICT use in PGDE is cost effective. It reduced transportation cost, and time. It also eliminated lodging and food cost of the students. So, it offered affordability. ICT use in PGDE has made education more accessible to the students from rural and remote areas.

Malcolm has termed his Adult Learning Theory as andragogy. The term is derived from Greek word 'man-leading,' as a substitution to pedagogy which means 'child-leading'. The theory emphasizes the different ways adults learn, that is distinct from the pedagogy used for children. The theory assumes that adults are self-directed learners, they learn best through experience, and intrinsic factors motivate them to learn. The theory believes that adults bring prior experiences to the learning process and are focused on learning that helps them solve problems, achieve goals, and improve their personal or professional lives. Knowles acknowledges the distinct ways adults tackle education and the teaching methods and styles work best for them. For this, the theory outlines six core assumptions about adult learners and their preferred learning approaches (Harper and Ross, 2011).

Lack of uninterrupted power supply, slow internet, and outdated equipment hindered successful learning. Some few students suffered from lack of ICT skills. They believed that training facilities were needed to utilize digital platforms effectively. Some students reported that use of ICT tools remained challenging to them because of language limitations as digital platforms are English-oriented.

Students' experience regarding ICT use

The survey findings revealed that majority of PGD students (60%) use Information and Communication Technology (ICT) tools every day, 85 percent of them participated actively on online learning platforms. The respondents were of the opinion that that encountered challenges as poor internet connectivity (65%), lack of training (45%), and digital tool navigation (35%). Qualitative data supported the findings that constant technical disruptions adversely impacted students' learning experience. ICT coordinators suggested consistent maintenance and further training so as to develop ICT competency among both staff and students.

Affordability of ICT use

ICT adoption is relatively high, but affordability remains an issue to some PGD students. Most of the students reported having minimal digital devices—100% smartphone and 80% laptop ownership—and still 25% were not able to meet ICT expenses (DiMaggio & Hargittai, 2001). Monthly internet cost was a continuous expense, especially to poor or rural students, because many respondents reported that it remained burden to the family for getting required equipment. The chart below presents perceived affordability:

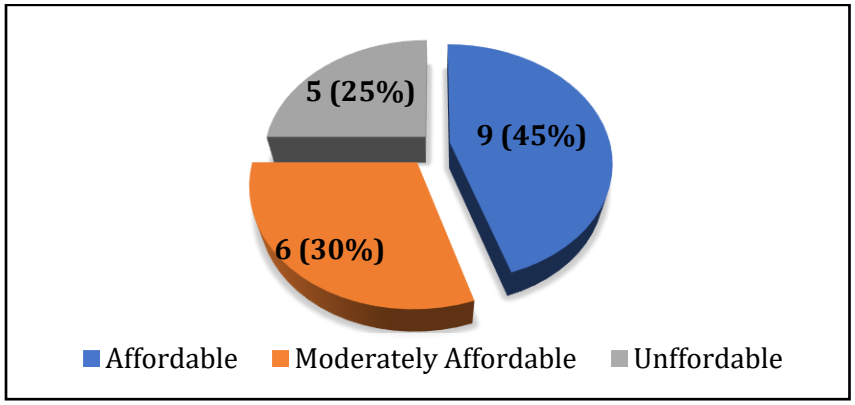

Fig. 1 . ICT Affordability

Perceived technical readiness

When the students were asked about their technical preparedness, 10% of the PGD students reported their competency to apply simple ICT tools such as MS Word, PowerPoint, and Zoom, and 90% indicated that they felt confident with them. Preparedness fell quite low, however, when applied to more complex study tools; only 35% of the students indicated they were confident using tools such as Moodle, SPSS, or citation software, and 65% reported they were weak in technical ability to use the tools. Figure 2 is the graphical presentation of the technical preparedness.

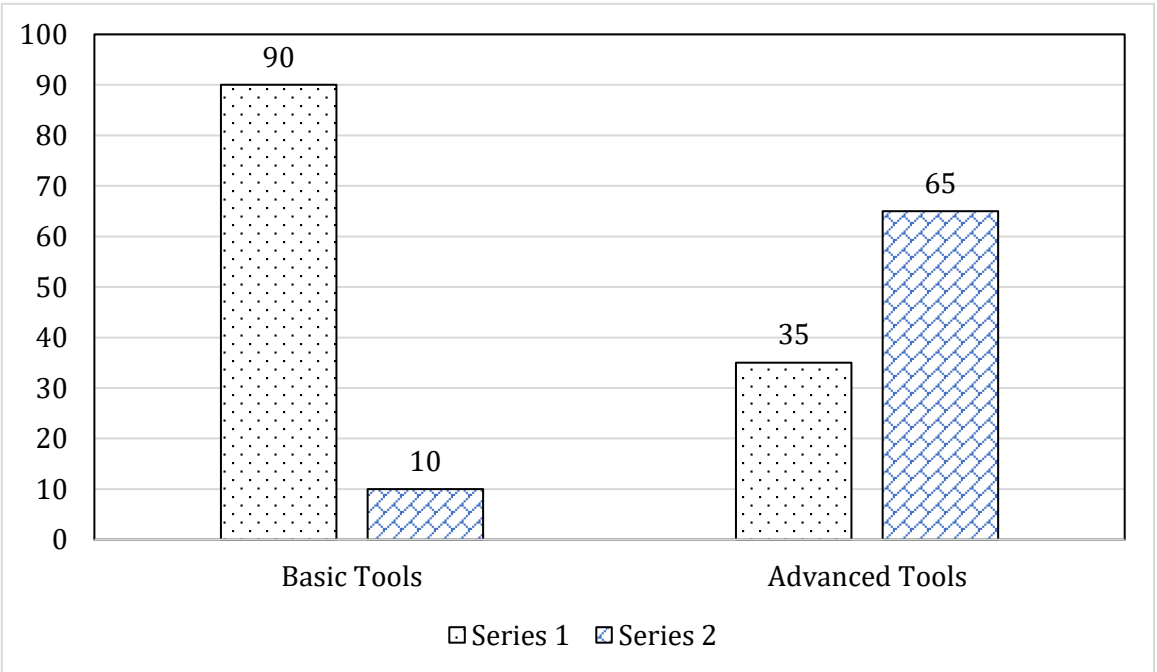

Fig. 2. Students' technical confidence and preparedness with ICT tools

The majority of the admitted students were of the opinion that they were unable to run complex computer software. Faculty members also agreed of more technical training for students so as to enhance their capacity to undergo senior-level academic exercises. Similarly, ICT experts expressed that the students are willing and excited to upgrade their ICT expertise but they lacked the facilities. There is remarkable use of ICT tools in teaching

PGD programme at TU but students' technical and financial capability to adopt the technology is not considered. The integration of new technology in education could increase inequality instead of decreasing it (DiMaggio & Hargittai, 2001).

PGDE programme student intake data shows that 563 enrolled in various courses in 10 TU constituent campuses. Among the specializations provided, Social Studies Education had been the most popular, with 150 students, followed by Science Education with 90 students and Instructional Planning and Management with 87 students. ICT Education, Inclusive Education, and Political Science Education were in low demand having only 2 students in each subject. When analysed campus wise students, S.S.M.Y. Multiple Campus, Siraha is at the top with 109 students, followed by M.R. Campus, Tahachal 82 students, and B.M. College, Butwal with 88 students. To sum up, people are rational to calculate the relative costs and benefits of alternative actions so that they can make a choice to maximize their benefits (Simpson, 2007).

In the first semester of the PGDE course, student registration fell to 377, either as a matter of course academic readjustment or structural rebuilding. Science Education was highly sought after with 103 students, followed closely by Social Studies Education with 89 students. Mathematics Education also seem to be popular with 58 students. Conversely, ICT Education (5 students) and Nepali Education (4 students) were specifically low in student enrollment, and it may be worthwhile to explore the cause of this trend—course delivery, student demand, or other constraints.

The second semester had a higher registration to 303 students. However, the trend by subject persisted, with Science Education is at the top with 80 students, followed by Social Studies Education (67) and Mathematics Education (51). In ICT Education and Nepali Education, students were still at 4 each. By campus, S.S.M.Y. Campus, Siraha was still in the lead with 60 students followed by Mahendra Ratna Campus, Tahachal and Prithvi Narayan Campus, Pokhara with 53 and 41 students respectively as reflective of their central role in PGDE program delivery.

Transformative learning not only conveys knowledge; it imparts genuine, authentic learning. It is introspective, experiential, student-focused, and necessitates self-directed learners and educators who are prepared to deliver significant, pertinent, problem-oriented assessments and employ diverse instructional strategies (Halupa, 2015).

Qualitative analysis

Qualitative findings further support and strengthen quantitative results. Faculty members found learning gap between students with easy access and frequent exposure to ICT tools and those who did not. ICT coordinators shared that along with well-developed ICT infrastructure, frequent maintenance and operation training are equally necessary for running ICT based PGDE classes smoothly. Faculty members were of the opinion that ICT platform, power instability, device quality and poor internet connectivity remained as the barrier for the effective use of ICT in PGDE program. They suggested improvement in above mentioned factors. The qualitative results put forward the immediate need of comprehensive ICT policy so as to promote ICT friendly environment in educational programmes including PGDE.

CONCLUSION

The research reveals that ICT significantly enhances PGD in economics education with improvement in learning performance, involvement, and access—especially among rural students. Blended learning was favored on account of flexibility and economy in saving transport costs, accommodation, and food expenses. However, learning was inhibited by issues in the form of unstable power supply, slow internet connectivity, out-of-date equipment, and scant ICT proficiency. Language issues with English-based e-content were similarly problematic. To maximize the use of ICT, there should be training programs to enhance digital literacy and break these barriers towards more effective and inclusive learning.

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