

A Stream-Wise Study of the Personal ICT Resources of College Students in Mizoram and their Use in Preparing Learning Materials

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Abstract

The present study aimed to explore “A Stream-Wise Study of the Personal ICT Resources of College Students in Mizoram and their Use in Preparing Learning Materials.” All the general colleges in Mizoram offering arts, science and commerce teachers formed population of the present study. Out of the 27 colleges, 18 general colleges in the state were selected as sample colleges through multi-stage sampling technique. Further, a sample of 1085 college students comprising of 525 from arts, 285 from science and 275 from commerce streams in each sample college representing arts, science and commerce streams were selected by following simple random sampling method. Majority of college students in Mizoram did not possess ICT resources required for education such as desktop computer, laptop, tablet, printer and wi-fi/internet access. Cell phone was the single ICT resource possessed by large majority (82.2%) of the students. As a whole, profile of college students in Mizoram based on personal ICT resources possessed and their use for preparation of learning materials was not good. The findings reveal that college students in Mizoram hardly used their personal ICT resources for preparation of learning materials.

Keywords: ICT resources, college students, stream-wise study

Introduction

ICT is extensively utilized in our daily lives, and the necessity for it in the educational field is ever increasing. ICT in education includes ‘presentations, audios, videos, images, and/or a combination of these’ utilised for instruction. “Institutions can provide students with improved learning chances by utilising a combination of audio-visual learning aids in addition to the conventional blackboard” (Virmani, 2023). “The use of ICT makes learning more important than teaching. It makes the learning environment more dynamic and interesting for both teachers and students. Additionally, it transforms instructors' roles from that of only transmitting knowledge to those of learning facilitators, knowledge navigators, and active learners alongside students” (Chatterjee, 2021).

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Teachers need to realise that the only option available to them is to use technology as a tool in the classroom if they want their students to achieve a high degree of proficiency and competition. “Since students rely on it more than just their teachers, a teacher may also be referred to as a ‘teaching technician’” (Chauhan, 2014). Information communication technology (ICT) application in our daily life has brought about many changes in various aspects of our modern society including education system. Buckingham (2005) remarks, “Graduates who are less familiar with digital culture are increasingly at a disadvantage in the national and global economy. Digital literacy—the skills of searching for, discerning, and producing information, as well as the critical use of new media for full participation in society—has thus become an important consideration for curriculum frameworks”. Thus, the significance of ICT for making graduates employable and for making them efficient and productive workers cannot be over exaggerated. This, at the same time, confirms the need for making all the teachers digitally educated which can be fulfilled through capacity building of the teachers in ICT and its effective application in education.

We are in the information era the demands of which have placed tremendous pressure on educational institutions throughout the globe to integrate ICTs into education. “The global economy has changed as a result of ICT advancements. Information may be gathered, assessed, and disseminated at ever-increasing speeds because of amazing advancements in information technology, quick international communication and transit capabilities, and massive technological linkages beyond national boundaries” (Chandra, 2004). The use of online learning has now become popular in education particularly at higher education level. Besides, public interest in social networking systems has grown worldwide. Life these days has become meaningless without internet connectivity and social media. “One of the most important features of social media in cyberspace is user engagement. Information is exchanged in both directions, and the traditional sender-recipient relationship has evolved” (Yeasmin, 2014).

Educational institutions these days need to efficiently handle the suddenly increasing demand for information and skills. With the advent of ICT, the student is not just engaged on the internet for formal interaction. Any learner irrespective of place of living can pay fees through online and access any course of study in an online mode. The world is getting closer and closure as a result of modern technology. Hence, “it is imperative that technological advancements be included into Indian classrooms in order to stay up with the technological revolution in industrialised nations' teaching-learning processes. Information is transmitted through electronic media in nanoseconds. Technology advancements must be included into the teaching and learning process” (Arulsamy, 2014). “The advent of new technologies and expansion of knowledge have opened up new outlooks for teaching and learning” (Mrunalini & Ramakrishna, 2016).

Technology is so important that it is what keeps the world moving forward today. It increases access to education and improves educational quality when used effectively. Popular uses of ICT in education include preparing students for examinations, using instructional resources, and creating notes. ICT use broadens students' grasp of the subject matter since it makes use of a number of readily understandable teaching-learning resources.

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(Chatterjee, 2021). ICT platforms such as email, chat rooms, and discussion groups enhance the number of communication channels and play a very significant role in making teaching-learning process more effective and interesting. “Frequent use of ICT in a variety of curriculum disciplines can positively motivate pupils to learn. It is important to note that ICT be used in the classroom in order for pupils to learn how to function in the information age” (Radha, 2016).

Review of related studies

Khan et al. (2011) conducted “a survey on IUB faculty of education and students’ use of ICT”. According to the study, students’ use of various ICT facilities, tools and platforms for their education had become unavoidable. Students could quickly retrieve the information they needed by utilizing modern information and communication technologies. They could access and retrieve information such as “e-books, e-journals” through various modern ICTs of the following: “wireless networks, the internet, search engines, databases, websites and web 2.0 technologies”.

Fraillon et al. (2014) studied “students’ use and engagement with ICT at home and school in grade 8 ICILS”. They found that females scored slightly higher than males. Students expressed a strong interest in an enjoyment from using computer technology. It was also found that competence of students in ICT skills had moderate relationship with computer and information literacy achievement.

Bidariana et al. (2011) undertook a study titled “a model for application of ICT in the process of teaching and learning”. They found that introduction of technology in education field was a valuable chance for making some changes and innovations, which increased efficiency and effective educational system. The developed model was the result of a continuous study of obtained findings and the application of ICT in education.

Kumara and Kumar (2018) undertook a study titled “the digital divide among the rural and urban students: an exploration” which was conducted among rural and urban students of 64 high schools. The findings were as follows:

- a. 20.66% of rural students and 69.70% of urban students used computers for academic purposes.
- b. students faced "frequent electric power failure problem" while using computers.
- c. most students depended largely on their teachers to learn computer.
- d. only 6.25% of rural schools had permanent computer teachers.
- e. majority of urban schools (96.87%) had computer teachers.

Thus, the study confirmed the existence of digital divide between rural and urban students and that the digital divide was so large.

Wangdi, Dema and Chogyel (2021) conducted a study on “online learning amid Covid-19 pandemic: perspectives of Bhutanese students”. The research found that internet in Bhutan was too expensive for students, and teachers were inexperienced to manage online classes. Majority of the students did not have personal smartphones and laptops for attending online classes.

Rationale of the Study

Technological application aims at enhancing and improving the processes of teaching, learning, and evaluation; facilitating the preparation and professional development of teachers; enhancing educational accessibility; and optimising the planning, management, and administration of education, including admissions, attendance, and assessments. In order to accomplish these objectives, ‘NEP 2020’ advocates wide applications of disruptive technologies pertinent to education. It proposes the establishment of the “National Educational Technology Forum (NETF)”, an independent organisation that will act as a channel for the integration of technology into numerous aspects of both higher education and the classroom (GOI, 2020). “NEP 2020 is a fundamental shift in the direction of improving the educational system. There is a growing need to include technology into

education. Various digital platforms are being proposed as a means of paving the way for the adoption of constructive policies” (Sharma, 2022).

Students’ talents and skills can now be examined with the help of ICT-based assessment or evaluation. Scoring students’ work, such as multiple-choice examinations, as well as in grading reports, essays, and projects etc., has become easy with the help of computer. “With the advent of read write web and the advancement of software as a service (saas), it is now possible to design and conduct online assessments. There are numerous online service providers, both free and paid, those create and develop online tests and quizzes. There are numerous approaches to incorporate ICT in evaluation practices” (Murugan, 2021).

The incorporation of ICT into the teaching-learning process can result in changes such as e-learning, e-communication, simple access to information, online student registration, and advertising, among other things. “It can also give the means of acquiring, linking, and analysing data on teaching and learning in ways that allow us to more accurately diagnose student needs and evaluate programmes” (Patel & Jadeja, 2022). The integration of ICT into teaching and learning strategies can only be successful if they are well planned, controlled and supported” (Nehru, 2014).

Statement of the Problem

The problem of the present study is thus stated as “A Stream-Wise Study of the Personal ICT Resources of College Students in Mizoram and their Use in Preparing Learning Materials”

Operational Definitions of Key Terms Used

The key terms used are as follows:

College Students: The term ‘college students’ in the present study means college students offering or belonging to arts, science and commerce streams.

ICT resources: ICT resources refer to ICT tools/devices that aid and support teaching and learning

College students: The term ‘college students’ in the present study refers to college students learning general courses such as arts, science and commerce

Stream-Wise: Stream-Wise in the present study refers to area-specific courses that students offer in colleges to take bachelor’s degree

Objectives of the Study

The study has the following objectives:

1. To prepare profile of college students in Mizoram based on personal ICT resources possessed in stream-wise.
2. To study the use of personal ICT resources for preparation of learning materials by college students in Mizoram in stream-wise
3. To suggest some measures for improvement.

Population and Sample

The present study had two groups of “population and sample” briefly described as follow:

- 1) *Population and Sample of Colleges in Mizoram*

Out of the 27 colleges, 18 general colleges in the state were selected as sample colleges through multi-stage sampling technique.

- 2) *Population and Sample of students*

A sample of 1085 college students comprising of 525 from arts, 285 from science and 275 from commerce streams in each sample college representing arts, science and commerce streams were selected by following simple random sampling method.

Construction of Tools

Questionnaire for students for studying personal ICT resources possessed and their use for preparation of learning materials by college students in Mizoram in terms of stream-wise constructed by the investigator were used in this investigation.

Analysis and Interpretation of data

4.5.0 Profile of college students in Mizoram based on personal ICT resources possessed in stream-wise

Table - 4.5.1

Personal ICT Resources Possessed by College Students

Sl. No	Personal ICT Resources Possessed	Total N=1085	Arts N=525	Science N=285	Commerce N=275
1	Desktop computer	342(31.5)	140(26.7)	109(38.2)	93(33.8)
2	Laptop computer	262(24.1)	123(23.4)	85(29.8)	54(19.6)
3	Tablet	323(29.8)	116(22.1)	113(39.6)	94(34.2)
4	Printer	296(27.3)	98(18.7)	111(38.9)	87(31.6)
5	Cell phone	892(82.2)	426(81.1)	238(83.5)	228(82.9)
6	Scanner	547(50.4)	261(49.7)	141(49.5)	145(52.7)
7	Wi-fi/ internet access	388(35.8)	177(33.7)	122(42.8)	89(32.4)

“Figures in the parentheses indicate percentages”

We find from “table 4.5.1” that:

- ICT resources required for education such as desktop computer, laptop, tablet, printer and wi-fi/internet access are hardly possessed by college students in Mizoram. The percentages of the students who are with these resources range from 24.1% to 35.8% only.
- Science students are better than commerce and arts students in terms of possession of personal ICT resources required for their education.
- Cell phone is the single ICT resource which is possessed by large majority of the students, i.e. 82.2%. In this age of technology, it becomes a wonder that there are still 17.8% of college students who do not possess cell phone.
- Scanner is claimed to be possessed by 50.4% of the students. This might be due to the fact that scanner has been downloaded by these students in their cell phones.

Table - 4.6.2

Use of Personal ICT Resources for Preparation of Learning Materials

Sl. No	Personal ICT Resources	Frequency of Use	Total N=1085	Arts N=525	Science N=285	Commerce N=275
1	Desktop computer	Frequently	179(16.5)	58(11.0)	69(24.2)	52(18.9)
		Sometimes	356(32.8)	155(29.5)	107(37.5)	94(34.2)
		Never	550(50.7)	312(59.4)	109(38.2)	129(46.9)
2	Laptop computer	Frequently	204(18.8)	64(12.2)	68(23.9)	72(26.2)
		Sometimes	340(31.3)	146(27.8)	103(36.1)	91(33.1)
		Never	541(49.9)	315(60.0)	114(40.0)	112(40.7)
3	Printer/scanner	Frequently	225(20.7)	97(18.5)	73(25.6)	55(20.0)
		Sometimes	371(34.2)	159(30.3)	112(39.3)	100(36.4)
		Never	489(45.1)	269(51.2)	100(35.1)	120(43.6)
4	Photocopier	Frequently	168(15.5)	57(10.9)	70(24.6)	41(14.9)
		Sometimes	311(28.7)	125(23.8)	102(35.8)	84(30.5)
		Never	606(55.9)	343(65.3)	113(39.6)	150(54.5)
5	Wi-fi	Frequently	374(34.5)	142(27.0)	119(41.8)	113(41.1)
		Sometimes	286(26.4)	141(26.9)	80(28.1)	65(23.6)
		Never	425(39.2)	242(46.1)	86(30.2)	97(35.3)
6	Pendrive	Frequently	162(14.9)	41(7.8)	70(24.6)	51(18.5)
		Sometimes	364(33.5)	148(28.2)	115(40.4)	101(36.7)
		Never	559(51.5)	336(64.0)	100(35.1)	123(44.7)
7	E-resources (e-books, e-journals)	Frequently	124(11.4)	54(10.3)	65(22.8)	5(1.8)
		Sometimes	263(24.2)	155(29.5)	102(35.8)	6(2.2)
		Never	698(64.3)	316(60.2)	118(41.4)	264(96.0)

“Figures in the parentheses indicate percentages”

It is striking to note from “table 4.6.2” that:

- a) There are many ‘college students’ who never use personal desktop computer, laptop computer, printer/scanner, photocopier, wi-fi, pendrive and e- resources for preparation of learning materials at home and that the percentages of these students are 50.7, 49.9, 45.1, 55.9, 39.2, 51.5 and 64.3 respectively. The percentages of frequent users of personal ICT resources for preparation of learning materials at home range as low as from 11.4 to 34.5.

- b) The percentages of frequent users of personal ICT resources are highest among science students followed by commerce students. However, frequent users of e-resources are more among arts students than among commerce students.

Findings and Discussion

Profile of college students in Mizoram based on personal ICT resources possessed

- 1) Majority of college students in Mizoram did not possess ICT resources required for education such as desktop computer, laptop, tablet, printer and wi-fi/internet access. The percentages of the students who were with these resources ranged from 24.1% to 35.8% only.
- 2) Cell phone was the single ICT resource possessed by large majority (82.2%) of the students. The finding that 17.8% of college students did not possess cell phone was rather a wonder in this age of technology.
- 3) Scanner was claimed to be possessed by 50.4% of the students. This might be due to the fact that scanner had been downloaded by these students in their cell phones.
- 4) In terms of possession of personal ICT resources required for their education, science students were better than commerce and arts students.
- 5) As a whole, profile of college students in Mizoram based on personal ICT resources possessed was not good.

2. Use of Personal ICT Resources for Preparation of Learning Materials

- 1) Many college students never used personal desktop computer, laptop computer, printer/scanner, photocopier, wi-fi, pendrive and e- resources for preparation of learning materials at home and that the percentages of these students were 50.7, 49.9, 45.1, 55.9, 39.2, 51.5 and 64.3 respectively. The percentages of frequent users of personal ICT resources for preparation of learning materials at home ranged as low as from 11.4 to 34.5.
- 2) Science students were better than arts and commerce students in the use of personal ICT resources for preparation of learning materials.
- 3) As a whole, use of personal ICT resources for preparation of learning materials among college students in Mizoram was not good.

Conclusion

- 1) It is sad to note that college students in Mizoram hardly possessed ICT resources required for education such as desktop computer, laptop, tablet, printer and wi-fi/internet access. As cell phone was the only tool that majority of the students possessed, it was not possible for large majority of them to do much work needing the application of ICT.

In this regard, Siddiquah and Salim (2017) in their survey on “ICT facilities, skills, usage, and the problems faced by the students of higher education of Lahore, Pakistan”, found that ‘the students had ICT facilities (computers and internet) at universities and home’ whereas the present study found students as not having the facilities but only cell phones.

- 2) From the present study, we find that college students in Mizoram hardly used either college or personal ICT resources for preparation of learning materials due to the fact that college ICT resources were not accessible to them and that they did not possess personal ICT resources except cell phone. If colleges could make the provision of computer lab with wi-fi for use of the students on rotation basis, it would solve the main problems of the students and that would

promote integration of ICT in education. The finding that science students were better than arts and commerce students in the use of both college and personal ICT resources for preparation of learning materials may suggest two main things. One is that science colleges may be better equipped with ICT resources than arts and commerce colleges. Another is that science students and their parents are more concerned about the use of ICT resources in education than arts and commerce students as well as their parents and as a result, they have better ICT facilities in their homes.

Siddiquah and Salim (2017) in their survey on “ICT facilities, skills, usage, and the problems faced by the students of higher education of Lahore, Pakistan”, reported that ‘the students mostly used computers for recreational purpose but hardly used them for academic purpose’, the finding of which is different from the present ones.

The main challenge lying with students was lack of ICT resources for majority of them. Computer, printer, laptop, tablet and such other ICT tools required for online education were not available for majority of the students. Moreover, internet connection was a big problem for them. The only resource or tool available to majority of them was mobile phone and that also of not a high quality. Poor internet signal was really a big threat.

Integration of ICT in education will be more and more important to make education successful in modern society. As the process will have to be started with the teachers, professional development programmes in the field of ICT in education will be important for them. Availability of the required ICT resources, access to these resources, provision of wi-fi etc needs to be ensured to enable the students to get the benefits to the most.

Suggestions and Recommendations

1. As cell phone is the only tool possessed by majority of the students for integration of ICT in their learning, it is recommended that the state government should make a policy for subsidizing tablet or laptop or desktop computer for college students from economically backward families.
2. Competency of school teachers in Mizoram in application of ICT in teaching-learning process.
3. Usage of ICT resources by teacher educators in teaching – learning process.
4. The digital divide among the rural and urban students: An exploration

References:

- Arulsamy, S. (2014). *Educational innovations and mangement*. Neelkamal Publications Pvt. Ltd.
- Bidariana,S., Bidarian S., & Davoudi, A.M. (2011). A model for application of ICT in the process of teaching and learning. *Procedia - Social and Behavioral Sciences*, 29, 1032 – 1041. 10.1016/j.sbspro.2011.11.336
- Buckingham, D. (2005). *Educación en medios*. Alfabetización, aprendizaje y cultura contemporánea, Barcelona, Paidós. In IIEP, UNESCO, 2023
- Chandra, R. (2004). *Technology in the preparation of teachers*. Isha books.
- Chatterjee, M. (2021, April 16). *Importance of ICT in education and teaching-learning process*. <https://monichatterjee.medium.com/importance-of-ict-in-education-and-teaching-learning-process-f794225c1c2e>

- Chauhan, R. S. (2014). *The role of ICT in improving the quality of Education: ICT in education*. APH Publishing Corporation.
- Fraillon J., Ainley J., Schulz W., Friedman T., & Gebhardt, E. (2014). Students' use of and engagement with ICT at home and school. *Preparing for Life in a Digital Age*, pp. 125-166. https://doi.org/10.1007/978-3-319-14222-7_6
- Khan, S. A., Bhatti, R., & Khan, A. A. (2011). Use of ICT by students: A survey of faculty of education at IUB. *Library Philosophy and Practice (e-journal)*, 677. <https://digitalcommons.unl.edu/libphilprac/677>
- Kumara, S. U., & Kumar, S. T. B. (2018). The digital divide among the rural and urban students: An exploration. *South Asian Journal of Participative Development*, 18 (2). <https://www.researchgate.net/publication/329842097>
- Mrunalini, T. & Ramakrishna, A. (2016). *Information and communication technology (ICT) in education*. Neelkamal Publications Pvt.Ltd.
- Murugan, V. (2021, July). ICT based assessment methods in education. *Journal of Emerging Technologies and Innovative Research (JETIR)*, 8(7). <https://www.jetir.org/papers/JETIR2107025.pdf>
- Nehru, R. S. S. (2014). *ICT in education*. APH Publishing Corporation.
- Patel, H., & Jadeja, M. (2022, December). ICT in assessment and evaluation. *Aarhat Multidisciplinary International Education Research Journal (AMIERJ)*, 8(7). <https://www.researchgate.net/publication/366714803>
- Radha, R. (2016). ICT in teaching learning. In Begum, J. A., Natesan, A.K., & Sampath, G (Eds.), *ICT in teaching learning* (pp. 211 -212). APH Publishing Corporation.
- Sharma, N. (2022, September). Integration of technology: A key factor of NEP 2020. *Journal of Emerging Technologies and Innovative Research (JETIR)*, 9(9). <https://www.jetir.org/papers/JETIR2209334.pdf>.
- Siddiquah, A., & Salim, Z. (2017, July). The ICT facilities, skills,usage, and the problems faced by the students of higher education. *Eurasia Journal of Mathematics Science and Technology Education*, 13(8), 4987-4994. 10.12973/eurasia.2017.00977a.
- Virmani, N. (2023, February 06 Updated). *ICT in education: How it is transforming learning*. <https://leadschool.in/blog/ict-in-education-how-it-is-transforming-learning/#:~:text=ICT%20provides%20the%20flexibility%20and,learners%20or%20have%20learning%20disabilities>.
- Wangdi, N., Dema, Y., & Chogyel, N. (2021). Online learning amid covid-19 pandemic: Perspectives of Bhutanese students. *International Journal of Didactical Studies*, 2(1), 101456. <https://doi.org/10.33902/IJODS.2021167818>
- Yeasmin, S. (2014). *Transforming formal learning through social media: A study to increase learners retention*. In S.S.Jena., K.Agarwal., & K. Mahapatra (Eds), *ICT in Education* (pp.42-49). Shipra publications.