Development Of "Digital Technology Scale" For Collge Students

Mrs. M. Devika[1]*, Dr. T. Sivasakthi Rajammal[2]

[1]*Ph. D Research Scholar, Department of Educational Psychology, Tamil Nadu Teachers Education University, Karapakkam, Chennai – 600 097, Tamil Nadu, India, Email:- devmotg@gmail.com.
[2]Research Supervisor, Assistant Professor, Department of Educational Psychology, Tamil Nadu Teachers Education University, Karapakkam, Chennai – 600 097, Tamil Nadu, India, Email:- tnteusakthi@gmail.com.

ARTICLE INFO	ABSTRACT
	In the traditional teaching method, the teacher can teach the concepts of the subjects, and the students can listen and observe the concepts. Nowadays, the modern education system is different, teachers and students share information with the help of technological teaching tools, so students engage more in the teaching and learning process. Digital technology in education refers to electronic devices like smart boards, computers, laptops, projectors, etc in the teaching and learning process. The Digital Technology Scale (DTS) has been constructed and standardized by the investigator and research supervisor in the present study for College Students. The Digital Technology Scale consists of 50 statements. The simple random sampling technique was used for the current investigation. The sample consists of 100 College students randomly selected from Chengalpet and Chennai District. The Cronbach's Alpha technique was used to regulate the tool and finally, out of 50 statements in DTS - 45 statements were retained in the final study. **Keywords:** Digital Technology, Traditional Education, Modern Education, Teaching,Learning, Teacher, Student, Education.

1.   Introduction:

Higher Education refers to the education that follows secondary education and it helps to improve the professional knowledge and skills of our young generation. In colleges, education is integrated with technology to face the issues and challenges in this modern world. People who complete their college education can be ready to work as an employee in this modern world and so college students have to develop their knowledge and professional skills during their college days. To utilize technology in education, college students need tobe aware of the applications and innovations in digital technology platforms.

2.   Need of the Study:

In the 21st Century, Digital Technology plays a major role in College Education. Technology provides enormous information for college students with easy-to-access information, accelerated learning, and fun opportunities to practice what they learn. It enables college students to explore new subjects and deepen their understanding of difficult concepts. College students can upgrade and improve their knowledge in their classrooms. They can spend their time in exciting, creative, and fair ways with the help of technology. Digital Technology also helps college students to build essential 21st-century skills. From the above statements, the investigator felt that Digital technology plays a major role among college students in their learning process in this modern world, because college students are the future pillar of our nation and so the need is felt to do this study **"Usage of Digital Technology among College Students".**

3.   Operational Definitions:

The Operational Definitions of Digital Technology and College Students are:

3.1. Digital Technology:

Digital Technology refers to the usage of electronic devices like computers, laptops, projectors, scanners, printers, etc. With the help of these devices, educators and learners utilize digital technology applications in the teaching and learning process. It needs the infrastructural facilities in the learning place like electronic devices with proper network connection. Digital Technology saves the time to learn difficult concepts easily and it gives the real experience to understand the concepts clearly for the educator as well as the learner.

3.2. College Students:

College Students refer to an individual who completed their high school education and can enroll in a college or university to pursue their higher education in a particular institution. The average age group of college students is between 18 years and 23 years.

4. Review of Related Literature - Studies related to Digital Technology:Indian Studies:

Ulaganathan & Krishnan (2024) investigated on Digital Technology in Higher Education: An Overview of Education 4.0 in India. The Indian education system has to cope with the requirements of Industrial Revolution 4.0 (IR 4.0). During the COVID-19 pandemic, all the schools and colleges have suddenly changed from traditional mode to online mode for the teaching and learning requirements in Education 4.0 by the Inspired of IR 4.0. This study mainly focuses on identifying the key components of Education 4.0 in India and the role of digital technology in higher education which helps the method of teaching and learning strategy in India. The study was based on the theoretical and conceptual background sources adopted from the recent literature and the Department of Higher Education, Ministry of Education, Government of India, and Ministry of Human Resource Development (MHRD), The study observed that four core components of Education 4.0 as a reference framework for design process the vision and concept of Education 4.0 are useful for enablers and initiatives can solutions to face present challenges in the higher education system in India. The large availability of course materials and digital technology in higher education can foster better teaching which can enable the development of collaborative skills as well as knowledge in creation skills. However, India has to take necessary action to make a large number of digital technology and virtual course materials to get unlimited access to teaching and learning in higher education.

Jayaprakash MG & Vishal Khatri (2023) investigated on impact Of Technology And Digitization In Indian Education And Learning: A Critical Analysis. Every human being requires education, and digital education is the current trend and requirement for all students or learners to become more focused in their studies. Digital education makes it easier and more diverse than ever before for students or learners to acquire knowledge. It also cuts down on the amount of time it takes to learn anything new. Schools, teachers, and the print media have traditionally been the primary sources of education. By registering with schools, teachers, and libraries, students were able to access information sources. The primary goal of this study is to examine the impact of technology and digitalization on Indian education and learning in a concise manner. Questionnaire survey approach was utilised in this study. According to the findings of this study, substantial changes in the way universities and colleges deliver education will occur in the next years. This rapid adoption of digital technologies in both education and assessment is not a passing trend; it will have long-term repercussions that will shape the new normal future.

Foreign Studies

Song N. Y (2024) conducted on Higher education crisis: Academic misconduct with generative AI. Higher educational institutions (HEIs) are facing a significant challenge in maintaining academic integrity due to the technological integration of generative artificial intelligence (AI). The widespread use of AI tools by college students has resulted in an increase in plagiarism and cheating, highlighting the need for effective implementation of this technology. However, there is a lack of research on the best practices for using AI in academic settings. HEIs must take responsibility for addressing these issues, as the majority of institutions do not have formal guidelines for AI use, leading to confusion among students and instructors. To combat academic misconduct, HEIs should establish clear objectives and policies for the equitable, inclusive, and ethical use of AI. Improving AI literacy among students and faculty is crucial, as it ensures that everyone has equal access to technology, preventing a digital divide. Moreover, proactive education on the ethical use of AI is vital for HEIs to prepare students for the AI-driven future of education and maintain academic integrity.

Ahmad Zuhudy Bahtiar and et.al (2023) investigated on Progressive Literacy Task: Design Strategy of digital literacy and competencies in learning outcomes. Raising interest in reading and digital literacy skills is currently a big challenge for teachers amid the many information vortices at this time. Attention and awareness of reading are still very low among students. This study aims to make the right learning strategy to form a culture of literacy among college students. This research is descriptive research to find the right model for teaching students about digital literacy both conceptually and in skills. The data in this study is to reveal (1) student learning motivation, (2) the use of learning strategies, (3) digital literacy skills, (4) and the formation of a literacy culture. Data collection techniques in descriptive research are through direct

observation, questionnaires, independent assignments, and performance. based on a collection of various data used to formulate appropriate learning strategy designs for students completing instructional technology courses . The result of this study is a strategy learning model which consists of the preparation stage, initial activities, core activities, and closing activities. The strategy model in this study is named Progressive Literacy Task (PLT). There are various activities in the PLT Strategy Model namely reading, exploring information, digital communication, digital skills and competencies, discussion, writing and evaluation. It is hoped that the application of the PLT strategy model can have a positive impact on student learning outcomes both from the aspects of motivation, skills, and learning achievement.

5. Pilot Study:

The Digital Technology Scale (DTS) of 50 statements intended for the pilot study was administered to a sample of 100 College students studying in the Arts and Science Colleges of Chengalpet and Chennai district. Then their responses were scored carefully and the marks secured by all the College students were arranged in descending order from the highest score to the lowest score. Then they were subjected to the statement analysis.

6. Construction of Scales:

6.1. Construction of Digital Technology Scale:
The investigator constructed the Digital Technology Scale for College Students with the suggestions of the research supervisor. Fifty statements on the scale were utilized in the pilot study. All the 50 items were with five-point scales, such as Strongly Agree, Agree, Uncertain, Disagree, and Strongly Disagree. The statement of the scale consists of factors related to Mobile Technology, the Internet of Things, Artificial Intelligence, Virtual Reality, and Cloud Computing. The tool was validated with the help of 100 College Students. Each statement has been scored as 5 for strongly agree, 4 for agree, 3 for uncertain, 2 for disagree and 1 for strongly disagree for all the positive statements only. There are 7 negative statements in the Digital Technology scale which are 8,19,28,39,40,45,49 and these were scored reversely. The total scores acquired from the sample were determined by utilizing Cronbach's Alpha technique to identify the reliability of the tool. The statement which has a value greater than 0.3 was selected for the final study.

Thus, out of 50 statements, 45 statements were selected for the final study. The final studies of the Digital Technology Scale of College Students of the pilot study show the selected statements by using Cronbach's Alpha are given in Table 1.

Table 1. Statement Analysis for Digital Technology Scale of College students andselection of statements for final study

Statement Number	Item Total Cronbach's Alpha Correlation	Selected / Not Selected
1	0.494	Selected
2	0.432	Selected
3	0.647	Selected
4	0.414	Selected
5	0.506	Selected
6	0.366	Selected
7	0.494	Selected
8	0.515	Selected
9	0.647	Selected
10	0.334	Selected
11	0.007	Not Selected
12	0.546	Selected
13	0.489	Selected
14	0.404	Selected
15	0.476	Selected
16	0.132	Not Selected
17	0.597	Selected
18	0.514	Selected
19	0.478	Selected
20	0.466	Selected
21	0.487	Selected
22	0.420	Selected
23	0.540	Selected
24	0.153	Not Selected

25	0.462	Selected
26	0.319	Selected
27	0.495	Selected
28	0.573	Selected
29	0.614	Selected
30	0.430	Selected
31	0.591	Selected
32	0.526	Selected
33	0.488	Selected
34	0.614	Selected
35	0.012	Not Selected
36	0.466	Selected
37	0.394	Selected
38	0.308	Selected
39	0.600	Selected
40	0.625	Selected
41	0.456	Selected
42	0.337	Selected
43	0.474	Selected
44	0.587	Selected
45	0.699	Selected
46	-0.002	Not Selected
47	0.531	Selected
48	0.679	Selected
49	0.661	Selected
50	0.455	Selected

6.2. Description of the Digital Technology Scale:
The Digital Technology Scale was constructed and validated by the investigator and research supervisor. The investigator constructed this tool based on the literature review about the Digital Technology of College Students and its dimensions are Mobile Technology, Internet of Things, Artificial Intelligence, Virtual Reality, and Cloud Computing. Totally 45 statements were finalized based on the dimensions of Digital Technology.

6.3. Dimensions of Digital Technology Scale:
The Digital Technology Scale for College Students consists of five dimensions namely, Mobile Technology, the Internet of Things, Artificial Intelligence, Virtual Reality, and Cloud Computing. Initially, 50 statements were arranged according to the dimensions such as Mobile Technology has 10 statements, Internet of Things has 10 statements, Artificial Intelligence has 10 statements, Virtual Reality has 10 statements and Cloud Computing has 10 statements. After the pilot study, 45 statements were finalized based on the dimensions of Digital Technology as shown in Table 2.

Table 2: Dimensions-wise distribution of selected items in the Digital Technology Scaleof College Students

S.No	Dimensions	Questionnaires	Total
1	Mobile Technology	1 to 10	10
2	Internet of Things	12 to 15,17 to,20	8
3	Artificial Intelligence	21 to 23.25 to 30	9
4	Virtual Reality	31 to 34, 36 to 40	9
5	Cloud Computing	41 to 45, 47 to 50	9
Total No. of Statements			**45**

6.4. Scoring Procedure:
The tool consists of 45 statements that reflect the Digital Technology of the College students. The respondents were asked to put a tick ✓ mark against each statement under one of the five responses such as Strongly Agree, Agree, Uncertain, Disagree, and Strongly Disagree. Each statement has been scored as 5 for strongly agree, 4 for agree, 3 for uncertain, 2 for disagree and 1 for strongly disagree for all the positive statements only. There are 7 negative statements in the Digital Technology scale [8, 17, 25, 35, 36, 41, 44] and these were scored reversely. The Digital Technology of College Students score of the subject gives the total statement scores of all 5 dimensions. As a result, the range of scores is high from 1 to 225, showing the higher score of Digital Technology of College Students.

7. Reliability:

A reliability coefficient measures the accuracy of a test or measuring instrument obtained by measuring the same individuals twice and computing the correlation of the two sets of measures by Cronbach's alpha method. Therefore, the reliability value is 0.936.

8. Validity:

Validity was established by circulating the roughly drafted Digital Technology Scale and carrying out all the suggestions specified by the professors in the Department of Education. The square root of reliability has been used to calculate the validity index. The validity of the Digital Technology scale is 0.967 and hence the scale is considered to have high validity.

9. Conclusion:

The investigator is hopeful that the Digital Technology scale would help measure the level of Technological Knowledge of College students. Hence, the constructed Digital Technology tool will be very useful for the investigator to measure the extent level of Technological Knowledge of College students in their present education system.

10. References:

1. Song N. Y. (2024). Higher education crisis: Academic misconduct with generative AI. *Journal of Contingencies and Crisis Management* . https://doi.org/10.1111/1468-5973.12532.
2. Ahmad Zuhudy Bahtiar and et.al. (2023). Progressive Literacy Task: Design Strategy of digital literacy and competencies in learning outcomes. *AL-ISHLAH: Jurnal Pendidikan Islam*, Vol. 21, No.1, Pg.1-10. ISSN: 2685-6581 (Online). ISSN: 1693- 7449 (Cetak). DOI: 10.35905/alishlah.v21i1.5284.
3. Ulaganathan & Krishnan. (2024). Digital Technology in Higher Education: An Overview of Education 4.0 in India. *Guru Nanak Journal of Multidisciplinary Research*. Special Issue: Volume 2. ISSN: 2277 1409.
4. Jayaprakash M.G, & Dr. Vishal Khatri. (2023). Impact Of Technology And Digitization In Indian Education And Learning: A Critical Analysis. *Elementary Education Online*, Vol:*19*(4), Pg. 7676–7681. Retrieved from https://ilkogretim- online.org/index.php /pub/article/view/7079.
5. Jack Leonard, R. Martin Reardon. (2019). Integrating Digital Technology in Education: School-university-community Collaboration. United States: Information Age Publishing.
6. Davis, N. (2017). Digital Technologies and Change in Education: The Arena Framework. United Kingdom: Taylor & Francis.
7. Smale, M. A., Regalado, M. (2016). Digital Technology as Affordance and Barrier in Higher Education. Germany: Springer International Publishing.
8. Selwyn, N. (2014). Digital Technology and the Contemporary University: Degrees of Digitization. United Kingdom: Taylor & Francis.
9. https://spotlight.leeds.ac.uk/world-changers/digital-technology/index.html