

Digital Literacy Skills of Secondary Level Students: An Assessment

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Abstract

With the emergence of digitalization, the students, particularly at the secondary level of education, have to acquire skills to understand, find, utilize, and create information from various sources on the internet. These skills are popularly known as digital literacy skills. Here, an important question arises in our minds that what is the level of digital literacy skills of secondary level students. This research attempted to answer this question by selecting a sample of 100 secondary level students through random sampling. The digital literacy skills of chosen students were assessed by administering the Digital Literacy Assessment Test (DLAT) in online mode. The scores of the students served as the basis for the assessment of their digital literacy skills. The obtained results are further used to provide some useful recommendations to improve teacher preparation programmes to prepare a new generation of teachers ready to utilize secondary level school students' digital skills for educational and social betterment.

Keywords: Digital literacy, Digital Literacy Skills, Secondary level students, Teacher Preparation, Teachers

Background

The integration of technology in every sector is on the rise, and education is no exception. There has been a significant shift in the teaching-learning process past few years with digitalization in education. Transformation of all information types (texts, sounds, visuals, video, and other data) into digital language can be termed as digitalization (Machekina, 2017). In comparison, Keane (2012) divided digital learning into four components: digital teaching material, digital tools, digital content delivery, and autonomous learning. Koh (2016) stated that a new level of personalized learning was created to integrate technology into the education process. The use of digital technologies presents numerous opportunities in teacher teaching and student learning. In an article, Johari (2017) stated that the digitalization in education had made the teaching-learning process stress-free, broad, and more participatory. Schools are gradually implementing digital learning solutions like Smart Interactive boards, laptops, interactive screens, projectors, and an internet connection to support the teaching-learning process. The presence of digitalization in education can be felt by increasing accessibility, availability, and usage of digital devices in the early years of the students' life. In other words, the learner needs digital literacy skills to make effective use of digitalization in education.

Digital literacy skills are a particular set of competencies that allow an individual to function and participate fully in a digital world by understanding, finding, utilizing, and creating information from various internet sources. Over a period, the meaning of digital literacy has been modified with the advancement of technology. Some researchers identified digital literacy as the ability to understand and use information when presented via computers (Gilster, 1997; Papert, 1996; Tapscott, 1998). Later, Eshet-Alkalai (2004) suggested that digital literacy involves many complex cognitive, motor, sociological, and emotional skills that users need to function effectively in the digital environment. In an article, Phuapan, Viriyavejakul, and Pimdee (2015) argued that digital literacy means using digital technology, communication devices, and the network in digital environments to survive in the digital world successfully. According to them, the essential elements required in attaining digital literacy skills are Accessing, Managing, Integrating, Evaluating, Creating, Communicating, Analyzing, and Synthesizing. Talking about the importance of digital skills, an OECD report (2016) entitled '*Skills for a digital world*' states:

To ensure that individuals can engage in digital activities and adapt rapidly to new and unexpected occupations and skills needs, a stronger emphasis has to be placed in promoting strong levels of foundation skills, digital literacies, higher order thinking competencies as well as social and emotional skills

Therefore, an assessment of students' digital literacy skills will help plan and implement digital teaching-learning initiatives and schemes in education in a better way. Considering that teacher is the crucial agent in any education system (Misra, 2018), and the digital literacy of the teachers affects the digital literacy skills of the students directly (Levy, 2018), it is equally important to assess that how teachers are trained to teach digital natives of today. Extending these arguments, the present research was conducted to:

- Assess the digital literacy skills of secondary school students.
- Provide suggestions for enriching the teacher preparation programme to come at par with the students' digital literacy skills.

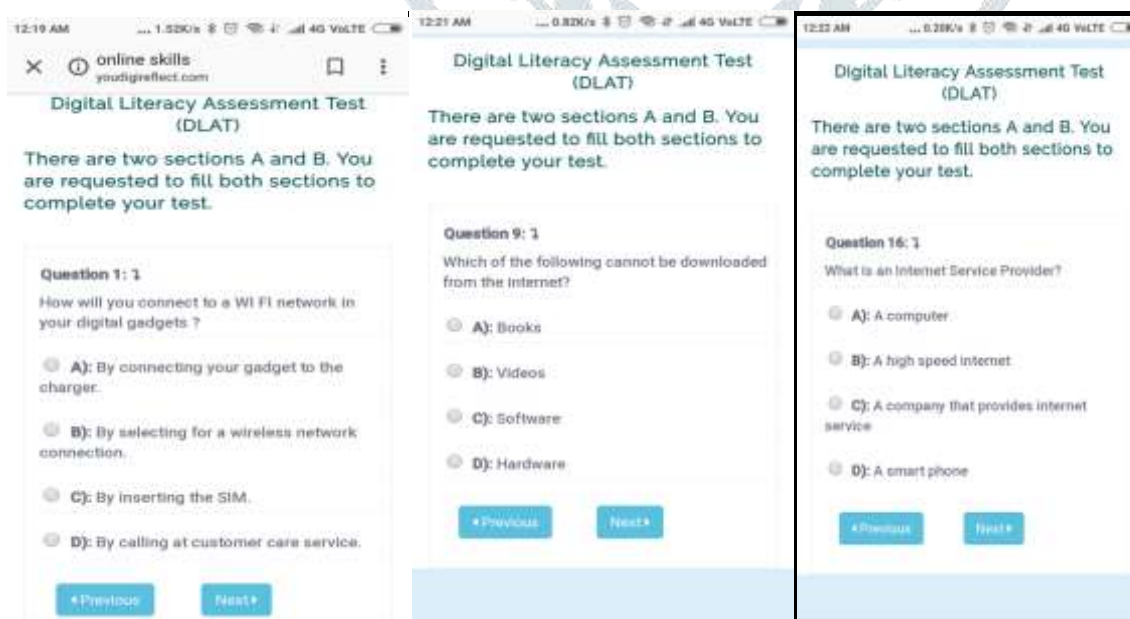
Methodology

The present study was confined to secondary school students of classes IX and X of CBSE School in Meerut, Uttar Pradesh. For sampling purposes, a random sampling method was used. One CBSE school was randomly selected by lottery method out of 94 CBSE schools of Meerut. One hundred students were randomly selected from the chosen schools from classes IX and X (10 students from each section; both classes were having five sections each).

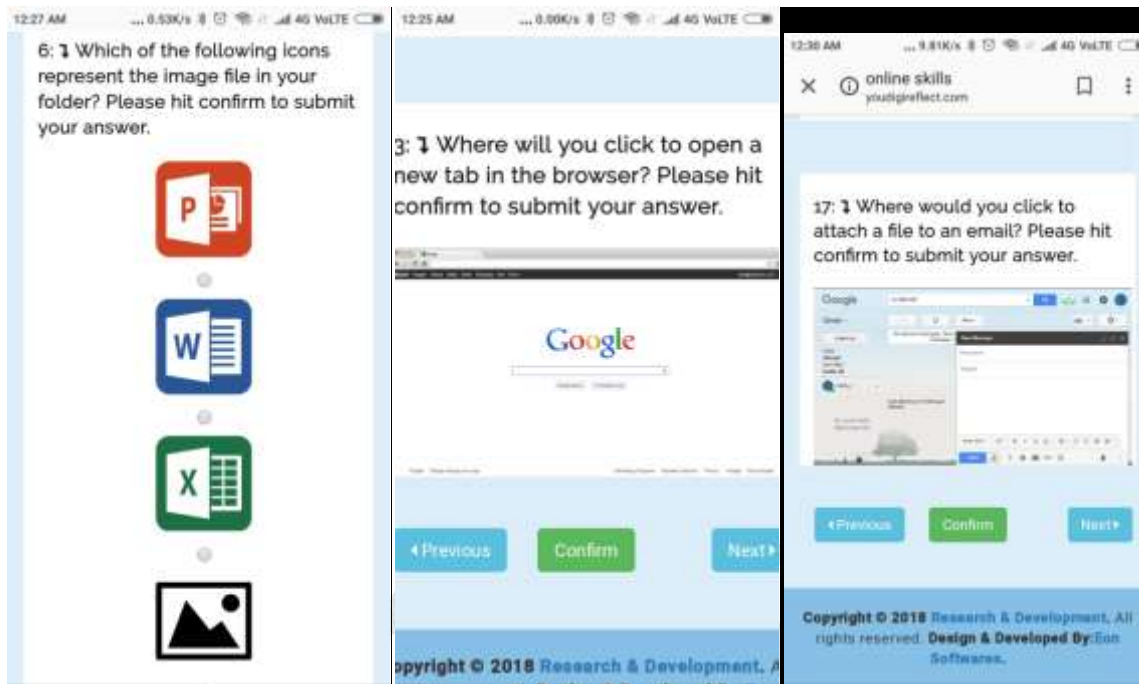
Tools used

The researchers have developed and standardized the 'Digital Literacy Assessment Test' (DLAT) to conduct the present study. The test comprises two sections: Section A and Section B. Section A contains 16 items and assesses the students' digital informational skills. Section B contains 19 items and assesses the digital operational skills of the students. All 35 items are the multiple-choice type and have four options. The student needs to select the right answer from the options given. The correct answer carries one mark, and the wrong answer gets zero. Therefore, the maximum scores a student can get were 16 in section A, 19 in section B, and 35 in total. The test was conducted online in the computer lab at the school. One of the researchers was present in the school during the online test. There was no time limit to complete the test. Screenshots of sample items from section A and section B are given below:

Screenshot of Items from Section A



Screenshot of Items from Section B



Analysis and Results

Tables 1, 2, and 3 respectively depict students' scores on digital informational skills, digital operational skills, and combined digital informational and digital operational skills scores.

Table1: Digital informational skills scores of the students

| Digital informational skills score | | | |
|-------------------------------------|--------------------|-----------|------------|
| | Score (MM: 16) | Frequency | Percentage |
| Mean | 9.01 | | |
| Standard Deviation | 4.42 | | |
| Above +1 σ | $X > 13.43$ | 31 | 31 |
| Between +1 σ and -1 σ | $13.43 > X > 4.59$ | 48 | 48 |
| Below -1 σ | $X < 4.59$ | 21 | 21 |
| N = 100 | | | |

Table2: Digital operational skills scores of the students

| Digital operational skills score | | | |
|-------------------------------------|---------------------|-----------|------------|
| | Score (MM: 19) | Frequency | Percentage |
| Mean | 15.41 | | |
| Standard Deviation | 3.33 | | |
| Above +1 σ | $X > 18.74$ | 17 | 17 |
| Between +1 σ and -1 σ | $18.74 > X > 12.08$ | 63 | 63 |
| Below -1 σ | $X < 12.08$ | 20 | 20 |
| N = 100 | | | |

Table3: Digital literacy skills scores of the students

| Digital literacy skills score | | | |
|-------------------------------------|---------------------|-----------|------------|
| | Score (MM: 35) | Frequency | Percentage |
| Mean | 24.42 | | |
| Standard Deviation | 7.66 | | |
| Above +1 σ | $X > 32.08$ | 17 | 17 |
| Between +1 σ and -1 σ | $32.08 > X > 16.76$ | 63 | 63 |
| Below -1 σ | $X < 16.76$ | 20 | 20 |
| | N = 100 | | |

The scores obtained by students were classified as the high (above +1 σ), moderate (between +1 σ and -1 σ), and low (below -1 σ) achievers, respectively. The following figures represent the percentage of students according to the scores obtained under these categories:

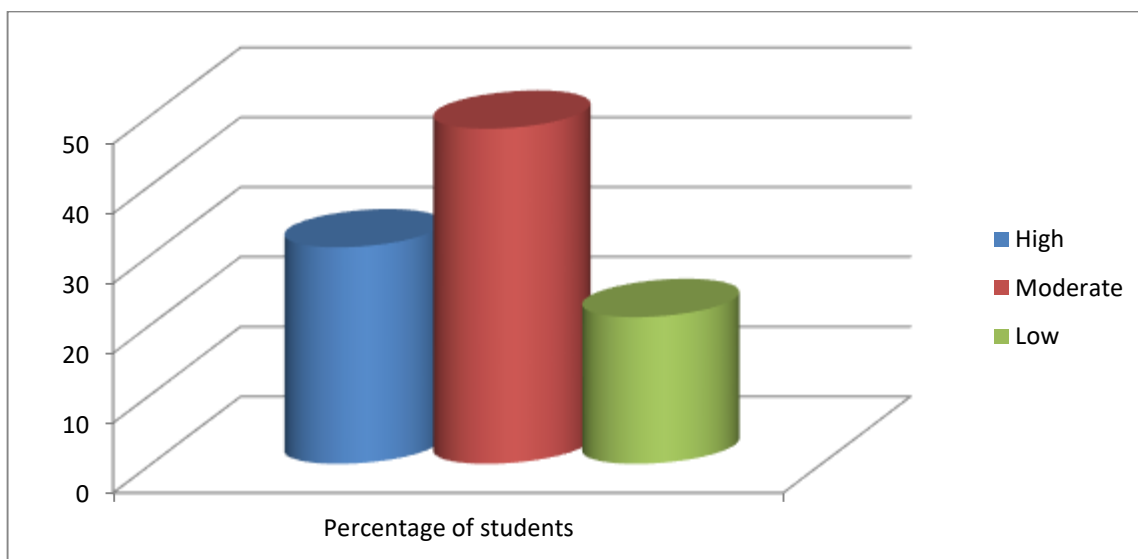


Figure 1: Digital informational skills of the secondary school students

Figure-1 represents the status of the digital informational skills of secondary school students. The statistics reveal that most students (48%) possess a moderate level of informational skills.

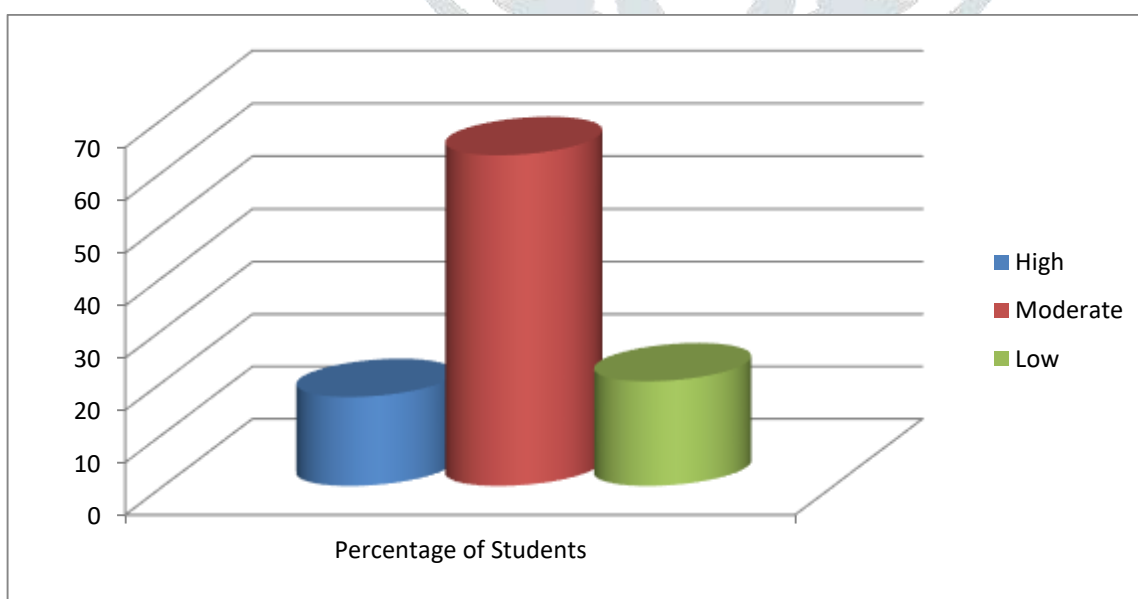


Figure 2: Digital operational skills of the secondary school students

Figure-2 represents the status of the digital operational skills of secondary school students. The data reveals that most students (63%) have a moderate level of digital operational skills.

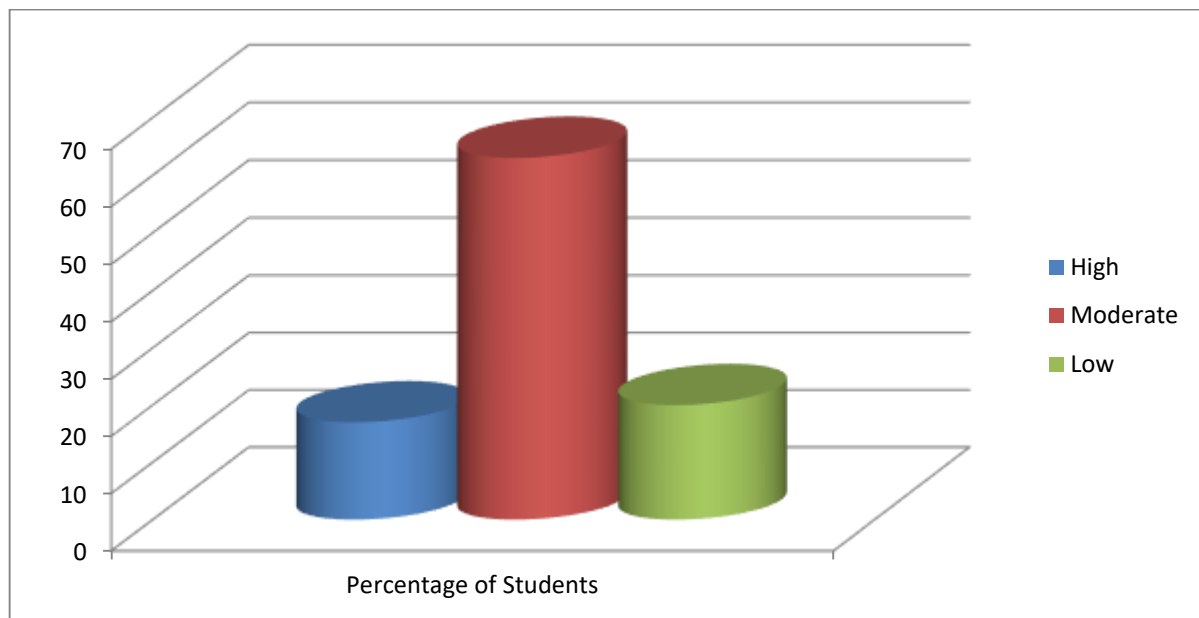


Figure 3: Digital literacy skills of the secondary school students

A look at Figure-3 makes it clear that the majority of secondary school students (63%) have a moderate level of digital literacy skills. The statistical viewpoint reveals that the majority of secondary school students achieved average scores in the online test.

From the above figures, it is clear that the digital informational and digital operational skills test most of the students scored moderately. Thus the present status of the digital literacy skills of the secondary school students is moderate.

Lessons for teacher preparation programmes

The above-given analysis presents two facts: (i) many secondary level students possess a moderate level of digital literacy skills, and (ii) the specified digital literacy component in B.Ed. programme needs updating and practical orientation. Previous researches also came up with similar conclusions. For example, Baylora and Ritchieb (2002) argue that the teacher's training programs' biggest obstacles are the lack of technology training; thus, making digital training more practical for teachers is one such demand. Therefore, policymakers must realize that learning digital tools and techniques in theory alone will not help trainee teachers. If we want to make our teachers digitally skilled, it is needed that teacher preparation programmes should focus on both theoretical and practical aspects. In this backdrop, the following additions and changes in the curriculum of teacher preparation programmes can be helpful:

- The duration of practical sessions on digital skills should be increased.
- The curriculum should have a provision for compulsory online project work based on collaboration.
- The curriculum should provide trainee teachers with an opportunity to get live training about using digital tools such as smart boards, laptops, and projectors.
- A compulsory 'Learning Digital Skills' workshop aiming to make trainee teachers digitally: cultural, confident, creative, critical, constructive, communicative, cognitive and civic can be added.
- The trainee teachers should be given the opportunity to practice online teaching in every semester throughout the curriculum to enhance their digital skills.
- Regular open discussion sessions should be arranged for trainee teachers to discuss their problems faced during practical sessions on digital skills.
- Assessment of the trainee teachers' digital literacy skills at the time of admission to the programme is also needed. This step will be useful to palm digital skills training as per the need and competence of individual trainee teachers.
- A specific criterion for assessing the digital skills of the trainee teachers needs to be identified and applied.

- A higher level of theoretical orientation and practical training needs to be included in the curriculum to make teachers digitally skilled and competent in teaching, assessment, management, and evaluation using digital tools and techniques.
- The gap between theoretical and practical components of ICT in teacher preparation programmes should be minimized.
- The social aspect and impact of using digital tools and techniques must be given due consideration in the syllabus.

Conclusion

The present study revealed that most secondary school students have moderate to high levels of digital literacy skills. The education system needs digitally competent teachers to keep pace with digitally literate learners. And it is a fact that teacher preparation programmes play a significant role in preparing quality teachers. Therefore, it is needed that the teacher preparation programme provides ample opportunities for trainee teachers to become competent in using digital tools and techniques for educational purposes. As we move towards a knowledge society, it is imperative to develop digitally qualified teachers to teach digitally skilled learners. Researchers believe that incorporating suggested activities can help improve the digital literacy skills of trainee teachers.

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