

Impact of Digital Literacy Training Programme on Self-Efficacy among Students with Visual Impairment

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Nowadays, being literate also entails knowing how to utilize tools and technology correctly. To employ assistive technology, including software that converts voice to text and screen readers, persons with visual impairment (VI) must be technologically savvy to be admitted to school, find work, and participate in other social activities. The conviction in one's ability to complete tasks is called self-efficacy and is linked to several aspects of scholastic success, perseverance, and problem-solving. The study's primary goal was to analyze how participants' self-efficacy was affected by a digital literacy training program for students with VI. Thirty students, ages twenty to thirty, participated in the experiment. Fifteen participants in the control group (CG) received no training, whereas fifteen participants in the experimental group (EG) had twenty-four weeks of digital literacy training. A validated Self-Efficacy Scale was used in the intervention to assess self-efficacy before and after the session. Participants who received the intervention reported higher levels of self-efficacy, whereas the control group showed no change. To improve independence and academic abilities, the study completely supported the necessity for digital literacy in education for those with visual impairment and validated the training's worth in terms of its capacity to foster self-efficacy.

Keywords: Students with Visual Impairment, Self-Efficacy, Assistive Technology, Digital Literacy

Literacy in the digital age includes the capacity to effectively use digital tools and technology and traditional reading and writing skills. Digital literacy comprises a wide range of abilities, from fundamental computer operation to successful use of the internet and software. For students with visual impairment, digital literacy is especially important since it allows them to access education, job, and social opportunities via assistive technology like screen readers, magnifiers, and speech-to-text software. The conviction that one can do tasks successfully, or self-efficacy, is a key factor in deciding how learning experiences turn out. Greater perseverance, enhanced problem-solving abilities, and increased academic success correlate with higher self-efficacy levels. Gaining proficiency in digital literacy can help students with visual impairment feel more

confident and capable of navigating digital settings independently. The current study intends to investigate how the self-efficacy of students with visual impairment is affected by a digital literacy training program. It assumes that providing these students with formal instruction in digital literacy will greatly raise their sense of self-efficacy, supporting both their academic and personal growth.

Purpose of the study

The purpose was to ascertain the impact of a digital literacy training programme on self-efficacy among students with visual impairment.

Objectives

- Designing a digital literacy training programme for students with visual impairment

- Implement the digital literacy training programme for students with visual impairment.
- Identify the current situation of self-efficacy of students with visual impairment.

Hypotheses

- There is a significant difference between pre-test and post-test scores on self-efficacy among the experimental group of students with visual impairment.
- There is no significant difference between pre-test and post-test scores on self-efficacy among the control group of students with visual impairment.
- There is a significant difference between the post-test scores of the experimental and control group of students with visual impairment.

Digital Literacy and Visual Impairment

Through assistive technologies, digital literacy has been demonstrated to improve access to education for persons with visual impairment (Kumar & Raj, 2019). Students with VI can more readily access digital content through the utilization of speech recognition software, braille displays, and screen readers. Students who are adept in digital literacy, according to Smith (2020), do better academically and are more independent in their learning activities.

Self-Efficacy and Its Importance in Education

Bandura (1986) first presented the notion of self-efficacy and emphasized the significance of this idea in encouraging people to start and finish projects. Increased motivation to learn, persistence in the face of adversity, and better academic success are all associated with high self-efficacy (Schunk & Pajares, 2009). Self-efficacy is a

crucial factor that affects the success of learners with disabilities, including those with visual impairments.

Impact of Training Programs on Self-Efficacy

Research has shown that training programs enhance self-efficacy, thereby giving students the skills and confidence to accomplish particular tasks (Brown & Lent, 2013). In digital literacy, also, it has been shown that through structured training, proficiency and self-esteem among participants can be improved (Mossberger et al., 2008).

Compeau and Higgins conducted research in 1995 with the theme “Application of social cognitive theory to training for computer skills”. Based on Bandura’s Social Cognitive Theory, the whole training process was contrasted with a behavior modeling training program. Bandura, A. (1977) Self-efficacy: Towards a logical paradigm of behaviour modification. According to Social Cognitive Theory, observers’ expectations about results and their perceptions about their own ability to do a behaviour are influenced by vicarious experience, which is exposure to others’ performances of that behavior—in this example, interacting with a computer system. Additionally, the theory offers tactics to improve this kind of performance. The data supported the study’s hypothesis—that self-efficacy had a major impact on both models’ performance.

Method

Participants

Thirty students with visual impairment, ages 20 to 30, participated in the study. CG contained 15 participants and EG contained 15 participants. Participants had been chosen by employing a random sampling approach, ensuring that all students had basic proficiency in reading Braille or using auditory learning methods but had limited

digital literacy skills. The personal information collected basic information from participants, including age, gender, level of visual impairment (total or partial), educational background, and prior exposure to digital devices or assistive technologies.

Self-Efficacy Scale

The Self-Efficacy Scale, created by Dr. Shruti Narain and Dr. Arun Kumar Singh, was utilized to assess self-efficacy. The 5-point Likert scale is employed to evaluate replies to a twenty-item questionnaire, where 1=strong disagreement, 2=disagreement, 3=neutrality, 4=agreement, and 5=strong agreement for positive statements, with the reverse scoring applied to negative statements. Consequently, a more favorable response correlates with an elevated level of efficacy. The scale has undergone

extensive validation and is frequently utilized for studies concerning self-efficacy in Indian educational contexts.

Procedure

The experimental group participated in a twenty-four-week digital literacy training programme. Sessions were conducted for 1 hour daily, five days a week. The control group continued their regular curriculum without any digital literacy training. Pre- and post-intervention self-efficacy scores were collected from both groups.

Research design

A true random group design was adopted in the investigation. Here, the control group received no training, while the experimental group participated in a twenty-four-week digital literacy training programme.

Results

Table 1. Summary of Shapiro-Wilk Test Statistics Value for normality

Variable	Group	Test	Statistic	df	Significant
Self-efficacy	Experimental	Pre	0.89	15	0.08
		Post	0.95	15	0.67
	Control	Pre	0.96	15	0.74
		Post	0.96	15	0.69

The pre- and post-test outcomes of EG & CG had been assessed by employing the Shapiro-Wilk test, as indicated by the data presented in the aforementioned table. The data showed a normal distribution, as evidenced by the significant values that were obtained exceeding the 0.05 threshold.

Table 2. Computation of the 't' ratio on self-efficacy of experimental and control group

Group	Pre-Test Mean	Post-Test Mean	Mean Difference	Standard Error Mean	't' Ratio
Experimental Group	63.26	82.80	19.52	1.29	15.13*
ControlGroup	62.93	63.13	0.20	0.14	1.38

* Significant for the degrees of freedom's (df) 0.05 level 14 = 2.14

The table indicates that the self-efficacy ratios for the EG & CG were 15.13 and 1.38, respectively. The EG's ratio of 15.13, above the requisite table value of 2.14, was

statistically significant at 0.05 confidence level for 1 & 14 df. Moreover, the CG's pre-test to post-test ratio was 1.38, which dropped short of the required table value of 2.14 and was considered statistically insignificant.

Table 3. Computation of Covariance Analysis of The Effects of the Experimental and Control Groups on Self-Efficiency

	Experimental Group	Control Group	Source of Variance	Sum of Squares	Df	Means Squares	F-ratio
Pre-Test Mean	63.26	62.93	BG	0.83	1	0.83	0.66
			WG	351.86	28	12.56	
Post-Test Mean	82.80	63.13	BG	2900.83	1	2900.83	405.84*
			WG	200.13	28	7.14	
Adjusted Post-Test Mean	82.75	63.18	BG	2866.46	1	2866.46	449.14*
			WG	172.31	27	6.38	

* Significant at 0.05 level for the df 1 & 28 = 4.19

* Significant at 0.05 level for the df 1 & 27 = 4.21

The analysis of the aforementioned table revealed that pre-test mean scores were 63.26 for the EG and 62.93 for the CG. The pretest F-ratio of 0.66 differs from the tabulated F-ratio of 4.19. Consequently, at a significance threshold of 0.05, the F-ratio for the pretest means with df 1 and 28 was considered non-significant. The post-test means for the EG & CG were 82.80 and 63.13, respectively. The post-test F-ratio

measured 405.84, in contrast to the calculated F-ratio of 4.19. This indicates that, at the 0.05 confidence level, df 1 & 28 exhibited significant post-test mean F-ratios. The adjusted post-test mean was 82.75 for the EG and 63.18 for the CG. The F-ratio obtained from adjusted post-test mean was 449.14. The tabulated value of the F-ratio was 4.21. The adjusted post-test mean F-ratio had been significant at the 0.05 level for df 1 & 27.

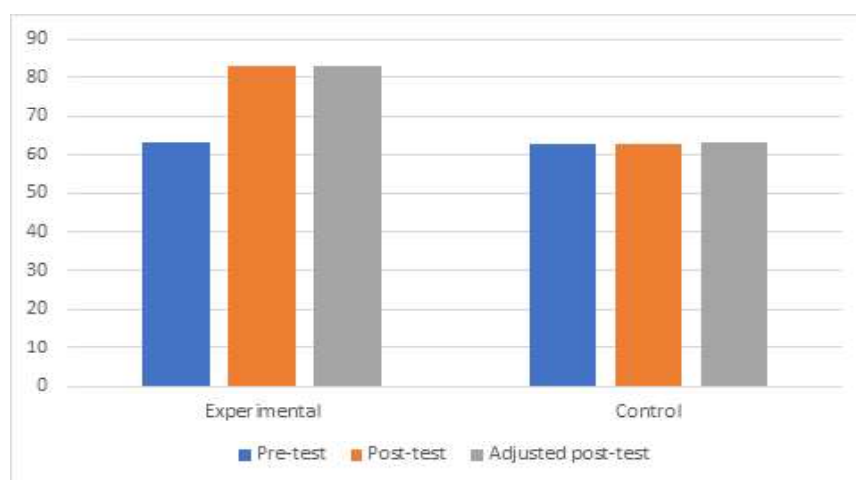


Figure 1. Variations between the experimental and control group in pre, post, and adjusted post-tests on self-efficacy

Conclusion

The research's outcomes support the notion that teaching digital literacy benefits students with visual impairment. The fact that the structured digital literacy programme is relevant in fostering confidence and independence in digital contexts is demonstrated by the significant score gains for students in the comparison between the CG and EG. A statistical examination of the training program revealed that positive attitudes, efficacy expectations, and self-confidence were all increased. The outcomes aligned with previous research that showed positive academic or personal changes in pupils due to digital abilities acquired by students with VI. This study illustrates the necessity of integrating digital literacy training into the curricula for students with VI, as its long-term and immediate benefits will directly influence their overall well-being.

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