

Digital Competence among Secondary Teachers

Dr. K. Radhamani¹, Dr. D. Kalaivani²

¹Associate professor in Education, Michael Job Memorial College of Education for Women, Tamilnadu, India

²Associate professor in Education, Michael Job Memorial College of Education for Women, Tamilnadu, India

Abstract: *In this digital era, teachers are expected to integrate modern teaching approaches and strategies in the classroom. Especially educational institutions are demanding the teachers who have good communication skills and competence in using digital technologies. A digitally competent teacher makes students more focused in their learning process by using technologies effectively in their teaching. The present study investigates the digital competence of secondary teachers. The results shows that the demographic variables such as age, completion of computer course and major subject studied make significant difference on digital competence among secondary teachers.*

Keywords: Digital competence, Technology, Teaching, secondary teachers

1. Introduction

The teacher occupies a very important place in the society because he brings about the transfer of the intellectual tradition from one generation to the next. He moulds the destiny of future citizens. He is expected to help in the silent social revolution that is taking place in the country. His duty does not end in the classroom with his students. He owes a duty to the society and the nation. Further, he should change his teaching strategies continuously to outfit the changing world. In the current scenario, teachers require competencies and skills which help them to uplift their position. Especially teachers should have the skill and competence of using digital tools in their classroom. Since the digital competence provides support to the teacher, he can perform better on their job effectively.

Digital competence:

Digital competence refers to technology - related skills. It involves the confident and critical use of electronic media for work, leisure, and communication. These competencies are associated with logical and innovative thinking, advanced information management skills, and well - developed communication skills. According to AndersSkov (2016) Digital competence is a combination of knowledge, skills and attitudes with regards to the apply of technology to carry out tasks, solve problems, communicate, manage information, collaborate, as well as to build and share content efficiently, appropriately, securely, critically, creatively, independently and ethically.

Ilomaki, L and Lakkala, M. et al., (2016) defined that, the digital competence consists of technical competence, the ability to use digital technologies in a meaningful way for working, studying and in everyday life, the capability to evaluate digital technologies critically, and stimulus to participate and commit in the digital culture. According to Digital Competence Framework (2018), Digital competence is the set of skills, knowledge and attitudes that facilitate the confident, innovative and critical use of technologies and systems. It is the skill set that provides a person to be a confident digital citizen, to interact and collaborate digitally, to produce work digitally, and to be confident in handling data and computational thinking.

Significance of the study:

Nowadays, the teaching profession requires a set of competencies and skills than before. An enormous utility of digital devices and their applications brought changes in the education system and require the teachers to develop their digital competence. Since the secondary education is the blooming stage of the children, they can easily grasp all the information in every field. As we know the future will be more digitalized so that students must get ready to live in that advanced digital world. It is the responsibility of the secondary teachers to prepare their students for digital life. So the secondary teachers should aware about the digital competencies and use them in more effective ways in their classrooms.

Objectives:

To find out if there is any significant difference in the mean scores of digital competence among secondary teachers with respect to age, locality, completion of computer course and major subject studied.

Hypotheses:

- 1) There is no significant difference in the mean scores of digital competence among secondary teachers with respect to locality.
- 2) There is no significant difference in the mean scores of digital competence among secondary teachers with respect to major subject studied.
- 3) There is no significant difference in the mean scores of digital competence among secondary teachers with respect to completion of computer course
- 4) There is no significant difference in the mean scores of digital competence among secondary teachers with respect to different age groups.

2. Methodology

The sample:

The sample of 155 secondary teachers was selected for the present study. The questionnaire was designed and disseminated using the Google form platform. Participants were encouraged to fill out the form and assist in sharing the questionnaire with their colleagues. Thus, participants were recruited by a snow ball sampling technique. Moreover,

participants were limited to one response to avoid duplicated or exaggerated data.

Tool for the present study:

In order to collect data for the present study the investigators have used Teacher’s Digital Competence Scale which was developed by Ramakrishna (2017). The scale was modified and validated by the investigators. Fifty items were used to measure digital competence. All items in the questionnaire are measured on a 5 - point Likert type scale, with 1 indicating “Strongly disagree” and 5 indicating “Strongly agree”. Respondents were asked to click the appropriate number to indicate the extent to which he/she agreed or disagreed with each statement. There are no negative items in the questionnaire.

Statistical analysis:

The data collected were analyzed by using descriptive and inferential analysis. The following statistical techniques were employed for the analysis and interpretation of the data.

- Mean
- Standard deviation
- ‘t’ - test
- ‘F’ - test

3. Analysis and Interpretation of Data

Hypothesis: 1

There is no significant difference in the mean scores of digital competence among secondary teachers with respect to locality.

Table 1: Mean, SD and t - values of digital competence of secondary teachers based on locality

Variable	Gender	N	Mean	S. D	‘t’	Remarks
Digital Competence	Rural	80	203.36	29.38	0.769	Not Significant
	Urban	75	206.99	29.23		

*Significance level at 0.05 level is 1.96.

Table 1 reveals that the obtained t - value for digital competence (0.769) is less than the table value. So it is not significant at 0.05 level. This shows that there is no significant difference in digital competence of secondary teachers based on location. Hence null hypothesis 1 is accepted.

Hypothesis: 2

There is no significant difference in the mean scores of digital competence among secondary teachers with respect to major subject studied.

Table 2: Mean, SD and t - values of digital competence of secondary teachers based on major subject studied

Variable	Major subject	N	Mean	S. D	‘t’	Remarks
Digital Competence	Arts	80	199.75	30.212	2.673	Significant
	Science	75	211.48	26.992		

*Significance level at 0.05 level is 1.96.

Table 2 reveals that the obtained t - value for digital competence (2.673) is more than table the value. So it is significant at 0.05 level. This shows that there is a significant difference in digital competence of secondary teachers based on major subject. Hence null hypothesis 2 is rejected.

Hypothesis: 3

There is no significant difference in the mean scores of digital competence among secondary teachers with respect to completion of computer courses.

Table 3: Mean, SD and t - values of digital competence of secondary teachers based on completion of computer courses

Variable	Completion of computer courses	N	Mean	S. D	‘t’	Remarks
Digital Competence	Yes	86	213.63	26.959	4.262	Significant
	No	69	194.51	28.730		

*Significance level at 0.05 level is 1.96

Table 3 reveals that the obtained t - value for digital competence (2.673) is more than the table value. So it is significant at 0.05 level. This shows that there is a significant difference in digital competence of secondary teachers based on completion of computer courses. Hence null hypothesis 3 is rejected.

Hypothesis: 4

There is no significant difference in the mean scores of digital competence among secondary teachers with respect to different age groups

Table 4 (a): Showing the significance of difference between and within group of secondary teachers belonging to different age groups with respect to their digital competence

Age	N	Mean	SD		
Below 30 years	46	209.15	29.25		
30 - 40 years	72	207.96	29.73		
40 - 50 years	37	194.5	26.45		
Source	Sum of Squares	Df	Mean square	F	Significant
Between groups	5448.019	2	2724.009	3.274	0.041
Witin groups	126455.89	152	831.947		
Total	131903.91	154			

The above table reveals that there is a significant difference between Groups and within the group of teachers' digital competence in relation to their age. Thus the null hypothesis was rejected.

Since the F - value is significant, the data was further analyzed using LSD test as shown table 4 - b.

Post Hoc Test - LSD: Post Hoc Test is used to test the significant mean difference in the digital competence of secondary teachers with respect to different age groups.

Table 4 (b): Difference in age level among secondary teachers in their digital competence - Post Hoc Test - LSD

Variable	Different Age Groups		Mean Difference	Significant value	Inference
Age	Below 30 years	30 - 40 years	1.194	.827	Not Significant
		40 - 50 years	14.585*	.023	Significant
	30 - 40 years	Below 30 years	- 1.194	.827	Not Significant
		40 - 50 years	13.391*	.023	Significant
	40 - 50 years	Below 30 years	- 14.585*	.023	Significant
		30 - 40 years	- 13.391*	.023	Significant

*The mean difference is significant at 0.05 level.

The above table reveals that there is a significant difference between the age level of 40 - 50 years with that of below 30 years. The age level of the teachers in 30 - 40 years has a significant difference with that of 40 - 50 years. The age level of the teachers in 40 - 50 years has a significant difference with that of below 30 years and 30 - 40 years. Thus the null hypothesis is rejected at 0.05 level. There was no significant difference between the age level of the teachers in below 30 years with that of 30 - 40 years.

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4. Conclusion

Digital Competence is the most required skill for the teachers in this digital era. A competent teacher will utilize available educational resources to their effective teaching and learning process. Similarly digitally competent teacher will utilize all the technological resources in her teaching and help to improve the knowledge and understanding level of the students. The present study found that there is a significant difference in digital competence among secondary teachers based on their age, major subject studied and completion of computer courses, whereas there is no significant difference in digital competence of secondary teachers based on locality. Digital literacy programmes and in service training will be provided by the educational institutions to develop digital competency among teachers irrespective of age and major subject. The teacher education institutions also play a crucial role in producing digitally competent future teachers. In addition, teacher education curriculum should be updated based on the rapid development of science and technology.

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