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A Comparative Study on State and CBSE Board Teachers on their Digital Competency

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Abstract

To effectively implement digital technology in the learning and teaching process, modern society requires educators with strong digital competencies. Teachers are tasked with helping students develop these competencies, which also means they must enhance their own digital skills. This study examines digital competency from six perspectives: professional involvement, digital resources, teaching and learning, assessment, empowering learners, and enabling learners' digital competency. The survey method was chosen for this study, targeting school teachers from both State and CBSE boards who teach students in grades six through eight across all subjects. Data was collected using random sampling, with 520 teachers contributing—218 from the State Board and 302 from the CBSE Board. The study revealed significant differences between the two groups in terms of demographic variables such as board of study and in-service program participation. It also uncovered a significant relationship between the dimensions of digital competency and its overall sum. Therefore, it is crucial for educators to effectively use technology to enhance and transform their teaching methods.

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INTRODUCTION

Since the transformation and improvement of education will depend on educational action, among other things, teachers are essential to this process of integrating technologies and play a critical role in the adoption and implementation of ICT in the classroom. This means that teachers need to possess effective digital competencies that enable them to integrate and use technologies in a pedagogical way. Digital competency is now considered the fifth fundamental skill, after reading, writing, math, and conversation. Assuming pedagogical-didactic criteria for an effective integration of ICT in their educational practice and, generally, in any formal or non-formal situation, Durán (2019) [5],[6] goes on to say that the Teachers Digital Competence (TDC) is a set of knowledge, skills, and attitudes required for a teacher to make effective use of ICT from its various aspects (technological, informational, multimedia, communicative, collaborative, and ethical).

In order to successfully integrate digital technology into the teaching and learning process, modern society need teachers who possess digital competencies. In order to help students build their digital competencies, teachers must also work on their own digital competency. Digital literacy, familiarity with educational platforms and software, and the capacity to smoothly incorporate ICT into learning activities are examples of digital competencies. Therefore, teachers' digital competence is the collection of information and communications technology (ICT)-related knowledge, skills, and abilities that are pertinent to the teaching profession and allow them to handle pedagogical and professional challenges in the knowledge society.

THEORITICAL BACKGROUND

The competency frameworks have been suggested from an institutional standpoint; based on various authors (Lazaro et al., 2019; Rodriguez-Garcia et al., 2019; Feerrar, 2019 [9]; Silva et al., 2019 [19]; Cabero-Almenara& Palacios-Rodríguez, 2020; Ranieri&Bruni, 2018) [17], the following are regarded as the most established and noteworthy among them: The European Union Framework for Digital Teacher Competence - DigCompEdu (Redecker&Punie, 2017) [18]; the International Society for Technology in Education (ISTE) Framework for teachers (Crompton, 2017) [4]; the UNESCO ICT skills framework for educators (Butcher, 2019) [1]; the common framework of digital teaching competence from the National Institute of Educational Technology and Teacher Training (INTEF, 2017) [13]; the UK Digital Teaching Framework (Education and Training Foundation, 2019)[7]; ICT skills for the professional development of teachers from the Colombian National Ministry of Education (Fernanda et al., 2013) [10]; and ICT skills and standards for the teaching profession from the Chilean Ministry of Education (Elliot et al., 2011) [8]. Kozuh et al. (2021) discerned significant disparities in teachers' digital ability attributable to professional training, teaching experience, gender, and subject specialization. Furthermore, Cabero-Almenara et al. (2020) examined the enhancement of teacher digital competence, revealing remarkable reliability metrics across all dimensions of the instrument employed in their study.

These frameworks, in addition to delineating the competencies required for teacher training, seek to ascertain training needs and provide tailored training programs (Flores-Lueg&Roig Vila, 2016 [12]; Leaning, 2019 [15]; Lee, 2019 [16]; Yazon et al., 2019) [20]. Based on the scientific literature regarding digital competence in higher education instructors and current research, DigCompEdu has been identified as the best suitable model for assessing teachers' digital competence. Each

domain encompasses a set of competences that educators must possess to foster successful, inclusive, and innovative learning methodologies through the utilization of digital tools (RedeckerPunie, 2017) [18].

Professional commitment:

Capacity to use digital technology to improve the teaching process and connect professionally with colleagues, students, parents, and other educational community members. Furthermore, technology-mediated communication enables individual professional development as well as collective and ongoing innovation in educational organizations.

Digital resources:

Recognizing good educational materials. Additionally, teachers must be able to generate, adapt, and distribute these resources to fit their goals, pupils, and teaching philosophies. They also need to understand how to safeguard personal information and respect author rights when using and managing digital content.

Digital pedagogy:

Being able to create, plan, and implement the use of digital technology throughout the entirety of the teaching process, while also encouraging student-centered approaches and techniques, is becoming increasingly important.

Evaluation and feedback:

In addition to paving the way for new and improved evaluation procedures, digital technologies have the potential to enhance the evaluation tactics that are now in use. Teachers are able to provide more particular remarks and help after doing an analysis of the vast amount of data that is available (digital) regarding the unique interactions of pupils.

Empowering the students:

The ability of digital technology to increase student autonomy and cooperation in the teaching-learning process is one of their primary benefits in the classroom. In addition, students' interests, skill levels, and individual learning requirements can be taken into account while designing digital learning activities.

Facilitating the competence:

The ability to help pupils develop digital competence is central to this area of competence and an essential component of teachers' competence in information and communication technology.

PURPOSE OF THE STUDY

Digital competency among teachers is a complex and crucial component of contemporary education. It has an impact on the caliber of instruction and learning as well as how prepared pupils are for the digital age. For education to remain relevant and effective in the digital age, it is imperative that teachers' digital competency be developed and evaluated. For digital technologies to be successfully incorporated into the teaching and learning process, it is crucial that educators have a positive attitude toward their potential. To be effective in their teaching activities, instructors can identify the digital competencies they need to have based on their everyday activities and the requirements for using digital technology.

Teachers that possess high levels of digital competence are able to use digital tools and resources to enhance their teaching methods. They can access a variety of online educational resources, produce dynamic and captivating learning materials, and use digital platforms to support collaborative learning. In addition to raising student engagement, digital technology use fosters creativity, critical

thinking, and problem-solving abilities. As a result, the current study on teachers' digital competency by the State Board and CBSE Board is crucial.

RESEARCH QUESTIONS

Is there is any significant mean difference between the State Board and CBSE Board teachers in the dimensions of Digital competency namely professional engagement, digital resources, teaching and learning,assessment, empowering learners, facilitating learner's digital competency and with overall total for digital competency?

Is there is any significant mean difference between the married and unmarried teachers in the dimensions of Digital competency namely professional engagement, digital resources, teaching and learning,assessment, empowering learners, facilitating learner's digital competency and with overall total for digital competency?

Is there is any significant mean difference between the teachers attending and not attending the in-service programme in the dimensions of Digital competency namely professional engagement, digital resources, teaching and learning,assessment, empowering learners, facilitating learner's digital competency and with overall total for digital competency?

Is there is significant correlation among the dimensions ofDigital competency namely professional engagement, digital resources, teaching and learning,assessment, empowering learners, facilitating learner's digital competency and with overall total for digital competency?

METHODOLOGY

The State Board and CBSE Board teachers who taught classes in all subject areas, including English, second languages, mathematics, science, and social science, from grades VI through X, participated in the study using the survey approach. For this study, the survey method is used. The method of random sampling is used to gather data. Nearly 520 instructors provided the data, of whom 218 were from the State board and 302 were from the CBSE board. The DigCompEdu Check-In instrument was utilized for the study. The Spanish version of this questionnaire was modified by Cabero-Almenara and Palacios-Rodríguez (2020) [3]. The instrument consists of 18 pieces total, with three items in each of the six dimensions. SPSS was used to examine the data.

FINDINGS OF THE STUDY

It is inferred from the **Table 1** that there is significant mean difference between the State board and CBSE board teachers in professional engagement, digital resources, teaching and learning, empowering learners, facilitating learner's digital competency and overall total for digital competency. It is reported that the state board teachers were found to be better than the CBSE board teachers in the above mentioned dimensions of digital competency and its overall total. Further it is evident that the dimensions of digital competency except the assessment are significant at one percent level. In the dimension assessment both the State board and CBSE board teachers are seems to be similar.

It is inferred from the **Table 2** that there is significant mean difference between the married and unmarried teachers in professional engagement, digital resources, teaching and learning, assessment, empowering learners, facilitating learner's digital competency and overall total for digital competency. It is reported that the married teachers were found to be better than the unmarried teachers in the above mentioned

dimensions of digital competency and its overall total. Further it is evident that the dimensions of digital competency except professional engagement and empowering learners are significant at one percent level. Whereas, the dimension professional engagement and empowering learners are significant at five percent level.

It is inferred from the **Table 3** that there is significant mean difference between the In-service programmes attended and not

Table 1 Significant mean difference between the State Board and CBSE Board teachers in the dimensions of Digital competency

Variable and its Dimensions	Type of Board				't' value	Level of Significance
	State Board (N=218)		CBSE (N=302)			
	Mean	S.D	Mean	S.D		
Professional Engagement	9.26	2.009	8.33	2.177	5.024	P<0.001
Digital Resources	9.17	2.473	8.08	2.764	4.726	P<0.001
Teaching and Learning	9.12	2.469	8.28	2.874	3.576	P<0.001
Assessment	9.29	2.765	8.86	3.381	1.585	P>0.005
Empowering Learners	10.11	2.507	9.32	2.784	3.385	P<0.001
Facilitating Learners Digital Competency	10.64	1.677	10.05	1.912	3.747	P<0.001
Overall Digital Competency	104.55	23.427	95.80	28.406	3.842	P<0.001

Table 2 Significant mean difference between the Married and Unmarried teachers in the dimensions of Digital competency

Variable and its Dimensions	Marital Status of the Teachers				't' value	Level of Significance
	Married Teachers (N=460)		Unmarried Teachers (N=60)			
	Mean	S.D	Mean	S.D		
Professional Engagement	8.81	2.133	8.02	2.213	2.693	P<0.005
Digital Resources	8.65	2.653	7.70	2.907	2.579	P<0.001
Teaching and Learning	8.78	2.707	7.45	2.734	3.588	P<0.001
Assessment	9.22	3.121	7.70	2.999	3.664	P<0.001
Empowering Learners	9.75	2.723	8.97	2.400	2.326	P<0.005
Facilitating Learners Digital Competency	10.38	1.816	9.67	1.902	2.847	P<0.001
Overall Digital Competency	100.79	26.523	89.33	26.620	3.145	P<0.001

Table 3 Significant mean difference between the teachers attending and not attending the in-service programme in the dimensions of Digital competency

Variable and its Dimensions	In-service Programme				't' value	Level of Significance
	Attended (N=324)		Not-Attended (N=196)			
	Mean	S.D	Mean	S.D		
Professional Engagement	9.14	2.025	8.03	2.192	5.873	P<0.001
Digital Resources	9.12	2.505	7.58	2.734	6.591	P<0.001
Teaching and Learning	9.13	2.515	7.80	2.899	5.519	P<0.001
Assessment	9.53	2.892	8.22	3.368	5.519	P>0.005
Empowering Learners	10.16	2.506	8.82	2.800	5.648	P<0.001
Facilitating Learners Digital Competency	10.62	1.715	9.76	1.913	5.323	P<0.001
Overall Digital Competency	104.80	24.375	90.66	28.227	6.034	P<0.001

Table 4 Correlation among the dimensions of Digital competency

Variable and its Dimensions	Professional Engagment	Digital Resources	Teaching and Learning	Assessment	Empowering Learners	Facilitating Learners Digital Competency	Overall Digital Competency
Professional Engagement	1	0.766**	0.772**	0.736**	0.769**	0.726**	0.851**
Digital Resources	X	1	0.895**	0.871**	0.872**	0.847**	0.947**
Teaching and Learning	X	X	1	0.895**	0.900**	0.872**	0.961**
Assessment	X	X	X	1	0.871**	0.836**	0.945**
Empowering Learners	X	X	X	X	1	0.847**	0.948**
Facilitating Learners Digital Competency	X	X	X	X	X	1	0.902**
Overall Digital Competency	X	X	X	X	X		1

attended teachers in professional engagement, digital resources, teaching and learning, empowering learners, facilitating learner's digital competency and overall total for digital competency. It is reported that the teachers who were attended the in-service programme were found to be better than the teachers who have not attended the in-service programme in the above mentioned dimensions of digital competency and its overall total. Further it is evident that the dimensions of digital competency except the assessment are significant at one percent level. In the dimension assessment both the teachers who have attended and not attended the in-service programme are seems to be similar.

It is evident from the **Table 4** that there is positive and significant relationship among all the dimensions namely professional engagement, digital resources, teaching and learning, assessment, empowering learners, facilitating learner's digital competency and overall digital competency at the one percent level.

CONCLUSION

In the current study, the findings indicate that the dimensions of digital competency exhibited by instructors working for both the State and CBSE boards demonstrate that the former group had a higher level of digital competency. Teachers who have participated in an in-service program that focuses on digital technology have demonstrated that they have the digital competency necessary to teach students. An educator who is digitally competent possesses the knowledge, attitudes, and abilities necessary to cultivate authentic learning in an environment that is enhanced by technological advancements, as demonstrated by this. Technology should be able to be utilized by each and every educator in a manner that enhances and revolutionizes the methods that they employ in the classroom. This is something that will be beneficial to both their students and them professionally.

Ethical Approval

No ethical approval was necessary for this study.

Author Contribution

All authors made substantial contributions to the conception, design, acquisition, analysis, or interpretation of data for the work. They were involved in drafting the manuscript or revising it critically for important intellectual content. All authors gave final approval of the version to be published and agreed to be accountable for all aspects of the work, ensuring its accuracy and integrity.

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