A Study on Assessing the Digital Competency Profile of Teachers in Odisha

Mitali Swain[1]

Assistant Professor in Mathematics (Teacher Education), Nabakrushna Choudhury College of Teacher Education, Angul, Odisha, India

Abstract: *The most influential and proven vehicle for achieving goals of sustainable development is education and to attain this target the vision of 21st-century learning skills focuses on the digitalization of pedagogical strategies along with teaching-learning practices. As the initiative of the government of Odisha focuses on ICT-enabled classrooms with innovative digital resources along with infrastructure, there is still minor improvement in the teaching practices. The current study aims to investigate the digital competency level of government school teachers using the DigCompEdu self-reflection tool. In the tool, 25 items are covering 7 areas. The researcher adopted a quantitative survey and used 50 samples working in government schools of Odisha. The study finds majority of samples i.e. 30% are in one competency level.*

Keywords: Digital competency, teacher training, DigCompEdu

1. Introduction

Digital technology has changed the way of acquiring information and knowledge. The COVID-19 pandemic has enormously increased the digital transmission of information and knowledge and digital competencies become crucial for better participation in society including employment opportunities and lifelong learning (UNSCO). Digital competency has become a key concept in recent years due to the COVID-19 outbreak in the world. A blended teaching model is felt necessary in the educational institution after the COVID-19 pandemic. Teachers need to have adequate digital competency to meet the requirements of the new innovative educational model (Li & Yu, 2022). the teacher needs to reinvent themself with the help of in-service training and integrated and innovative pedagogy to meet the emerging needs of the teaching learning process. The teachers need to prepare for student-centered learning with the help of sensible mobilization of digital technologies (Sa & Serpa, 2020). Teachers' digital competency, experiences, and technology self-efficacy help them in the transition from in-person classroom transactions to a virtual learning environment, which helps in digital inclusion in school education and it is also necessary for sustainable development (Ogodo et al., 2021).

In Odisha, after the schools are getting upgraded to 5T schools, in this scheme the classrooms are equipped with modern ICT technologies so there is a growing interest among teachers to acquire digital literacy and digital competency skills to meet the changing needs of the classroom. Digital competency means not only making use of new emerging digital technology but also participating in the emerging society of the 21st century, where knowledge explosion through the internet and diverse technology are influencing the lives of students in the classroom and around the globe. Through adequate digital competency teachers can access more relevant educational resources and get wider opportunities for problem-solving and collaboration (Alkhateeb et al., 2017). Digital competency is also considered as an instructional technology skill that teachers should learn to implement in the classroom to make it student-centered. This is a pedagogical skill needed to facilitate learning in the digital environment, it also needs advanced use of technology and the development of innovative learning resources (Ogodo et al.,2021).
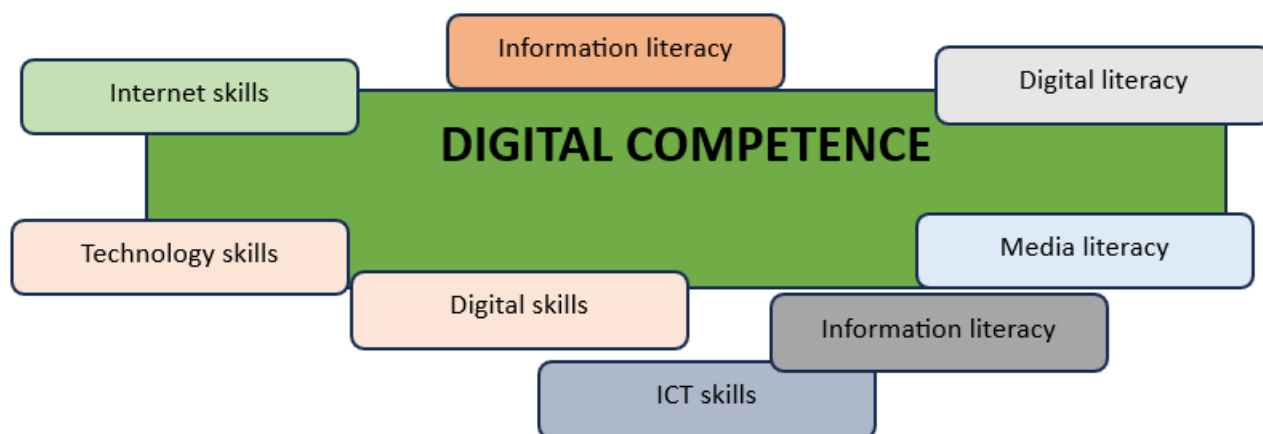

Figure 1: Digital competency related concept

As the teachers of government schools of Odisha are ready to use digital technology in their classroom transaction to imparting quality education and making teaching-learning process more student centred so the researcher aims to find

out the actual digital competency level of teachers as a factor that may influence the teaching-learning process in future.

2. Research Question

This study aims to investigate the digital competency profile of teachers of Odisha to provide an understanding of the digital competency and skills of government school teachers. For this, the following research question is formulated:

What is the current digital competence profile of the teachers of Odisha state government schools measured through digital competence score?

3. Methodology

Research Design

The study adopted a quantitative survey method and an online questionnaire by adopting the DigCompEdu self-reflection tool. The data is based on numerical figures and obtained in an objective manner. The study explored the specific digital competencies of teachers of Rayagada district, Odisha. The researcher adopted a convenience sampling technique for collecting data. The questionnaire was distributed to the teachers through mail and the sample size of the study was 50.

Research Instrument

The data was collected through an online questionnaire adopting the DigCompEdu self-reflection tool for digital competencies. The assessment tool consists of 25 competencies divided into 7 areas. The competencies were described into 6 different levels such as A1 (newcomer), A2 (Explorer), B1 (Integrator), B2 (Expert), C1 (Leader), C2 (Pioneer). From the total 25 statements, the teacher has

to choose 1 out of 7 multiple choice iteams. The options are arranged in an increased level of complexity and the answer option also uses the application of Blooms digital taxonomy. Area 1 of the assessment tool focuses on ability of the individual to use digital technology not only to enhance teaching learning practices but also for interaction with students and for continuous innovation in their institution. Area 2 of the tool focuses on the digital resources. It assesses how far the individual identifies good educational content and resources and modifies share, creates digital resources that fulfill their learning objectives and also assess how far they are responsible to use digital content, protecting personal data and copyright rules. Area 3 of the DigCompEdu tool tries to assess how far the individual can plan, design and implement the digital content and technologies in their teaching-learning process to make his classroom a student-centered classroom than a teacher-led classroom. Area 4 focuses on adopting various assessment strategies by using digital technologies and shifts in existing assessment strategies and the ability to understand how digital technologies help in enhancing existing assessment strategies and help in adopting better and new assessment strategies in teaching the teaching-learning process. Area 5 focuses on the ability of the teachers to boost the active involvement of students in learning activities develop their interest in learning and fulfil their learning needs by using digital technologies. Also, accessibility to each student should be taken care of. Area 6 asses the ability of the teacher to facilitate digital competencies among students. The last area that is Area 7 focuses on how far the teachers are aware of open education and open educational resources and adopting it in their professional development and using it to develop their digital competencies, empowering learners and improving their teaching-learning process.

The tool has a similar type of scoring procedure for all the 25 questions. Following is an example of the scoring procedure of the tool.

I use different digital channels to communicate with learners and colleagues whenever appropriate
e.g. emails, blogs, instant messaging, the department's website, Apps

0 points I do not use digital communication channels

1 point I use basic digital communication channels, e.g. e-mail, instant messaging

2 points I identify different digital solutions to communicate

3 points I combine different communication channels, e.g. e-mail, instant messaging, or the education organisation's website

4 points I analyse and assess the communication channels to choose the ones I consider most effective for my communication

purpose

5 points I reflect on, programme and adapt my communication strategies

6 points I confidently plan my digital communication strategy using a variety of digital technologies

Figure 1: DigCompEdu self-reflection tool

Data Collection and Analysis

In the first stage, the Researcher sends the invitations electronically to teachers to get their consent for their cooperation and to participate in the survey, after their

mutual consent researcher send the link of the adopted the DigCompEdu self-reflection tool to submit their responses. The mean, standard deviation, coefficient of variance, and percentage analysis is used to analyze the data.

4. Results

Participant Demographics

Table 1 shows the demographic data involved in the study. There are 60% of participants are male where whereas 40% of participants are female. Of the participants, 62% of teachers have more than 15 years of experience in teaching, likewise, 24% of teachers have 10 to 15 years of experience in teaching, 10% of participants have 5 to 10 years of teaching experience, 2% of participants having 1 to 5 years of teaching experiences and again 2% participants having less than 1 year of teaching experiences. Teachers are from both the primary and secondary state government schools. Of the participants teachers 22% were teachers from secondary school and 78% were teachers from primary schools of Odisha. 66% of teachers don't have any ICT-related certificates.

Table 1: Demographics Information of the sample used in the study

Questions	Answers	Percentage	Number of participants
Are you?	Female	40%	20
	Male	60%	30
How many years of teaching experience do you have?	More than 15 years	62%	31
	10 to 15 years	24%	12
	5 to 10 years	10%	5
	1 to 5 years	2%	1
	Less than 1 year	2%	1
Which stage are you teaching?	Primary	78%	34
	Secondary	22%	11
Do you have any computer or information technology-related certificates?	Yes	34%	17
	No	66%	33

To find the answer to the research question of the study mean of each area and the mean of the overall scores were calculated. The mean scores of Area 3, area 4, and Area 5 are comparatively similar as compared to other areas. The mean score of Area 6 is higher (9.6) and Area 7 has the lowest mean score (4.36). the overall mean score is 43.32

Table 2: Distribution of scores of each area

Area	Mean	Min	Max	SD	Coefficient of variance	Highest possible score
Area 1	8.38	0	22	6.08	0.72	24
Area 2	4.62	0	14	3.46	0.74	18
Area 3	5.72	0	20	2.11	0.36	24
Area 4	5.04	0	16	3.46	0.68	18
Area 5	5.6	0	17	4	0.71	18
Area 6	9.6	0	29	6.98	0.72	30
Area 7	4.36	0	18	4.14	0.94	18
Overall score	43.32	3	123			150

Percentage distribution of competency band of teachers:

From the sample 30% of teachers were in A1 competency band, A1 represents New Comer. 22% of teachers were in A2 competency band i.e. Explorer. 18% of teachers are in B1 competency band i.e. integrator. 14% of teachers are in B2 competency band i.e. Expert. 10% of teachers are in C1 competency band i.e. Leader and 6% of teachers are in C2 competency band i.e. Pioneer.

Table 2: percentage distribution of teachers in each competency level

Digital Competence Level	Scores for each competency level	Number of teachers in each competency level	Percentage of teacher
A1: New Comer	Less than 23	15	30%
A2: Explorer	23 to 38	11	22%
B1: Integrator	39 to 56	9	18%
B2: Expert	57 to 74	7	14%
C1: Leader	75 to 91	5	10%
C2: Pioneer	More than 92	3	6%

5. Discussion

The current study assesses the digital competencies of teachers of state government schools in Odisha. The researcher used the DigCompEdu assessment tool, through which the researcher found out that 30% of teachers i.e. the majority of teachers in the A1 competency level of digital competency, that means they are newcomer and they have the opportunity to enhance their skills with the help of digital technology. They should focus on enhancing their learning strategies. There are 22% of samples are in the A2 competency band i.e. Explorer. The explorer are aware of digital technology and they have the potential to use or explore more about them to enhance professional and pedagogical practices. And to move them to the next competency level i.e. integrator level they have to

collaborate and exchange their ideas with colleagues and by amplifying their knowledge related to digital skills and practices. Competency band B1 has 18% teachers from the sample. It means 18% of teachers are at the integrator level, they are integrating digital technologies into their practices, and they use digital technologies to develop diverse aspects of their professional engagement. As they are at the integrator level they already know which digital tool fits best in which situation and how digital technology helps in improving pedagogical strategies and methods. The teachers in B1 need to give themselves some more time for knowledge exchange, reflection, and adoption to reach the next step i.e. B2. There are 14% of teachers from the sample who are in the B2 competency band i.e. Expert. These teachers can use digital technologies creatively and confidently to enhance their professional activities. They judiciously choose different digital technologies for different situations and understand the merits and demerits of different digital strategies. They are interested in new ideas. They should share their expertise with other teachers and work on critically developing their digital strategies to reach the next level i.e. Leader(C1).

10% of teachers are at the C1 level which means Leader. Teachers who are in the leader level have a comprehensive and consistent approach to using digital technologies to improve professional and pedagogic practices. They continuously reflect to develop their classroom practices. They keep updated by exchanging new developments with their peers and colleagues and help to enhance the potential of others to use digital technologies to improve their classroom practices. They will also be able to reach the next level if they experiment a little more.

The last level is C2 which is Pioneer Level. 6% of teachers are in the Pioneer level of competency band. The teachers who are in the pioneer level are aware of the constraints of these practices. They are eager to experiment and they are highly innovative in using digital technologies.

The findings of this paper show ways to further study of digital competencies among teachers. This DigCompEdu self-reflection tool provides a bird's view of the competencies and attitudes of teachers. As the sample is small (50) it may not be possible to predict the actual competencies of teachers towards digital technologies. Still, the paper gives a visualization of the use of digital strategies in pedagogical practices.

6. Conclusion

There are a large number of studies regarding digital competency and digital literacy all over the world but the current study adds little more about teachers of Odisha using the DigCompEdu 7 areas framework as a guide. The findings show that the majority of teachers are at the A1 level that is they are Newcomer and they need the opportunity to enhance their skills with the help of new technologies. So to further enhance their skills related to digital technologies, they need proper training digital resources, and adequate infrastructure to reflect their strengths and they should focus on enhancing their teaching strategies. This study also offers an awareness of

the strength of pedagogical potential driven by Digital technologies.

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