

## Teachers' Practices towards Strengthening Digital Literacy skills- A Semi Empirical Study

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### Abstract

Regarding the global scenario due to the pandemic, the world is moving towards virtual. Having a basic understanding of how to use digital tools is becoming more important. This study set out to do just that by investigating how teachers conceptualise digital literacy and how they plan to use tactics to increase their students' digital competence in online classrooms. The goals of this research were threefold: to assess teachers' understanding of digital literacy; to look at how secondary schools see digital literacy development; and to look at how teachers actually use online learning environments to promote digital literacy development among their students. This study was quantitative and descriptive. Researchers implemented a survey technique to collect the primary data. All male and female teachers teaching at the secondary school level in the Tirupathi district were the population. This research suggests that workshops and training sessions be held to help secondary school teachers learn more about digital literacy.

### Introduction

The concept of "21st century skills" is not new. In fact, schools have been teaching students how to solve problems, work together, and think critically for a long time. Literacy is one of the skills that is needed in the 21st century, among other key skills such as learning skills and life skills. The concept of multiliteracy highlights the depth and breadth of literacy, including digital literacy. To receive information in a variety of computer-dependent forms is a key component of digital literacy. When computers were first introduced, twenty years ago, they were widely regarded as the pinnacle of technological advancement. Due to the fast development of technology, people today have access to more information than ever before. Digital literacy is the proficiency with computers and related technologies that allows a person to satisfy his or her own specific requirements. Competencies in

reasoning, communicating with others, and experiencing emotion were all covered. To characterise the information needed to read, assess, and produce material using digital technologies, others have invented the term "knowledge literacy". Moreover, digital literacy is defined by the American Library Association (2011) as the intellectual and technical competence to utilise information and communication technologies (ICT) effectively for information finding, assessment, production, and communication.

Computer, information, technological, visual, communication, and media literacy are all parts of digital literacy, according to Covello (2010), Good fellow (2011), and Simsek and Simsek (2013). People are considered to have digital literate if they have a grasp of these six types of literacy. Mohammadyari and Singh (2015) stated that individuals who possess the range of skills necessary to make successful and efficient use of digital technology are said to be "digitally literate". A more exact definition of digital literacy was provided by Ozden (2018), who defined it as the capacity to acquire information by digital methods. According to UNESCO, the ability to access, manage, understand, integrate, communicate, evaluate, and create information using digital technologies in a safe and acceptable manner is crucial for work, decent employment, and starting one's own business (2018). Computer, media, and ICT (information and communication technology) literacy are all covered. Digital literacy, as defined by List (2019), is a set of related skills and knowledge that are essential for success in today's information-driven society.

According to Spires et al. (2017), there is a wide variety of ways to acquire information, and the many components of digital literacy—including text, images, animations, sound, video, and other forms of media—show that this multifaceted approach is necessary. This information can be found in digital literacy. According to Boche (2014), multiliteracy enables individuals to access more diverse knowledge from a variety of technological sources. Literacies such as computer and video game literacy, as well as multiliteracy, are all instances of what are known as multiple literacies. They are not the conventional ways of interpreting literature, but rather, novel ones (McCord, 2015). McCord (2015) added that a teacher's multiliteracy knowledge has a role in how they incorporate it into their lessons. By combining new and old technological tools, a more stimulating and productive learning environment may be established in the classroom. One example would be to use a combination of knowledge from a book, an online learning platform, the internet, and video observation (Alice, 2012). According to Gee (2009), in this contemporary age of learning, many literacies are required because of the broad media format of literacy.

The students of today are familiar to digital tools and are able to easily gather, produce, and disseminate digital content (Ting, 2015). In addition, the pervasiveness of digital technology in the modern classroom has led to a shift in how today's pupils learn compared to those of past generations. Mobile gadgets, online resources, programmatic applications, data transport and storage services, and so on are all instances of digital technology. Students now make extensive use of digital media including email, learning management systems, e-books, online journals, online quizzes, and online discussion forums. Thus, it is crucial for teachers to be technologically literate in order to promote and assist students' use of technology in the classroom (Tang & Chaw, 2016). Coklar and Kabakci, Yurdakul (2017) argue that teachers' capacity to understand and use new technologies as they emerge and evolve in classroom settings is strongly related to the success of technological integration. Digital literacy allows individuals to engage in contemporary learning, working, and social activities by manipulating digital material and using digital communication and collaboration technologies (UNESCO, 2018; European Commission, 2020).

Teachers are the backbone of every successful school system and crucial to its long-term viability (Salite, 2016; Fedosejeva et al., 2019; Salite et al., 2020; Heasley et al., 2020). Integrating technology into the classroom is closely correlated with instructors' adaptability to new learning-friendly technologies (Coklar, Kabak & Yurdakul, 2017). As our culture increasingly shifts online, there has been an increase in need for educators who are comfortable with and proficient in many forms of digital media. As a result, we must find innovative approaches to integrating technology into the classroom (Instefjord & Munthe, 2017). The modern digital world provides educators with a unique chance to have access to knowledge, tools, and sources that may be used to educate and instruct through digital media. It is crucial that teachers have the digital literacy skills pupils need to succeed

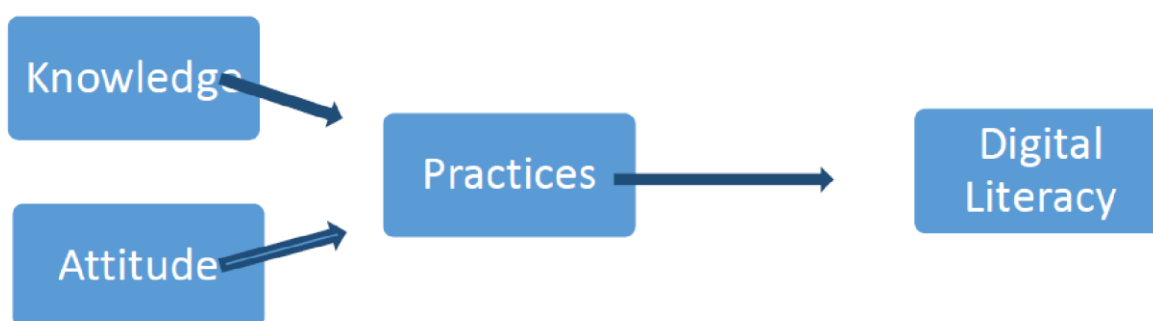
because of the influential role they play in moulding the next generation. Perhaps Down the Road (Gunduzalp, 2021).

To keep up with the quick rate of change brought about by new technology, we need a different set of skills, knowledge, and attitudes than those required for conventional literacy. Teachers are unique amongst technology users because of their unique needs in the digital world. These needs include, but are not limited to, teaching and training procedures, social communication, buying, bill paying, and sharing. Most children nowadays have grown up with computers and other digital technologies, making the transition to online learning a must. Students' increasing reliance on mobile devices like tablets, smartphones, and laptops makes it more challenging to include traditional teaching methods into their lessons. Hence, teachers have a significant impact on students' successful integration of technology into the classroom (Gunduzalp, 2021).

**Research Methodology**

Descriptive research methods were used to conduct the study, and quantitative data were gathered from the sample using a Google Forms survey. Teachers working at government secondary schools of Tirupathi district were the population of this study. A sample of 450 secondary school teachers from three districts of Tirupathi district (Tirupathi, Chiniot & Jhang) was selected through convenience sampling technique. Data were collected from the teachers through researchers' designed questionnaire based on five-point Likert scale having 24 positive statements along with demographic questions. Expert comments and a pilot study were used to validate the validity and reliability of the questionnaire prior to its administration. The questionnaire has a Cronbach's alpha of ( $\alpha=.81$ ). Eventually, researchers gathered all the data they needed and used descriptive, inferential, and structural equation modelling statistics to probe into the topics of study. The following results were occurred during data analysis:

**Research Model**



**Figure 1: Research Model of the study. Results and Discussion**

**Table 1**

Variables	Mean	S. D	$\alpha$	1	2	3	4
Knowledge	4.21	.623	.57	.506**			
Attitude	4.19	.75	.77		.416**		
Practices	4.24	.798	.75			.556**	
Digital Literacy	4.19	.742	.75				.631**

Results of Table 1 shows the mean scores, STD deviation, alpha value, and relationship statistics among the variables. This research contains four variables, knowledge (IV), attitude (IV), practices (M), and digital literacy (DV). The mean score for all four scales shows that responses are close to agreed portion of five- point Likert scale. The reliability score (Cronbach's alpha) for each research instrument shows internal consistency of scales under the suggested alpha threshold by Nunnally,

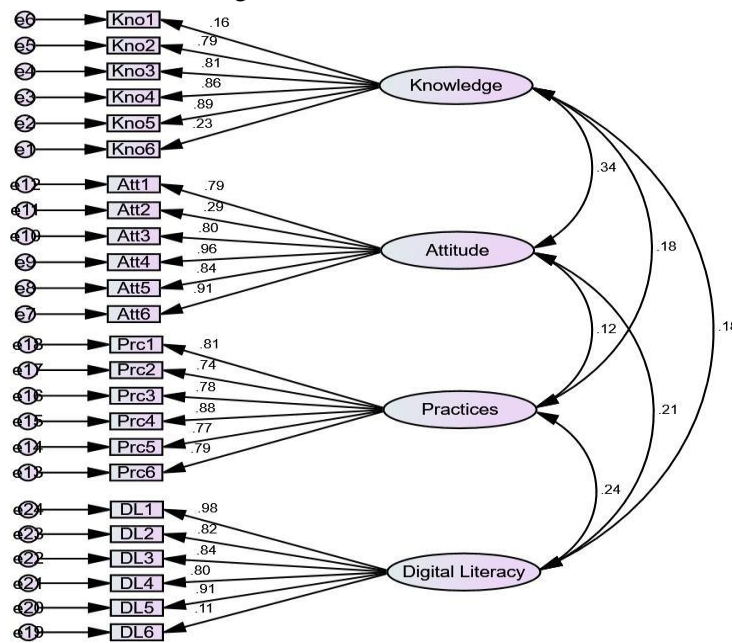
(1978). Furthermore, the correlation analysis estimates the strength and weakness of association among variables. In this regard, all variables have positive and significant correlations. Correlation evidently shows that there is no issue of overlapping or multicollinearity among variables.

**Structural Equation modelling (SEM)**

The behavioral sciences frequently employ the highly generic statistical modelling method known as structural equation modelling, or SEM. It can be thought of as combining path analysis and factor analysis (MacCallum and Austin, 2000). The latent components, which are theoretical constructs represented by SEM, are frequently of interest. Regression or path coefficients between the components represent the relationships between the theoretical entities. Covariance structure modelling is another name for structural equation modelling, which assumes a structure for the covariance between the observed variables (MacCallum and Austin, 2000). To further investigate the measurement model, the SEM does confirmatory factor analysis. It is crucial to verify the validity of latent conceptions. This study has performed CFA analysis to assess the measurement portion of the model. Afterwards, study performs structural analysis for hypotheses assessment.

**Confirmatory Factor Analysis**

Figure 2: CFA Results



CMIN/DF	P-VALUE	GFI	AGFI	TLI	CFI	PCFI	RMSEA	P- CLOSE
4.93	.322	.651	.650	.902	.725	.642	.088	.041

The figure 2 demonstrates the CFA results in terms of conceptual analysis. The model shows four constructs, namely as, knowledge, attitude, practice, and digital literacy. Each of the latent construct has 6 measured items. The model is only performed to examine the factor loadings, and it is seen that some of the measured items have low item loadings. To improve the model's goodness of fit, we can remove low-loading data points (Jacksen et al., 2009). Furthermore, the covariance statistics shows the discriminating ability of each latent construct. Hence, each of the construct's items have ability to explain the respective construct. The convergent and discriminant validities have also been verified via the use of other tests, such as composite reliability and average variance extracted. In this regard, model has established convergent validity because each of the construct has score greater than  $>.70$  (Jacksen et al., 2009). However, AVE for attitude and Knowledge has not been established which indicates that model need to be improved. Lastly, the goodness of fit indices was observed. The indices such as, CMIN/DF, P-CLOSE, GFI illustrating that CFA model should be modified.

Figure 3: CFA Modified

CMIN/DF	P-VALUE	GFI	AGFI	TLI	CFI	PCFI	RMSEA	P- CLOSE
1.51	.022	.823	.881	.823	.982	.838	.044	.044

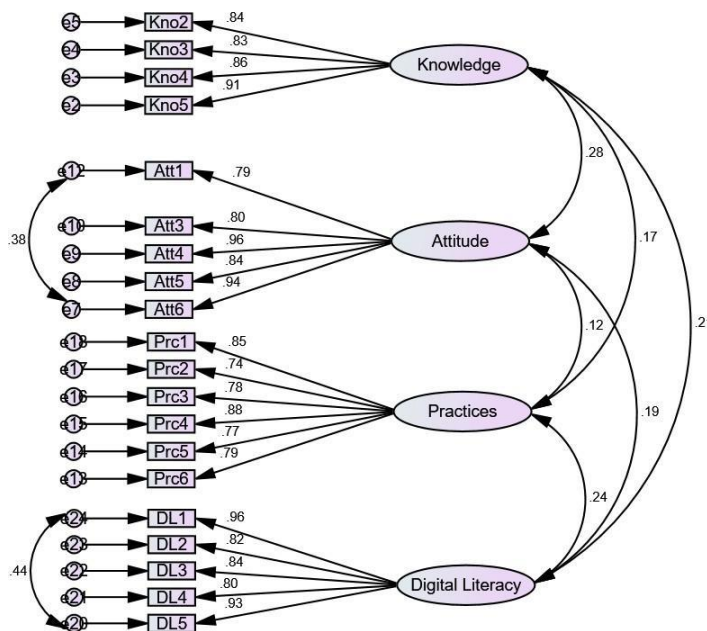


Figure 3 representing the results after suggested model modifications. The suggestion for the model modifications were taken up from AMOS software. In this connection, the items having low loading (Kno6 and Att2) were been removed. Moreover, AMOS suggested to have covariance of residuals of the same constructs. Keeping in view, covariance matrices were linked in between e12, e7, e24 and e20. In order to verify the convergent and discriminant validities, we reexamined the composite reliability and average variance retrieved. In this regard, after suggested model modification convergent validity were suitably observed because each of the construct has score greater than  $>.70$  (Jacksen et al., 2009). Previously, AVE for attitude and Knowledge were not suitably enough, however, after model modification all AVE scores for each of the latent constructs have value greater than  $>.50$ . Lastly, model fit indicators were also improved that shows suitable GoF of the model.

Structural Model Outcomes for H1, H2

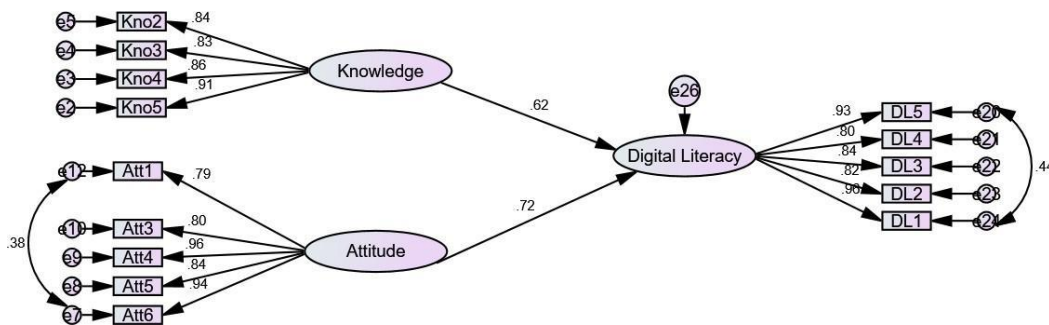


Figure 4: Direct Effect on IVs on DV

Figure 3 illustrates the results of inner model which is also called structural model. The confirmation of the constructs enabled this research to assess the proposed hypotheses. This research hypothesised (H1) that digital literacy would increase with knowledge and (H2) that it would increase with attitude (H2). In this connection, the outcomes in figure 4 shows that knowledge had .62 or 62% positive impact on digital literacy at 0.001 level of significance. Moreover, attitude had .72 or 72% positive impact on digital literacy at 0.001 level of significance. Based on these results, this research had confirmed H1 and H2.

Figure 5: Mediating Effects, H3 and H4

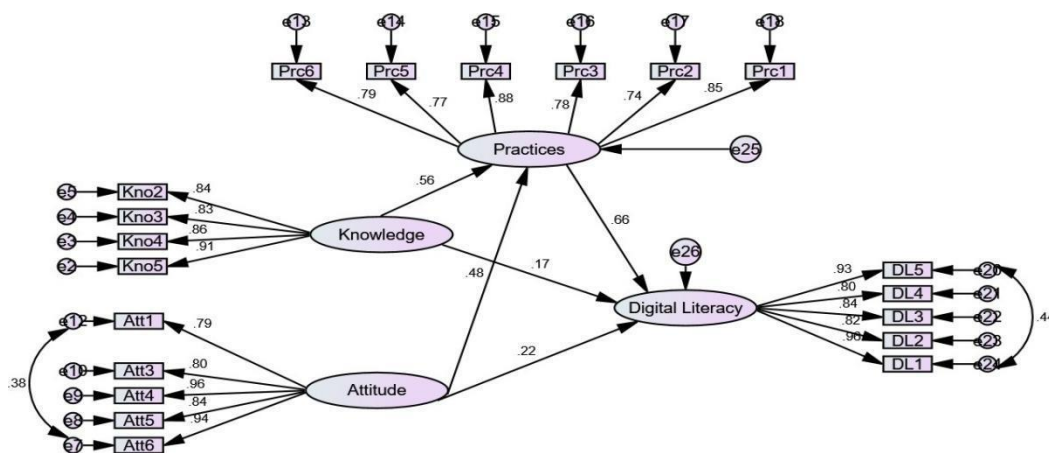


Fig. 5 displays the study's final model output. The major objective of this research was to assess how much of an effect practise has on the relationship between theoretical understanding and digital fluency. The connection between perspective and competence in the digital realm is similarly mediated through behaviour. The model results indicate that after intervention of practice in between knowledge, attitude, and digital literacy the direct effect is been reduced .17 (knowledge  $\square$  digital literacy) and .22 (attitude  $\square$  digital literacy). This is one of the types of evidence of mediation. However, the indirect effect (*through mediator*) was assessed with the help of t-statistics and its level of significance. In this connection, <https://www.danielsoper.com/> website was used to compute the indirect effect. These are danielsoper's findings on the indirect influence of knowledge, behaviours, and digital literacy:

Hence, the results indicate that practical experience mediates the connection between knowledge and digital literacy. Hence, Hypothesis 3 has been accepted. In same manner, danielsoperis again

performed for assessment of indirect effect attitude  practices  digital literacy.

**Sobel test statistic: 3.06760127**

**One-tailed probability: 0.00107892**

**Two-tailed probability: 0.00215784**

**Sobel test statistic: 3.24347822**

**One-tailed probability: 0.00059040**

**Two-tailed probability: 0.00118080**

The above-mentioned results confirmed that practices once again mediate the relationship between attitude and digital literacy. Therefore, hypothesis 4 (H4) of this research stand accepted.

### Conclusions

Conclusions drawn from this study's analysis of instructors' knowledge, attitudes, and actions towards the promotion of students' digital literacy were consistent with those drawn from the previous section. This study also found a statistically significant relationship between teachers' knowledge of digital literacy, their attitudes about it, and their practices at different digital platforms to strengthen their digital literacy skills. Moreover, SEM results also confirmed that independent variables (knowledge, attitude) had a positive relationship with dependent variable (digital literacy). Moreover, mediator practises were introduced as part of the mediation procedure. Hence, it was shown that actions influence the connection between cognition and digital literacy skills. Knowledge and attitudes about digital literacy have a direct link, but this article argues that the mediating role of behaviours provides a more robust explanation. In light of the study's findings, it's recommended that seminars and training sessions be held for teachers of secondary school students to increase their digital literacy skills.

### Limitation and suggestions for future research

Future researchers may conduct these types of studies at the higher education level, where digital literacy is recognized as a new label of education, because at the higher education level, digital literacy is essential for university success as well as for quality research productivity.

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