



Do teachers' educational philosophies affect their digital literacy? The mediating effect of resistance to change

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Abstract

This study aims to reveal the direct and indirect effects of primary school teachers' educational philosophies on their digital literacy through resistance to change. A cross-sectional research design was used in the current study. Data were collected from 298 primary school teachers working at primary schools located in a city centre in the Mediterranean region of Turkey. The relationships between the variables were tested through the use of the structural equation model. The study results indicated that the teachers' traditional and contemporary educational philosophies did not directly affect their digital literacy levels, but indirectly affected their resistance to change through the level of resistance to change. The results also suggested that teachers' traditional educational philosophies had a negative effect on their digital literacy levels through the mediating role of resistance to change, while the contemporary educational philosophies positively affected their digital literacy levels through resistance to change. Consequently, in recent conditions teachers are expected to develop both their own and students' digital skills. Due to the importance of digital literacy in this age where technology permeates every aspect of life, teachers should accept digital change and transformation without resistance.

Keywords Educational philosophy · Digital literacy · Resistance to change · Teacher · Digital age

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1 Introduction

Digital literacy is defined as the confident, critical, and creative use of information and communications technology (ICT) for work, employment, learning, leisure, involvement, and/or participation in society (Ala-Mutka, 2011). One of the environments where digital literacy can be taught is schools, and teachers are responsible for improving students' digital literacy skills in schools. Because teachers can be identified as the key people who present information that is beneficial to both the individual and society, the educational philosophies they adopt also affect the regulation of the teaching–learning process. Thus, their philosophy of education has an effect on various areas such as the determination of the activities that teachers implement in the classroom; the methods, techniques, strategies, and models they employ; the assessment-evaluation tools; their classroom organisation approaches; and the models of discipline (Aslan, 2017; Doğanay & Sarı, 2003; Ornstein & Hunkins, 2012; Posner, 2009).

Teachers' philosophical preferences have affected their educational understanding, and their perspectives on – and use of – technology (Duman & Ulubey, 2008); the use of digital technology in educational areas has become crucial. In fact, numerous recent studies have been conducted to highlight the significance of digital teaching materials in terms of the teaching–learning process (Aslan, 2020; Özcan & Kılıç-Kırbaşoğlu, 2017; Yıldırım, 2020). It can thus be stated that teachers should have digital literacy skills in order to use digital teaching materials in a qualified way in the teaching–learning process.

Educational philosophies are grounded on two main perspectives: contemporary and traditional. *Change* is the basis of progressivism and reconstructionism, which are among the contemporary educational philosophies. Teachers who have adopted these educational philosophies are constantly improving themselves professionally and keeping up with change. On the other hand, perennialism and essentialism, the traditional educational philosophies, require that the existing structure be preserved and maintained from generation to generation. Indeed, having adopted these educational philosophies, teachers heavily employ traditional teaching methods and techniques in the teaching–learning process, and use teaching materials such as blackboards, chalk, and textbooks (Sönmez, 2019; Terzi, 2008). Teachers adopting traditional educational philosophies do not prefer to use digital teaching materials in the teaching–learning process (Duman & Ulubey, 2008). In this vein, it is likely that teachers' educational philosophies have an impact on their digital literacy. It can also be asserted that their resistance to change has a mediating role on this. This is because it can be stated that teachers who adopt a contemporary education philosophy should be kept up with change and develop themselves professionally, but those with traditional education philosophies resist change, and endeavour to maintain the existing structure.

This research is vital in terms of providing information about the educational philosophies adopted by primary school teachers, their resistance to change, and digital literacy levels. The results will also provide clues for education

policy-makers and practitioners regarding the development of teachers' digital literacy skills. In addition, it will shed light on researchers in the field of educational sciences. The study results can also be used as feedback to the teachers, in terms of their educational philosophies, as to whether they are resistant to change and whether their digital literacy is at a sufficient level.

2 Conceptual framework

The conceptual framework of this study is constructed on research conducted in the last thirty years (Anisimova, 2020; Doğanay & Sarı, 2003; Duman & Ulubey, 2008; Kulu-Şentürk, 2007; Livingston et al., 1995; Quaicoe & Pata, 2020; Záhorec et al., 2019). Teachers need to blend their philosophical thoughts with technology in to fulfill educational objectives (Duman & Ulubey, 2008). Teachers' beliefs and attitudes are some of the factors influencing their teaching practices, and this is also related to their use of technology (Inan & Lowther, 2010). For this reason, it can be said that teachers who adopt contemporary educational philosophies adopt digital literacy skills more than teachers who adopt traditional educational philosophies. Thus teachers' traditional beliefs and attitudes, as well as the lack of knowledge, skills, and abilities, are considered to be among the barriers to digital literacy (Marsh et al., 2017). This is contingent on emphasising the relationship between teachers' educational philosophies and their resistance to change. Individual innovativeness is an important feature in explaining digital literacy, and that resistance to change and digital literacy are positively associated (Güngör & Kurtipek, 2020). This provides an insight into a relationship between teachers' digital literacy and their resistance to change. Theoretical assumptions and research results revealed the mediating role of resistance to change in terms of the relationship between primary school teachers' traditional and contemporary educational philosophies and their digital literacy. Considering these assumptions as a research framework, the current study attempts to identify the mediating role of resistance to change in terms of the relationship between the primary school teachers' educational philosophies and their digital literacy. Figures 1 and 2 depicts the conceptual framework of the study.

The following hypotheses were established based upon the conceptual framework:

Hypothesis 1. Primary school teachers' educational philosophies (traditional and contemporary) have a direct impact on their digital literacy.

Hypothesis 2. Primary school teachers' educational philosophies (traditional and contemporary) have a direct impact on their levels of resistance to change.

Hypothesis 3. Primary school teachers' educational philosophies (traditional and contemporary) mediate the indirect effect of resistance to change on their digital literacy.

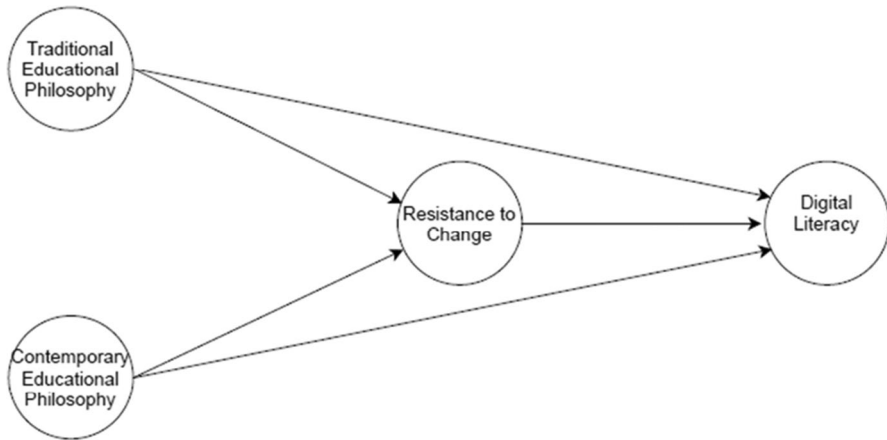


Fig. 1 The conceptual framework of the study

2.1 Educational philosophies

Philosophy of education is a branch of science that exists as a result of the relationship between education and philosophy. Educational philosophy is a way of thinking that queries education, educational science, educational objectives, content, the relationship between the theories that shape education and practice, and the limits and obstacles of education, as well as methods (Köse, 2019). Philosophy of education is also defined as a philosophical discipline that analyses and interprets thoughts and practices related to education, and that aspires to resystematise education based on these interpretations (Sönmez, 2019). Educational philosophies bring together the research results of educational philosophies, educational sciences, and other disciplines with regard to education (Köse, 2019). Likewise, philosophy of education guides the teaching–learning environment. It also gives clues to teachers regarding the implementation of the results of teaching–learning theories in the teaching environment (Ergün, 2018). Wiles and Bondi (2007) categorised educational philosophies under six headings: perennialism, essentialism, progressivism, reconstructionism, naturalism, and existentialism, while the literature indicated that educational philosophies are classified under

four sections as perennialism, essentialism, progressivism, and reconstructionism (Gutek, 2014; Ornstein & Hunkins, 2012; Segall & Wilson, 2004).

Perennialism is known as the oldest educational philosophy. Perennialism has been influenced by idealism and realism, yet idealism is dominant in this education philosophy (Güçlü, 2018). In perennialism, it is stated that unchanging universal knowledge should be transferred to individuals. According to perennialism, the purpose of education is to transfer universal everlasting knowledge to individuals (Ergün, 2018). Human nature and moral principles do not change. Humans should be raised according to these unchanging moral principles (Arslanoğlu, 2012). In this respect, teachers who adopt this educational philosophy can be said to have resistance to change. Intellectual education is adopted in perennialism. This educational

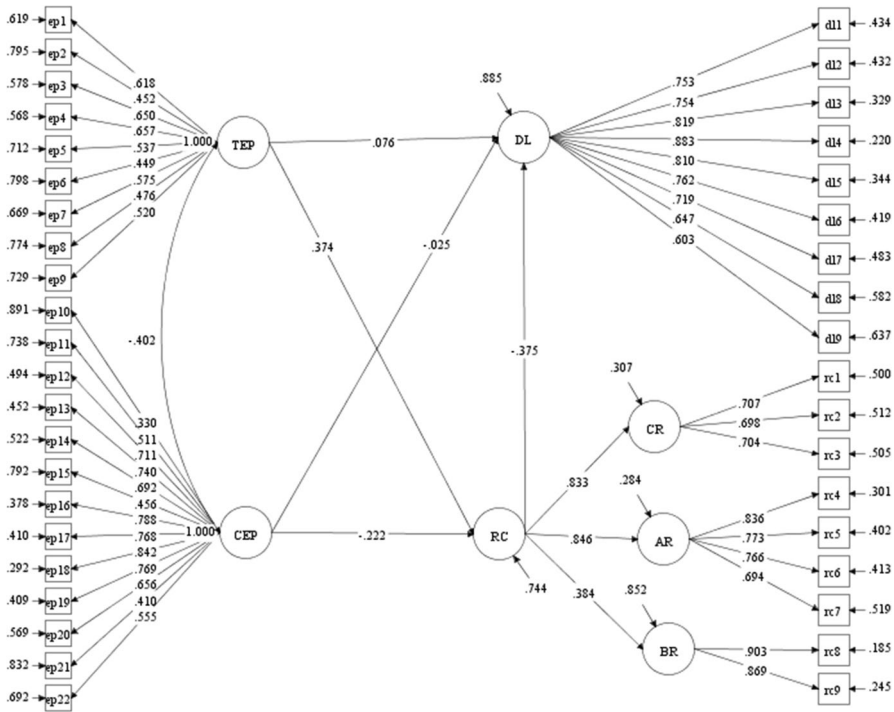


Fig. 2 Structural relationships between variables

philosophy requires that schools not be a reflection of life; on the contrary, they should undertake the task of preparing students for life (Sönmez, 2019). Students acquire universal unchanging knowledge so that they can read the classics (Köse, 2019).

Essentialism has been influenced by idealism and realism. However, the realist philosophical movement is more influential on this educational philosophy. Essentialism proposes that the human mind is a blank slate at birth. The main task of the teacher is to fill the empty minds of the students (Aslan, 2018). Essentialism is based on transmitting the cultural values of society to individuals (Hotaman, 2019). Teachers adopting this educational philosophy are the sole authority in the classroom. They have rules of strict discipline in the class. If necessary, the student can be punished by the teacher. The main task in the teaching–learning process is to transfer knowledge to students, in particular through memorising the knowledge (Ellis, 2015; Ornstein & Hunkins, 2012; Sönmez, 2019).

Progressivism is based on the philosophy of pragmatism. This progressive education philosophy puts the student at the centre, referring to student-centred education (Terzi, 2008). The philosophy of progressive education demands that the teaching environment be designed according to the developmental characteristics of the student (Güçlü, 2018). Individual differences should be considered while planning the teaching–learning process (Ergün, 2018). School should be life itself rather than being a preparation for life (Hotaman, 2019). The teaching environment should be

organised in a democratic way, and student-centred methods and techniques should be employed. Change plays a significant role in the philosophy of progressive education (Sönmez, 2019). In this respect, teachers who adopt this educational philosophy struggle to keep up with change.

The reconstructionist educational philosophy is the continuation of the progressive education philosophy. This educational philosophy was also influenced by the philosophy of pragmatism. While the individual is at the forefront in the progressive education philosophy, the reconstructionist education philosophy should be focused on society. The objective of education in reconstructionism is to constantly organise society, and to integrate real democracy into society (Güçlü, 2018; Noddings, 2016). There is constant change in science and technology. Reconstructionism argues that education should be regulated in order to enable society to keep pace with this change. Education should be at the centre of social change, and the teacher should play an active role in this process (Hotaman, 2019). The reconstructive philosophy of education puts great emphasis on the social role of the school in order to settle social change (Winch & Gingell, 2002). Considering all the above-mentioned, teachers adopting this educational philosophy do not resist change, and they even try to lead it.

2.2 Resistance to change

Change is defined as the differentiation that occurs in anything within a certain period of time (Erdoğan, 2004), or the planned or unplanned transformation of a system from one state to another (Ives & Jarvenpaa, 1991). Organisational change, on the other hand, refers to actions by which an organisation alters an important component of its structure, such as its culture, its basic technologies, the infrastructure it uses to operate, or its internal processes (Stobierski, 2020). Every organisation has to experience a transition or change in order to survive. Like all other organisations, educational ones change over time due to the pressure of the environment they are in (Yılmaz & Kılıçoğlu, 2013). Changing practices in schools involve different approaches to the curriculum, management structure, training programmes, students, and teachers, and adaptation to these changes requires flexible school structures (Rosenblatt, 2004). Social values, changing technology, administrative processes, and satisfying the needs of school members are all pressures on schools to change (Yılmaz & Kılıçoğlu, 2013). Change is a phenomenon that envisages giving up existing practices and obscurity. For this reason, most of the employees in an organisation tend to hinder changes, either overtly or covertly (Sabuncuoğlu, 2000). The factors of resistance to change are the fear of the unknown, the lack of information about change, the threat to core skills and competence, the threat to social status, a low level of trust in the organisational climate, poor relationships, the fear of looking ignorant, and reluctance to experience innovation (Plant, 1987).

Considering the underlying reasons for the tendency to resist, resistance may be said to raise the awareness of factors that will cause the failure of the change process. Since it is a multidimensional construct (Rafferty & Jimmieson, 2017), individuals' resistance to change may vary. McGuire (1985) stated that people would

respond to a situation in three ways which were affective, behavioural, and cognitive. In parallel with Piderit's assumptions (2000), Oreg (2006) also concluded that resistance is a tridimensional negative attitude towards change, which includes affective, behavioural, and cognitive components. Nevertheless, these dimensions are not independent of one another. The need for change is not constant. Essentially, individuals experience stability and routine in their jobs. Furthermore, those who are resistant to change and want to maintain their routine settings are actually more satisfied and perform better. In these cases, resistant individuals' performance decreases; conversely, those who embrace innovation and change perform better (Oreg, 2017). Resistance to change makes change impossible; moreover, it is a kind of barrier that stops progress as it can create negative behavioural intentions such as withdrawal, intention to quit, or attempts intended to sabotage the change being undertaken (Vrabcová, 2015). Resistance to change is acknowledged as one of the main reasons for the failure of processes involving change in organisations in general, and in educational systems in particular (Fullan & Hargreaves, 1996; Zimmerman, 2006).

As educational institutions, schools are organisations that must adapt to their environment and operate comfortably with new structures, policies, and procedures. In recent years, developments in digital technologies have led schools to face constant change. It should not be forgotten that one of the elements of success in educational organisations is the teacher (Darling-Hammond, 2000). It is extremely critical to know teachers' knowledge and skills, their need for change, and their attitudes towards change in educational processes (Aydın & Şahin, 2016). In the face of changes, teachers generally do not have a choice, and they are forced to implement them. However, they can be resistant towards change in different ways (overtly or covertly). Although resistance principally evokes a negative situation, approaches to resistance emphasise that resistance functions as a useful mechanism, and not a reaction that should be prevented (Furst & Cable, 2008). Given the underlying reasons of the resistance tendency, it may be said to raise awareness of the factors that cause the failure of the change process. Thus, it is most likely that teachers' attitudes towards digital technologies will be decisive in the use of these technologies within educational settings, and that teachers' educational philosophies can shape their perspectives towards digital technology. The complex, cognitive, and emotional skills required for users to work with digital tools include digital literacy skills (Karabacak & Sezgin, 2019). Adaptation to change and transformation is easier as a result of digital literacy. It is claimed that teachers who keep abreast of change and adopt contemporary educational philosophies such as progressivism and reconstructionism use digital teaching materials in the teaching–learning process. In this case, they may improve their digital literacy skills.

2.3 Digital literacy

It is evident that technology, and notably digital technology, has gained importance in education today. Recent studies have also persistently and increasingly accentuated the significance of digital literacy in addition to ICT (e.g. Ala-Mutka, 2011;

Godbey, 2018; Peled, 2021). Hence, it has become ineluctable for individuals to pursue scientific and technological advances. One of the objectives of education is to enable individuals to keep up with innovation and change. Accordingly, it is of great importance for teachers to be literate in digital technology.

In recent years, there has been much debate about digital literacy in educational contexts (Ng, 2012), and the concept is regarded as an indispensable twenty-first century skill (Vavik & Salomon, 2015). Ng (2012) defined digital technologies as a subset of electronic technologies that include hardware and software used by individuals for educational, social, or entertainment purposes in schools or at home. This study evaluated digital literacy as a variety of literacies related to the use of digital technologies.

Ng (2012) categorised digital literacy into three dimensions that are cognitive, technical, and social–emotional. The cognitive dimension is associated with the ability to think critically about the research, to evaluate, and create the cycle processing digital information. The technical dimension of being digitally literate, in a broad sense, means possessing the technical and operational skills to use ICT for learning and in everyday activities. The social–emotional dimension includes being able to use the Internet responsibly to communicate, socialise, and learn. Martin (2008) described digital literacy as developing awareness, attitudes, and abilities regarding digital technologies; accessing digital resources; integrating, analysing, and synthesising digital technologies; creating new information and communicating; and evaluating them at the level of digital competence, digital use, and digital transformation. Adaptation to new or developing technologies is a significant indicator in determining digitally literate individuals (Ng, 2012). Digital literacy is a decisive competence for working, learning, and socialising in the contemporary world (Churchill et al., 2008), and teachers' digital literacy is needed to accomplish the educational outcomes demanded by the age.

Digital literacy requires the ability to research, produce, and share accurate information, and to possess the skills to use technology in the learning–teaching process in line with the right use of different technologies (Hamutoğlu et al., 2017). A digitally literate individual is an individual who is creative and innovative, who is able to collaborate, communicate, think critically, solve problems, develop decision-making skills, know what technological concepts mean and use these concepts accordingly, and who can do what is required as a digital citizen (Ocak & Karakuş, 2018). It is expected that teachers are digitally literate and have high self-efficacy in this regard, since the age we live in is called the digital age, and therefore teachers must possess the skills to use digital tools. It is extremely important that teachers who influence individuals' educational background, like primary school teachers, have digital literacy skills. Providing that primary school teachers have digital literacy skills, they can transmit these skills to primary school students. Thus they can have a significant role in raising individuals with appropriate skills for the twenty-first century.

3 Method

This study used a cross-sectional research design to determine the direct and indirect effects of primary school teachers' educational philosophies on their digital literacy through resistance to change. The cross-sectional research design involves looking at data from a population at one specific point in time, and it is descriptive rather than causal in nature (Sedgwick, 2014). This research design is frequently used in social and educational sciences for the following reasons: research data is difficult to manipulate, data collection is inexpensive and easy, and it allows multiple variables to be analysed together (Levin, 2006).

3.1 Sampling

The population of the study consisted of 1,608 primary school teachers working at primary schools located in a city centre in the Mediterranean region of Turkey during the 2020–2021 academic year. The sample was taken from the whole population. Since it was impossible to perform face-to-face meetings during the pandemic process, the contact information of the teachers was obtained from the Provincial Directorate of National Education and online questionnaires were sent to the teachers via social media platforms. When the number of questionnaires completed by teachers reached 325, new forms were not received for a week and the data collection process was terminated. Overall, of the 325 questionnaires which were checked, 27 questionnaires were excluded from the data set because of inaccuracies and extreme values, and analysis was carried out on 298 questionnaires. This sample represents the population with an error of approximately 5% at the 95% confidence level. With regard to the demographic information of the teachers, 184 (65%) of the participants were female and 114 (35%) were male. In total, 73 of them (23%) taught in the first grade, 76 (27%) in the second grade, 75 (26%) in the third grade, and 74 (24%) at the fourth-grade level. The teachers showed a homogeneous distribution in terms of their grade levels. Lastly, 234 (79%) of the teachers stated that they had attended a course or seminar on digital technology, while 64 (21%) indicated that they hadn't attended a course or seminar on digital technology.

3.2 Instruments

This study deployed a Personal Information Form, which included questions on the demographic information regarding the teachers, the Philosophical Preference Assessment Scale (PPAS), the Change Resistance Scale, and the Digital Literacy Scale. Information related to the scales follows.

Philosophical preference assessment scale (PPAS) The tool developed by Çetin et al. (2012) is a 5-point Likert-type scale consisting of two factors: traditional philosophy of education (TEP) and contemporary philosophy of education (CEP) (1 = Strongly Disagree; 5 = Strongly Agree). Perennialism and essentialism educational philosophies were included in the TEP factor, while the educational philosophies of

progressivism and reconstructionism were handled in the CEP factor. The Kaiser–Meyer–Olkin (KMO) coefficient was 0.883, and Bartlett’s test of sphericity value was 4,879.799 ($p < 0.001$, $df = 741$). The internal consistency coefficients of the factors were calculated as 0.90 for the TEP and 0.86 for the CEP. The two-half reliability coefficients were found to be 0.85 for CEP and 0.84 for TEP. In the current study, exploratory factor analysis was performed to ensure the validity and reliability of the scale, and items with factor load values below 0.40 were eliminated from the scales in favour of expert opinions. The final form of the tool includes nine items in the TEP factor (e.g. the teacher should be the only authority in the classroom, school is not a place of reform), and the internal consistency coefficient was identified to be 0.79. The CEP contained 13 items (e.g. the student is at the centre of education, learning to learn is essential, not knowledge) and the internal consistency coefficient was determined as 0.88. This scale is valid and reliable since it has been previously used to determine the philosophical preferences of teachers. In addition, measuring the educational philosophies adopted by the teachers as contemporary and traditional educational approaches showed that the scale was suitable for the current study and enabled us to use this scale.

Scale of resistance to change Developed by Oreg (2006), the tool is a three-dimensional 5-point Likert-type scale (1 = Strongly Disagree; 5 = Totally Agree), the Turkish adaptation of which was developed by Çalışkan (2019). The scale consists of three subscales: cognitive resistance, affective resistance, and behavioural resistance. The KMO coefficient was 0.838, and Bartlett’s test of sphericity value was 2,556.266 ($p < 0.001$). During the adaptation process, the internal consistency coefficient was calculated as 0.834 for the overall scale, 0.885 for cognitive resistance, 0.823 for affective resistance, and 0.811 for behavioural resistance. Confirmatory factor analysis fit values were found as $\chi^2 = 153.35$, $df = 82$, $RMSEA = 0.04$, $NFI = 0.94$, $GFI = 0.95$, $AGFI = 0.93$, $CFI = 0.97$. In order to ensure the validity and reliability of the scale, exploratory factor analysis was performed and items with low factor loadings were removed from the scale in the current study. Three items were designed for the cognitive component (e.g. I believed that change would make my job harder), and the internal consistency coefficient was determined to be 0.74, with four items for the affective dimension (e.g. I was afraid of the change), and the internal consistency coefficient was calculated as 0.84, with two items for the behavioural dimension (e.g. I presented my objections regarding the change to the management), and the internal consistency coefficient was identified as 0.88. The internal consistency coefficient was found to be 0.84 for the whole scale. The scale includes current beliefs about change, how individuals feel about the change, and their intention or actions in response to the change process, such as complaining about the change and trying to persuade others. It is a valid and reliable measurement tool for determining the level of resistance to change, and the literature indicates that teachers’ resistance to change status can be determined with this scale.

Digital literacy scale The tool was developed by Ng (2012) and translated into Turkish by Üstündağ et al. (2017). It is a 5-point-Likert scale and has one dimension

and ten items (e.g. I have good ICT skills, 1 = Strongly Disagree; 5 = Strongly Agree). The scale aims to determine the attitude towards the use of digital technologies as well as the perception of digital literacy. The KMO coefficient was 0.90, and Bartlett's test of sphericity value was 3,383 ($p < 0.0001$, $df = 979$). The internal consistency coefficient of the scale was found to be 0.86. An item was removed from the scale in the present study as it was intended specifically for university students. This study performed an exploratory factor analysis with a view to ensuring its validity and reliability, and hence the internal consistency coefficient of the scale was determined as 0.92. Since it is considered an up-to-date scale to determine teachers' digital literacy levels, it was used in this study.

3.3 Data analysis

The data were analysed through use of the SPSS 22 and Mplus7 programs. The SPSS 22 package program was used to control the data for outliers, perform descriptive statistics (mean, standard deviation, kurtosis, and skewness), reliability analyses (AVE, α , and CR), and correlation analysis. The direct and indirect relationships between teachers' philosophical preferences, resistance to change, and digital literacy levels were tested through the structural equation model (SEM) by means of the Mplus 7 program.

The fit level of SEM was evaluated according to the chi-square model fit criterion (χ^2 / df), Tucker Lewis index (TLI), comparative fit index (CFI), standardised root mean square (SRMR), and root mean square error of approximation (RMSEA) indices. The values of $\chi^2 / df < 3$, SRMR and RMSEA < 0.08 , TLI and CFI > 0.90 are recognised as indicative of good fit (Hu & Bentler, 1999; Kline, 2011).

The bootstrap method was used to estimate the significance of the mediating effects related to SEM. Preacher and Hayes (2008) suggested evaluating and comparing indirect effects in multiple mediator models through using the bootstrap method. The bootstrap approach is a sampling estimation technique that calculates the indirect effect of the predictor variable on the outcome variable at a 95% confidence interval (CI) (Fritz & MacKinnon, 2007). The current study analysed the mediating role of teachers' resistance to change regarding the effect of philosophical preferences on their digital literacy levels. Preacher and Hayes (2008) suggested over 1,000 replications, while DiCiccio and Efron (1996) recommended at least 2,000 replications for conducting bootstrap resampling. In the current study, bootstrap analysis was performed with 2,000 samples for the confidence interval of the indirect and direct effects.

4 Results

The findings were discussed in three stages and presented respectively. First, the descriptive statistics and reliability analysis results of the variables were evaluated. Subsequently, the correlations between the variables were examined. Finally, the direct and indirect relationships between teachers' philosophical preferences,

Table 1 Descriptive and reliability analysis findings

Variables	N	\bar{X}	sd	Skewness	Kurtosis	AVE	α	CR
Traditional Educational Philosophy	298	2.42	0.04	-1.28	-0.42	0.57	0.79	0.90
Contemporary Educational Philosophy	298	4.58	0.02	0.38	-0.05	0.51	0.88	0.80
Resistance to Change	298	1.84	0.04	-1.13	-0.23	0.60	0.84	0.93
Cognitive Resistance	298	1.81	0.04	-0.87	-0.50	0.50	0.74	0.75
Affective Resistance	298	2.17	0.05	0.17	-0.13	0.59	0.84	0.85
Behavioural Resistance	298	2.31	0.06	0.64	-0.54	0.62	0.88	0.88
Digital Literacy	298	3.64	0.05	-0.37	-0.41	0.57	0.92	0.92

Table 2 Correlation analysis results

Variables	TEP	CEP	RC	CR	AR	BR	DL
TEP. Traditional Educational Philosophy	-						
CEP. Contemporary Educational Philosophy	-0.40**	-					
RC. Resistance to Change	.35**	-0.30**	-				
CR. Cognitive Resistance	0.30**	-0.15**	0.230**	-			
AR. Affective Resistance	0.13*	-0.19**	0.377**	0.10*	-		
BR. Behavioural Resistance	-0.04	-0.03	0.682**	-0.88**	-0.88**	-	
DL. Digital Literacy	-0.05	0.06	-0.148**	-0.18**	-0.48**	0.32**	-

resistance to change, and digital literacy were predicted through SEM. Table 2 displays the descriptive statistics of the variables and the reliability values regarding the scales.

As is seen in Table 1, teachers' TEP beliefs ($\bar{X} = 2.42$, $sd = 0.04$) were at a low level, while their CEP beliefs were high ($\bar{X} = 4.58$, $sd = 0.02$). Teachers' cognitive resistance ($M = 1.81$, $sd = 0.04$), affective resistance ($\bar{X} = 2.17$, $sd = 0.05$), and behavioural resistance ($\bar{X} = 2.31$, $sd = 0.06$) were found to be low, and hence their general resistance to change ($\bar{X} = 1.84$, $sd = 0.04$) appears to be low. In addition, the teachers were identified as having high digital literacy levels ($\bar{X} = 3.64$, $sd = 0.05$). The standard deviation values of the variables illustrated that teachers' views were homogeneously distributed. The kurtosis (-0.54, -0.05) and skewness (-1.28, 0.64) values were in the normal distribution range (± 1.5) (Tabachnick & Fidell, 2013).

The Cronbach alpha internal consistency coefficient values of teachers' philosophical preferences, resistance to change, and digital literacy were found to be above the minimum level (> 0.70). In addition, composite reliability ($CR > 0.70$) and average variance extracted (AVE) values (> 0.50 ; $CR > AVE$) are above standard values (Fornell & Larcker, 1981). Table 2 depicts the correlation coefficients between teachers' philosophical preferences, resistance to change, and digital literacy levels.

Table 2 suggests low and medium level correlations between the variables. The results indicated a medium level and positive relation between TEP and resistance to change ($n=0.35$; $p<0.01$), while a low level and negative correlation between CEP and resistance to change ($n=-0.30$; $p<0.01$). No significant relationship was identified between digital literacy and TEP ($n=-0.05$; $p>0.05$) and CEP ($n=0.06$; $p>0.05$). Moreover, a low level and negative relationship was noted between digital literacy and resistance to change ($n=-0.15$; $p<0.01$).

TEP: traditional philosophy of education; CEP: contemporary philosophy of education; EP: philosophy of education; DL: digital literacy; RC: resistance to change; CR: cognitive resistance; AR: affective resistance; BR: behavioural resistance (Fig. 2).

The model fit values of the structural relationships between variables were within acceptable limits ($\chi^2/df=1.90$ [<3], RMSEA=0.06 [<0.08], CFI=0.88 [<0.90], TLI=0.87 [<0.90], and SRMR=0.07 [<0.08]). These values indicate that the model as a whole is significant. As indicated in Table 3, the analysis revealed whether the direct, indirect, and total effects of teachers' philosophical preferences and their digital literacies on resistance to change were significant or not.

According to Table 3, the bootstrapping analysis results showed that the direct effect of teachers' traditional philosophy of education beliefs on their digital literacy levels ($\beta=-0.064$, $p>0.05$) was insignificant, whereas the direct effect ($\beta=0.374$, $p<0.01$) on the levels of resistance to change was positive, significant, and at a medium level. The direct effect of a contemporary philosophy of education belief on teachers' digital literacy levels ($\beta=0.058$, $p>0.05$) was found to be insignificant, while the effect on the levels of resistance to change ($\beta=-0.222$, $p<0.01$) was medium, negative, and significant. Traditional and contemporary philosophy of education beliefs explained 25.6% of the variance in teachers' resistance to change. These results pinpointed the fact that educational philosophies (traditional and contemporary) did indirectly affect teachers' digital literacy and Hypothesis 1 was rejected; on.

the contrary, they had a direct effect on teachers' resistance to change, and Hypothesis 2 was accepted.

The effect of a traditional philosophy of education belief on teachers' digital literacy levels through the mediating role of resistance to change ($\beta=-0.140$, $p<0.01$) was found to be low, negative, and significant at the 95% confidence interval (-0.227, 0.053). On the other hand, the effect of a contemporary philosophy of education belief on teachers' digital literacy levels through the mediating role of resistance to change ($\beta=0.083$, $p<0.01$) was determined to be low, positive, and significant at the 95% confidence interval (0.019, 0.147). Traditional and contemporary educational philosophies explained 11.5% of the variance in teachers' digital literacy levels through resistance to change. The results revealed that the total effect of teachers' traditional ($\beta=-0.064$, $p>0.05$) and contemporary philosophy of education ($\beta=0.058$, $p>0.05$) beliefs on their digital literacy levels was not significant. As a result, although teachers' educational philosophy beliefs did not have a direct effect on their digital literacy, it significantly explains them through resistance to change. These results indicated that Hypothesis 3 was confirmed. The model demonstrated that teachers' philosophical preferences significantly explained their digital literacy

Table 3 Bootstrapping results for SEM

Construct	Product of coefficient		z	95% Bootstrap CI		R ²	p
	Point Estimate	SE		Lower	Upper		
Standardized total effect							
TEP → DL	-.064	.092	-0.695	-.215	.087		.487
CEP → DL	.058	.078	0.750	-.070	.187		.453
Standardized direct effects							
TEP → DL	.076	.107	0.714	-.100	.252		.475
CEP → DL	-.025	.075	0.326	-.149	.100		.745
TEP → RC	.374	.098	3.812	.213	.535	.256	.000
CEP → RC	-.222	.092	-2.397	-.374	-.070		.017
Specific indirect effects							
TEP → RC → DL	-.140	.053	-2.654	-.227	-.053	.115	.008
CEP → RC → DL	.083	.039	2.143	.019	.147		.032

indirectly through resistance to change. The bootstrap approach was conducted with 2,000 samples so as to determine the significance of the mediating role of resistance to change in the effect of teachers' philosophical preferences on their digital literacy.

5 Discussion

This study is an attempt to reveal the direct effect of primary school teachers' educational philosophy on their digital literacy levels and its indirect effect through their resistance to change. This section presents the results obtained in conjunction with the relevant literature, the inferences, the limitations of the study, and recommendations for practice and further studies.

The study results initially suggested that teachers' traditional and contemporary philosophy of education beliefs did not have a direct effect on their digital literacy levels. Duman and Ulubey (2008) concluded that the educational philosophies adopted by pre-service teachers were related to their use of technology, and whatever educational philosophy they adopted, teachers were found to be open to the use of technology. Teachers' beliefs are an important factor in the effective use of new technology in teaching and learning (Leem & Sung, 2019). A significant relationship was determined between teachers' educational beliefs and their instructional decisions and classroom practices (Mumtaz, 2000), indicating that teachers' beliefs about technology use affected whether, and how, they chose to use it in the classroom (Ertmer & Hruskocy, 1999). Teachers' beliefs are influential on their adoption and use of technology in their teaching practices; moreover, they may use the same technological tools in different ways depending on their educational beliefs (Kim et al., 2013). Therefore, it may be wise to mention that the point where teachers' philosophy of education beliefs affect their digital literacy levels results from the necessity of digital literacy. Teachers who adopt the traditional philosophy of education and those believing in the contemporary philosophy of education differ in terms of not learning digital technology but in the necessity of accepting, and using this technology.

Digital literacy competence is a requirement of the current technological age. Recent studies (Peled, 2021) demonstrated that pre-service teachers had higher levels of digital literacy. Kim et al. (2013) also highlighted the fact that integrating technology into the teaching and learning process is related to teachers' beliefs about the necessity of these technologies. Teachers' educational beliefs play a key role in their use of computers, the Internet, mobile devices, and new digital technologies in the classroom (Ertmer & Hruskocy, 1999). Unlike related studies, the results of this study demonstrated that teachers' philosophy of education beliefs did not directly affect their digital literacy. This may be due to the fact that the study was conducted during the COVID-19 pandemic period when distance education had to be carried out through digital technologies, and teachers were expected to be digitally literate regardless of their educational beliefs.

The study results also showed that traditional philosophy of education had a medium, positive, and significant effect on resistance to change, while contemporary philosophy of education had a medium, negative, and significant effect on resistance

to change. This refers to the fact that a significant part of the variance regarding teachers' resistance to change was explained by their traditional and contemporary philosophy of education beliefs. The majority of the teachers were determined to resist change, and their thoughts and beliefs affected their approach to change in education (Akşan Kiliçaslan & Baki, 2021). In a study conducted by Bingöl and Kınay (2018), teachers adopting the perennialism and essentialism education philosophies, which are considered to be traditional approaches to education, emphasised that routine should be preserved. Openness to change, flexibility, and innovative involvement are necessary for the teaching profession and modern teachers, and they have become a significant part of the value system (Vrabcová, 2015). Sönmez (2019) remarked that education is a means of change in contemporary education philosophy, and balances life which is always changing. In this sense, having a low-level resistance to change by teachers who adopt a contemporary education philosophy shows their openness to change and their willingness to adopt innovations. Those who adopt a traditional educational philosophy, however, are more committed to routine and stability, and do not have a positive perspective regarding change.

Another result of the study demonstrated that a traditional philosophy of education had a negative and significant effect on teachers' digital literacy levels through their resistance to change, while a contemporary philosophy of education had a positive and significant effect on teachers' digital literacy levels through their lack of resistance to change. In other words, although teachers' understanding of educational philosophies did not have a significant effect on their digital literacy, teachers with a traditional understanding of education had higher levels of resistance to change, and their digital literacy levels were negatively affected. Conversely, when teachers had a high understanding of a contemporary philosophy of education, their resistance to change decreased, hence having a positive effect on their digital literacy. These results suggested that 11.5% of the variance regarding the teachers' digital literacy levels was explained by their philosophy of education beliefs through the mediating role of resistance to change. Individuals generally do their jobs in stable and routine settings. Those who are resistant to change and who maintain a routine tend to be more satisfied and perform better. Resistant individuals may perform poorly, whereas non-resistant and innovative individuals demonstrate higher levels of performance (Oreg, 2017). Innovation and changes in education impact teachers whether mediated or not by technology (Sánchez-Cruzado et al., 2021). Integrating innovative technologies into classroom practices inevitably requires teachers to acquire new technological and pedagogical skills (Clark & Luckin, 2013).

Digital literacy is also one of the skills that teachers must acquire. Teachers, who have adopted a contemporary education philosophy, who are open to innovation, and are not afraid of change and adapt to it, develop digital literacy skills – one of the skills required by the age – and do not show resistance in acquiring these skills. However, the indisputable point in education is not whether technology is used or not, but how well digital means are applied by teachers to support teaching and learning processes (Záhorec et al., 2019). It is essential that the use of needed technologies are not resisted, and that the best digital literacy skills specific for the use of technology are acquired.

6 Conclusion

With the widespread use of technology in the field of education, it can be observed that teachers try to make their lessons more effective through the application of digital technologies, and that they attach great importance to the integration of digital technologies with the teaching process in terms of professional development. Teachers' perspectives on, and their acceptance of, technology pertains to their philosophy of education beliefs, thus these perspectives are also relevant in disclosing their relation to digital literacy. From the results revealed, it can be deduced that teachers with low digital literacy prefer to use technological devices less in lessons, while those with sufficient digital literacy skills can use technological devices more effectively. Hence, we can say that teachers preferring traditional educational philosophies tend to preserve the existing structure and resist change, and their digital literacy is low. In order for teachers and students to possess the qualifications required by 21st-century society, they must acquire the digital literacy skills that are compulsory to use in schools. Sánchez-Cruzado et al. (2021) affirmed that the purpose of developing teachers' digital skills is to improve students' skills. This sheds light on the idea that teachers' philosophy of education beliefs and their attitudes to change affect their digital literacy levels and have an indirect effect on students' skills. After all, it is a must rather than an option for teachers to increase their digital skills for the sake of themselves and their students, and that they should acknowledge digital change and transformation in this context without any resistance.

7 Limitations and recommendations

The results of the current study, which are limited to teachers' perceptions, should not be underestimated. Various studies can be conducted on teachers' digital competencies through interviews with other stakeholders of the teaching–learning process, principally with students. This cross-sectional study is limited to teachers' perceptions at a specific time period due to the nature of cross-sectional research. Given that this study was carried out during the COVID-19 pandemic, teachers' perceptions may have been affected by the special circumstances (compulsory distance education, use of digital technologies, etc.). Facing a forced change in this process may have caused teachers to change their original views about resistance to change and their digital literacy levels. Qualitative or mixed research designs could be used to examine teachers' perceptions prior to the pandemic in depth, and to compare them with the change in this process. Policy-makers and practitioners should conduct

research to identify teachers' needs for professional digital literacy skills, and develop policies on these issues.

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Conflict of interest The authors declare that they have no conflict of interest.

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