



# Teaching Style, Digital Literacy, and Self-Efficacy on Early Childhood Education Teacher Capabilities

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## ABSTRAK

Permasalahan yang dialami guru PAUD selama pembelajaran daring dilihat dari latar belakang pendidikan, lama mengajar dan efikasi diri. Tujuan penelitian adalah untuk menganalisis hubungan literasi digital (LD), gaya mengajar (GM) dan self-ability (ED) terhadap kemampuan guru PAUD (KG) pada masa pandemi Covid 19. Penelitian ini bersifat kuantitatif dengan menggunakan model *expost facto* untuk mengetahui hubungan sebab akibat antara peristiwa dan kondisi. Sampel yang digunakan adalah proporsional stratified random sampling sebanyak 355 responden guru dengan pengalaman mengajar lebih dari tiga tahun dan latar belakang pendidikan yang beragam. Instrumen yang digunakan adalah angket dengan teknik analisis statistik deskriptif dan Structural Equation Modeling (SEM). Kami mengumpulkan data melalui angket literasi digital, skala gaya mengajar, instrumen efikasi diri dan kemampuan guru PAUD. Hasil penelitian menemukan bahwa: 1) terdapat hubungan antara LD dan GM; 2) tidak ada hubungan antara LD dengan PAUD KG; 3) terdapat hubungan antara LD dengan PAUD guru PAUD; 4) ada hubungan antara GM dengan guru UGD; 5) terdapat hubungan antara GM dan KG; 6) terdapat hubungan antara ED dan KG; 7) adanya hubungan antara LD dan KG melalui ED; 8) tidak ada hubungan antara GM dan KG melalui ED.

## ABSTRACT

Problems experienced by PAUD teachers during online learning are viewed from educational background, length of teaching and self-efficacy. The purpose of the study was to analyze the relationship between digital literacy (LD), teaching style (GM) and self-efficacy (ED) on the capabilities of PAUD teachers (KG) during the Covid 19 pandemic. This research is quantitative using the *expost facto* model to determine the causal relationship between events and conditions. The sample used proportional stratified random sampling of 355 teacher respondents with more than three years of teaching experience and a diverse educational background. The instrument used was a questionnaire with descriptive statistical analysis techniques and Structural Equation Modelling (SEM). We collected data through digital literacy questionnaire, teaching style scale, self-efficacy instrument and ECD teachers' capabilities. The study found that: 1) there is a relationship between LD and GM; 2) there is no relationship between LD and ECD KG; 3) there is a relationship between LD and ECD teachers' ED; 4) there is a relationship between GM and teachers' ED; 5) there is a relationship between GM and KG; 6) there is a relationship between ED and KG; 7) there is a relationship between LD and KG through ED; 8) there is no relationship between GM and KG through ED.

## 1. INTRODUCTION

Digital literacy has become a necessity for every individual in society, including learners, educators, and all elements related to education (Asrizal et al., 2018; Basyoni et al., 2020). Digital literacy can benefit both individuals and society. Moreover, digital literacy for PAUD teachers is essential to anticipate the advancements of the information age being applied in the field of education (Anhusadar, 2016; Hardiyana, 2016). Digital literacy for teachers is increasingly important in the classroom as digital resources and media become integral parts of teachers' daily practices. Hence, it is a common prerequisite for teachers to develop digital literacy skills to support their teaching. Teachers are required to master computers, media, and

digital literacy as tools and strategies in education (Nieto-Escamez & Roldán-Tapia, 2021; Parvathamma & Pattar, 2013). During the COVID-19 pandemic, which necessitates social distancing to prevent the spread of the virus, schools are advised to conduct remote learning, utilizing online media. However, not all teachers possess digital literacy, especially early childhood educators (Al Mamun et al., 2022; Aslam et al., 2018). Contemporary education requires PAUD teachers who can utilize digital resources and media as learning tools.

The teaching challenges faced by PAUD teachers during the COVID-19 pandemic include communication barriers, teaching methods, materials and costs, as well as technology use, with a high percentage tendency in the frequent category (Anhusadar, 2016; Hardiyana, 2016). Additionally, there's the inability to engage in online learning and stress levels due to workload, lack of preparation for distance teaching, and insufficient teacher training to meet the needs of remote education for children (Suhendro, 2020; Ujianti et al., 2021). In summary, the challenges faced by PAUD teachers in teaching during the COVID-19 pandemic include difficulties in using online media, raising questions about the capabilities of PAUD teachers, their confidence in teaching online, and their teaching styles. When studying the success of early childhood teachers in teaching during the COVID-19 pandemic, factors include not only digital literacy but also the capabilities of early childhood teachers, including educational background, teaching styles, and teacher self-efficacy, thus emphasizing the need for careful diagnosis of each teacher's deficiencies. Teaching style is an expression used to describe various aspects of teaching, although some authors use it as if teaching style is synonymous with teaching methods or techniques. Most researchers who have defined teaching style refer to it as the tendency of teaching behavior and teaching beliefs, the teaching activities of an educator that persist even as content changes (Daud, 2020; Müller & Wulf, 2020), the different qualities displayed by a teacher over time, or the distinctive way each individual gathers, organizes, and transforms information into useful knowledge (Han & Ellis, 2019; Jamal, 2020). Previous study defined it as those that allow interaction between the teacher and students in the decision-making process of teaching and learning and enable both teacher and students to have appropriate roles in that process (Bystrova, 2020).

Then, self-efficacy is largely based on previous study conceptualized as individuals' perceived expectations to achieve desired outcomes through personal effort (Bandura, 1977). If individuals believe they will succeed in a given task, they are more likely to invest substantial effort, persevere in their efforts, and manage any negative events. When applied to the teaching profession, self-efficacy is conceptualized as teachers' belief that they can bring about desired changes in student achievement (Brady et al., 2021; Cubukcu et al., 2020). Teachers with strong self-efficacy believe that they can positively influence student learning and take responsibility for motivating students and improving their teaching skills until students make progress. Previous studies have noted significant relationships between digital literacy and self-efficacy (Rohmah & Bukhori, 2020; Van et al., 2021), digital literacy and teacher capabilities (Falloon, 2020), digital literacy and teaching styles (Putri Ningrat et al., 2018), teaching styles and teacher capabilities (Winarno et al., 2022), self-efficacy and teacher capabilities (Mulholland & Wallace, 2001), teaching styles and self-efficacy (Jelatu et al., 2019), digital literacy and teacher capabilities through self-efficacy (Lampropoulos et al., 2019), and teaching styles and teacher capabilities through self-efficacy (Putri Ningrat et al., 2018).

Based on previous research, it is necessary to conduct new research on the relationship between digital literacy, teaching style, and self-efficacy on the capabilities of PAUD teachers. The aim of this research is to analyze the relationship between digital literacy (LD), teaching style (GM) and self-ability (ED) on the ability of PAUD teachers (KG) during the Covid 19 pandemic. The novelty of this research lies in the combination of the above variables which will study simultaneously. This research can be used as literature in the field of early childhood teacher education or educational technology, providing a benchmark for developing the capabilities of PAUD teachers.

## 2. METHOD

This research employs an ex post facto design with classical experimental methods to establish the cause-and-effect relationship between events and conditions, utilizing literature surveys in an effort to define and describe data and conditions (Danuri & Maisaroh, 2019). The collected data were analyzed using various methods aided by the Smart PLS 3.0 application tool with Structural Equation Modeling-Partial Least Square (PLS-SEM) analysis techniques. The population of this study consists of all PAUD teachers in Probolinggo Regency, totaling 2541. The sample was taken from the population in several randomly and proportionally stratified sub-districts, with a sample size of 355 PAUD teachers. Data were collected from 10 sub-districts in Probolinggo Regency, East Java Province, Indonesia, all of which were female. The number of participants per sub-district is as follows: Kraksaan 35 participants, Krejengan 32 participants, Krucil 38 participants, Kuripan 33 participants, Leces 32 participants, Lumbang 32 participants, Maron 38

participants, Paiton 39 participants, Pajarakan 40 participants, Pakuniran 36 participants. [Table 1](#) presents information regarding the participants' teaching experience.

**Table 1. Participants**

Length of Teaching Experiences	n	%
3-5 Years	166	47
5 Years or More	189	53
<b>Total</b>	<b>355</b>	<b>100</b>

As stated in [Table 1](#), participants in the group with teaching experience of 3 to 5 years totalled 166 participants, while participants in the group with teaching experience of more than 5 years totalled 189 participants. The primary data collection instrument in this study is a questionnaire structured based on a theoretical framework in the form of a Likert scale. The instrument used in this study is an adapted questionnaire from previous research, which is closed-ended, providing answer options for respondents to choose from. Respondents only need to select the option that corresponds to their experience. Additionally, personal information and demographic data such as educational background, government certification, teaching hours, and involvement in organizations were collected. The instrument grid is show in [Table 2](#).

**Table 2. The Instrument Grids**

No.	Variable	Indicators
1	Digital Literacy	<ol style="list-style-type: none"> <li>1. Information and Information Literacy</li> <li>2. Communication and Collaboration</li> <li>3. Digital Content Creation</li> <li>4. Security</li> <li>5. Problem Solving</li> </ol>
2	Teaching Style	<ol style="list-style-type: none"> <li>1. Participation in the Process</li> <li>2. Related to Teaching Experience</li> <li>3. Creating a Learning Climate</li> <li>4. Student-Centered (or Teacher-Centered) Learning</li> <li>5. Individualized Instruction</li> </ol>
3	Teacher's Abilities	<ol style="list-style-type: none"> <li>1. Skills</li> <li>2. Collaboration or Consultation</li> <li>3. Responsiveness</li> <li>4. Acknowledgment</li> <li>5. Integrity</li> </ol>
4	Self-Efficacy	<ol style="list-style-type: none"> <li>1. Mastery Experience</li> <li>2. Vicarious Experience</li> <li>3. Social Persuasion</li> <li>4. Physiological Arousal</li> </ol>

The analysis method that combines multiple regression elements and confirmatory factor analysis, known as Structural Equation Model ([Hair & Alamer, 2022](#)), is considered appropriate for testing the hypothesis model. Data processing with Structural Equation Modelling (SEM) is performed using the Smart PLS 3.0 application.

### 3. RESULT AND DISCUSSION

#### Result

T studies indicate a significant relationship between digital literacy and teacher competence, digital literacy and self-efficacy, self-efficacy and teacher competence, teaching style and self-efficacy, and teaching style and teacher competence. In this study, we investigated the relationship between variables under the conditions of the COVID-19 pandemic, demographics, and different content from previous research. The analysis results in SEM involved testing the model of relationships between variables (Path Analysis). This was done to obtain an appropriate model for structural analysis and regression analysis. The researchers tested the structural model or causal model with the following results as show in [Table 3](#).

**Table 3. Path Coefficients**

Variable	Teaching Style (X2)	Teacher Capabilities (Y2)	Digital Literacy (X1)	Self-efficacy (Y1)
Teaching Style (X2)		0.459		0.250
Teacher Capabilities (Y2)				
Digital Literacy (X1)	0.680	0.100		0.646
Self-efficacy (Y1)		0.385		

Table 3 illustrates that the direct effect of exogenous variables (X1) on variables X2, Y1, and Y2 is positive at 0.680, 0.100, and 0.646, respectively. Meanwhile, X2 on Y1 and Y2 also has a positive relationship, 0.459 and 0.250 respectively. Meanwhile, the effect of Y1 on endogenous variables has a positive effect of 0.385. Meanwhile, the coefficient path correlation in the indirect outer model between variables X1 and X2 on Y which is mediated by variable Z is quite positive. These results can be seen in Table 4.

**Table 4. Specific Indirect Effects**

Variable	Specific Indirect Effects
Digital Literacy (X1) -> Teaching Style (X2) -> Teacher Capabilities (Y2)	0.312
Teaching Style (X2) -> Self-efficacy (Y1) -> Teacher Capabilities (Y2)	0.096
Digital Literacy (X1) -> Teaching Style (X2) -> Self-efficacy (Y1) -> Teacher Capabilities (Y2)	0.065
Digital Literacy (X1) -> Self-efficacy (Y1) -> Teacher Capabilities (Y2)	0.249
Digital Literacy (X1) -> Teaching Style (X2) -> Self-efficacy (Y1)	0.170

Base on Table 4, the Specific Indirect Effects table states that the indirect effect of variable X2 (Teaching Style) on variable Y2 (Teacher Capability) has a positive effect of 0.096 if mediated by Y1 (Self-efficacy). Similarly, Digital Literacy if mediated by "self-efficacy" has a positive influence on teacher capability of 0.249. The Indirect Influence results state that if the P Values are smaller than 0.05 then the hypothesis is declared to have a significant effect, but if the P Values are more than 0.05 (> 0.05) then the effect as described in the hypothesis cannot be declared significant. The illustration results based on these figures state that all exogenous and endogenous variable relationships are all significant, except for the direct relationship between Digital Literacy and Teacher Ability (0.362) which exceeds the significance value (> 0.05).

**Discussion**

These findings recognize that the importance of digital literacy for teachers and prospective teachers needs to increase literacy course materials for prospective teachers and training, facilities and support from school principals for teachers. It takes the habit of using digital in every activity and a tech-savvy cultural environment or digital literacy for ease and effectiveness in carrying out the duties and responsibilities of a teacher (Sari, 2017; Sulianta et al., 2019). Digital literacy is directly and significantly related to self-efficacy and teaching style in line with research conducted (Aslan, 2021), while with teacher capabilities there is no relationship, meaning that it does not support the results of research (Falloon, 2020). There needs to be a review to reaffirm the evidence of the correlation between digital literacy and teachers' ability to use subjects other than ECD teachers. While digital literacy with teacher capability through self-efficacy shows a significant relationship. Teachers' teaching style shows their competence. From a teacher's teaching style, competence can be known by displaying a disciplined, confident and consistent teaching style. The teacher's teaching style will be a characteristic that is easily understood by students so that students can easily adapt to teachers who have a distinctive teaching style. Although it is basically a teacher who must adapt to their students, especially early childhood students helping students (Gilakjani, 2012; Schunk & DiBenedetto, 2020). Teaching style with self-efficacy and teacher ability are directly and significantly related, but teaching style with teacher ability through self-efficacy is not significant.

A teacher must have the ability of the teacher, this can be netted through the selection of PAUD teacher admissions while in the field there is no selection of PAUD teacher admissions, so training, training or seminars are needed to improve the competence of PAUD teachers. Teacher ability in this study became the indogenous variable associated with the exogenous variables of literacy, teaching style and self-efficacy (Ellizah et al., 2020; Machmud & Alim, 2018). All relationships were significant only that digital literacy was not significant directly and with teaching style through self-efficacy was also not significant. All

relationships were significant only that digital literacy was not significant directly and with teaching style through self-efficacy was also not significant.

Self-efficacy is an important variable for all humans to help convince oneself of the ability to deal with all human problems. Aspects of teacher self-efficacy make it possible to do better by facilitating a school culture and teaching environment that encourages greater teacher self-efficacy and, in turn, better teaching performance. Self-efficacy can emerge with support from the surrounding socio-cultural environment; therefore, every school institution must foster a culture of mutual support in kindness, especially the principal as a manager and leader in the school. Self-efficacy in this study is a mediator variable of teaching style on teacher capability, while the exogenous variables of digital literacy and teaching style are significant and the endogenous variable of teacher capability is also significant. These studies have limitations in generalizing their results because they focus on specific samples from PAUD populations or specific geographic areas. Moreover, this study limits the ability to apply the findings broadly to the ECCE population as a whole. The limitations in its methodological design, such as a small sample size, adjustments to the instruments used, or data collection methods that may not be fully representative or reliable.

#### 4. CONCLUSION

There is a relationship between self-efficacy and the capabilities of teachers in Probolinggo. This suggests that teachers with high self-efficacy are more likely to have good capabilities or can easily attain them. Furthermore, there is a relationship between digital literacy and teacher capabilities through self-efficacy in Probolinggo. This indicates that teachers with high digital literacy and self-efficacy are more likely to have good teacher capabilities. However, if digital literacy is high and self-efficacy is low, teacher capabilities may not be good. On the other hand, there is no relationship between teaching style and teacher capabilities through self-efficacy in Probolinggo. This means that having good teaching style and self-efficacy does not necessarily lead to good teacher capabilities. These research findings can be utilized by the government to formulate policies for the development of early childhood education teacher skills.

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