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## Factors Influencing Elementary Teachers' Readiness in Delivering Sex Education amidst Covid-19 pandemic

Nhung T.P. Nguyen , An T.T. Chu , Ly H. Tran , Son X. Pham , and Hien N. Nguyen   
Vinh University, Nghe An, Vietnam

Vinh T. Nguyen\*   
FPT University, Hanoi, Vietnam

**Abstract.** The emergence of variants of Covid-19, the persistence of lockdowns in many countries, and the necessity to maintain sustainable education have resulted in a shift from the traditional classroom to virtual space. As such, there is a strong need to leverage technological advances while mitigating the challenges faced by primary teachers. Through the incorporation of eight elements, the authors sought to better understand factors that influence teacher readiness to deliver sex education in primary schools. Structural Equation Modeling was employed to assess the proposed conceptual model. The online survey was designed and distributed by Google Forms. Based on the results from 383 individuals, the findings revealed that facilitating conditions, educational policy, and parental involvement all had a relationship with teacher readiness. Digital content positively influenced performance expectancy and effort expectancy. Sexual knowledge had a statistically significant and positive influence on effort expectancy. Finally, openness had a statistically significant and positive influence on performance expectancy. The significant exceptions were that effort expectancy was not found to predict teacher readiness, and performance expectancy was not found to influence teacher readiness. The reasons for these non-significant correlations were briefly discussed and more studies on this topic are called to investigate these unexpected outcomes in more detail. The level of readiness, as well as theoretical and practical implications for scholars and practitioners, were discussed.

**Keywords:** sex education; teacher readiness; primary schools; educational policy; parental involvement

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\* Corresponding author: Vinh T. Nguyen, [vinhnt56@fe.edu.vn](mailto:vinhnt56@fe.edu.vn)

## 1. Introduction

The outbreak of the Covid-19 pandemic and the emergence of its variants have had a profound effect on every aspect of life on a global scale, from travel, retail, restaurants, aviation to higher and primary education (Pokhrel & Chhetri, 2021; Tadesse & Muluye, 2020). Organizations and businesses must be able to adapt quickly to the change in the “*new normal*” conditions. As a result, ideas have been formulated, solutions have been proposed to maintain daily activities, of which remote working via digital tools is one of the most widely used ones today (Gallegos et al., 2020; Shareefa et al., 2021). Although remote working has been discussed for a long time, it was only when Covid-19 had its debut that this type of working became more popular (Gallegos et al., 2020). In reality, although many benefits are expected to originate from working remotely, numerous challenges must be addressed, such as infrastructure, new policies suitable for remote working, integration, new content, assistive devices, usability, implementation, etc. (Gocotano et al., 2021; Wenceslao & Felisa, 2021).

Organizations and enterprises are taking several urgent steps to support remote working, such as acquiring equipment, launching information technology training courses, digitizing documents, and the education sector is not immune to this trend (Gallegos et al., 2020; Shareefa et al., 2021). Many lectures have been digitized, and lessons have also been videotaped for online education. These activities appear straightforward at first glance, but they are fraught with difficulties, such as needing to record a lecture many times, digitally converting information with dynamic features or time, Internet connection issues, storage capacity, and so forth (Gocotano et al., 2021). In addition, insufficient battery life, teacher's lack of engagement with the students, class disruption, zoomed-out videos, unclear slides, videos, and difficulty to open large files are problems students face (Gocotano et al., 2021). The aforementioned issues are tough for university professors, but they are much more difficult for primary school teachers (Iivari et al., 2020; Zakharov et al., 2021), especially when it comes to courses that are cognitively and psychologically inclined, such as sex education (or SexEd) (Goldfarb & Lieberman, 2021). Sex education plays an important role in the development of children (Jin, 2021). To begin with, sex education is critical to the whole development of a child's personality. Second, it complies with the rules of teenage psychological and physiological growth. Strong understandings and influences of love activities and sex life in society, together with sexual vibes, gender changes in the body, and emotions, gradually build in children a new type of knowledge that was not learned in school or at home (Cacciatore et al., 2019). Third, providing children with sex education will help them grasp the reproductive issues and know how to restrict fertility, particularly broad views and conceptions regarding population difficulties (Warzecha et al., 2019). The required information about sex life will help them be more vigilant, stronger, and aware of how to avoid societal problems, therefore contributing to the creation of a sustainable society (Berglas et al., 2016).

The need to transition primary school pupils to an online learning environment has prompted numerous concerns, particularly about digital security (Plaza-del-Pino et al., 2021; Russell et al., 2020). Children are routinely exposed to digital

devices, which exposes them to screen pornography, most of it is misogynistic and inappropriate for their age (Plaza-del-Pino et al., 2021). In some regions, parents and teachers are not adequately trained with information technology skills to mitigate the hazards (Bartau-Rojas et al., 2018). As a result, it is critical to include parents, teachers, and relevant authorities in developing suitable policies, solutions, technology, and procedures to safeguard children against abuse (Russell et al., 2020; Schneider & Hirsch, 2020). Furthermore, the usage of appropriate terminology in the network environment is an issue that must be addressed. For example, when the sex content is conveyed indirectly or impliedly, especially for young pupils, the message can be more confusing and harder to understand (Shin et al., 2019). It might be difficult to use straightforward terms in sex education due to software content filtering (e.g., automatic mute when encountering sensitive keywords or pictures). This is a painful issue that is frequently highlighted in the media, but it also barely reaches the level of “awareness” (Choi, 2013; Voyiatzaki et al., 2021). In developing countries, sex education is a contentious issue in both public health and education policy (Leung et al., 2019). Thus, teachers should be leaders in the education and training of the country's future generations. Only when teachers carry out their duty effectively in today's demanding environment will students be prepared with the required information, abilities, and attitudes concerning psychophysiology, allowing them to develop to their full potential (Jørgensen et al., 2019; Lameiras-Fernández et al., 2021; Plaza-del-Pino et al., 2021).

Numerous scientific papers have been published regarding online training in the context of the Covid-19 epidemic (Alea et al., 2020; Alghamdi & Al-Ghamdi, 2021; Bautista Jr et al., 2021; Funa & Talaue, 2021; Shareefa et al., 2021), but the most of them are about the university setting, with only a handful devoted to general education (Alghamdi & Al-Ghamdi, 2021). The paucity is more visible in primary education, particularly in sex education for children (Choi, 2013; Espinosa & Barraza, 2021; Schneider & Hirsch, 2020). Several authors have proposed a sex competence framework for schools, but they have not taken into account teachers' preparation for this competency framework in the context of the Covid-19 epidemic (Initiative, 2020; Wang & Hall, 2018). As a result, the goal of this research is to understand the factors influencing primary school teachers' readiness to provide children with SexEd. Researchers may utilize these findings to improve or integrate existing models, and principals and policymakers can use them to develop policies and solutions for creating a sustainable learning environment for children.

## **2. Literature Review and Theoretical Framework**

The topic of sexual education has elicited interest among academics of all levels (Kim et al., 2021; Plaza-del-Pino et al., 2021). Kim et al. (2021) investigated gender disparities in sexual behavior among 2460 high school students who reported having had sexual experiences. In the study, the researchers found that boys had earlier sexual debuts, used contraceptives less frequently, and received fewer sex education lessons in schools. Lameiras-Fernández et al. (2021) provided an overview of what is known regarding the diffusion and efficacy of sex education programs to influence better public policy decisions. The authors observed that

while assessments of digital platforms and blended learning indicate better efficacy in terms of promoting sexual and reproductive health in teenagers, they also entail increasing risks of bias. In the authors' view, determining the success of sexual education programs requires a more rigorous assessment, given the potential of new technology, which may lead to more cost-effective treatments than traditional programs. On the topic of SexEd in the classroom, Plaza-del-Pino et al. (2021) examined the perspectives of 15 primary school teachers. From the analysis, the authors identified two key themes, which are the lack of training to fears of the families. Hamilton-Giachritsis et al. (2021) explored how experts who assist with victims interpret internet child sexual assault. According to the findings, there is frequently a low knowledge of the hazards and severity of technology-assisted online child sexual abuse, which can lead to victims continuing at risk, a systemic failure to protect, and a decreased probability of obtaining effective therapies. Martin et al. (2020) showed that the implementation of the sex education program for preschool teachers led to improved knowledge and attitudes. The aforementioned studies demonstrate that while SexEd has been captured from different points of view, a gap exists in determining factors that influence teachers' readiness to disseminate SexEd in primary schools amidst the covid-19 pandemic. Thus, the current study contributes to the body of knowledge by investigating the effects of relationship amongst factors toward teachers' readiness in primary schools. For elementary teachers to be successful with remote teaching, it is necessary to identify the dimensions of readiness they should possess for SexEd in the virtual space.

The concept of readiness for online learning can be attributed to Warner et al. (1998). Online readiness was characterized by Borotis and Poulymenakou (2004) as being mentally and physically prepared for certain online learning experiences and activities. For this study, teacher readiness is defined as the degree to which an individual feels confident about oneself in disseminating SexEd in primary schools. Three questions were used to assess teacher readiness including 1) I feel that I am ready to teach SexEd for children, 2) I feel confident that I can mentor my students, 3) I think that I can organize my classes online efficiently.

Many researchers have attempted to assess readiness factors that influence online learning performance by either confirming an existing model or expanding it with additional components (Dorsah, 2021; Zou et al., 2021). For example, Hung (2016) identified four teachers-as-learners' factors, including communication self-efficacy, institutional support, self-directed learning, and learning-transfer self-efficacy. Zou et al. (2021) considered other factors such as technology access and computer self-efficacy. Sailer et al. (2021) suggested that the facilitating conditions provided by higher education institutions influence the context of teaching and learning significantly. Churiyah et al. (2020) highlighted that education policy plays an important role to conduct learning from home for kids as many parents strongly support this policy because of the spread of the coronavirus. Several authors studied in detail parental engagement factors in online learning environments (Fauzi & Khusuma, 2020; Stevens & Borup, 2015), and they suggested that teachers and parents should coordinate to improve student engagement. Due to the involvement of technological aspects in online

teaching/learning, a majority of recent research integrated the Unified Theory of Acceptance and Use of Technology (UTAUT) model to evaluate online learning performance (Hu et al., 2020; Mittal et al., 2021). UTAUT has been proven to be an effective model in the context of mobile technology learning for students and academics at university levels (Omar et al., 2019). However, there is little data with elementary or secondary school teachers (Adov et al., 2017). In another line of research, Patra et al. (2021) emphasized that teachers should develop learner-centric digital content to accommodate students' needs. Their recommendation was aligned with the challenges posed previously. On the topic of SexEd, Westwood and Mullan (2007) reported that teachers lack sufficient sexual health expert knowledge to contribute to current guidelines for SexEd in secondary schools. In addition, the literature in the field recounts various creative programs that fail to owe to elementary school teachers' reluctance to openly and firmly confront the sexuality topic (Pellejero Goni & Torres Iglesias, 2011). The following dimensions were drawn to assess teacher readiness for online SexEd based on the selective reviews above: digital contents, sexual knowledge, openness, facilitating conditions, effort expectancy, performance expectancy, educational policy, and parental engagement.

*Facilitating Condition:* Facilitating Condition is defined as a person's perception of whether there is an organizational and technological environment to support the utilization of a system (Venkatesh et al., 2003). This study employed four questions to measure facilitating conditions, including the following: 1) I have the devices/tools/apps necessary to teach SexEd online, 2) I am familiar enough with the devices/tools/apps to utilize them, 3) The devices/tools/apps are working properly, and 4) The service provider can assist me if I am having trouble using the devices, tools, or apps. Thus, the hypothesis below was proposed:

**Hypothesis 1 (H1). Facilitating Conditions positively influence Teacher Readiness on teaching SexEd in primary schools.**

*Effort Expectancy:* UTAUT defines Effort Expectancy as the ease with which a system can be used, and this is a key prediction of the model (Venkatesh et al., 2003). This factor has been justified in a variety of settings, particularly in blended learning (Azizi et al., 2020). In the context of this study, effort expectancy refers to users' perceptions of how easy an online learning environment allows the primary teacher to deliver SexEd. The effort expectancy was assessed using the following four questions: 1) I would find the online learning environment (e.g., devices/tools/apps) easy to use, 2) It would not take me long to figure out how to use devices/tools/apps for teaching kids, 3) I will be able to interact with devices, tools, and apps clearly and understandably, and 4) Being skilled at using devices/tools/apps is an easy task for me. Thus, the hypothesis below was proposed:

**Hypothesis 2 (H2). Effort Expectancy positively affects Teacher Readiness on teaching SexEd in primary schools.**

*Performance Expectancy:* The term "Performance Expectancy" refers to a person's perception that he or she will be able to achieve their work performance goals by employing the system (Venkatesh et al., 2003). In the context of this study,

performance expectancy refers to the primary teachers' belief that using devices/tools/apps is helpful for delivering SexEd. Three questions were used to estimate performance expectation: 1) I would find the devices/tools/apps useful for teaching SexEd, 2) I think using devices/tools/apps will help me deliver contents that I want my students to learn, 3) I think using devices/tools/apps will help me improve ways of teaching. Thus, the following hypothesis was proposed: **Hypothesis 3 (H3). Performance Expectancy positively affects Teacher Readiness on teaching SexEd in primary schools.**

*Educational policy:* Educational policies are governed by 'quality' education paradigms, in which quality is defined as economic metrics such as effectiveness, efficiency, economy, and accountability, as well as academic achievement (Steiner, 2012). For this study, the educational policy relates to the primary teachers' belief that having a clear guideline for teaching SexEd will help them feel more confident. Three questions were used to measure educational policy guidelines. 1) I was provided with necessary guidelines/policies from schools and states that help me carry my class online easily, 2) The guidelines/policies are understandable and easy to follow, 3) It is not difficult for me to follow the guidelines/policies while delivering class lessons. The following hypothesis was proposed:

**Hypothesis 4 (H4). Educational policy positively affects Teacher Readiness on teaching SexEd in primary schools.**

*Parental Involvement:* It has been shown that parental involvement through good parenting at home has a significant impact on children's achievement and adjustment even after all other factors have been eliminated (Desforges & Abouchaar, 2003). Parental involvement was emphasized in the context of digital sexual education (Aventin et al., 2020) where the authors suggested that efforts must be devoted to increasing the confidence of school personnel and teachers to communicate with parents on sensitive topics while simultaneously focusing on parental components. In this study, parental involvement factor was measured by using three questions: 1) I can contact students' parents whenever it is needed while teaching SexEd online, 2) Students' parents are accessible at any time while the class is running, 3) Students' parents are presented to help kids focus on learning. The hypothesis below was proposed:

**Hypothesis 5 (H5). Parental Involvement positively affects Teacher Readiness for teaching SexEd in primary schools.**

*Digital contents:* It is not easy to develop a good digital learning media since it requires not only pedagogy knowledge, but technology knowledge and coding skills as well (Fiangga et al., 2021). This is a challenging issue for a vast number of non-technical teachers (Ferri et al., 2020). In the context of this study, digital contents refer to materials that teachers use and deliver to kids via an online communication channel. Three questions were used to measure the extent to which digital contents are available to be used by primary teachers/students in SexEd: 1) I have digital materials for SexEd, 2) Digital materials are appropriate for kids, 3) Digital materials are easy to operate and delivered via online learning environment. It is argued that the greater the availability of digital content, the

lesser the effort and the higher the performance required by teachers, thus the following hypotheses were proposed:

**Hypothesis 6 (H6). The availability of digital content has a positive effect on Performance Expectancy for primary teachers.**

**Hypothesis 7 (H7). The availability of digital content has a positive effect on Effort Expectancy for primary teachers.**

*SexEd Knowledge.* The knowledge factor has been explored to measure teacher preparation for online teaching (Pellejero Goni & Torres Iglesias, 2011; Westwood & Mullan, 2007). Knowledge in the context of this study refers to a comprehension of SexEd. Three questions were used to estimate primary teachers' knowledge: 1) I feel confident when delivering SexEd, 2) I can look at SexEd from different points of view, 3) I can justify SexEd in different settings. If teachers have more knowledge, they should make fewer efforts. Thus, the following hypothesis was proposed:

**Hypothesis 8 (H8). SexEd Knowledge has a positive effect on Effort Expectancy for primary teachers.**

*SexEd Openness:* As part of openness, teachers needed to be willing to answer questions without focusing on the topic (Booth-Butterfield & Sidelinger, 1998); maintain an open-minded attitude; balance openness with privacy; and take into account the characteristics of their students (Kirkman et al., 2005). Some studies (Pellejero Goni & Torres Iglesias, 2011; Plaza-del-Pino et al., 2021) pointed out that teachers of primary schools are often reluctant to speak openly about sexuality. Three questions were employed to measure Openness, which are as follows: 1) I'm open-minded to sensitive topics, 2) I am willing to discuss sexual content with others, and 3) I talk with kids considering their emotions and behaviors. If teachers have been open to their students, they should have high performance. Thus, the following hypothesis was proposed:

**Hypothesis 9 (H9): SexEd Openness has a positive effect on Performance Expectancy for primary teachers.**

These assumptions guided the development of the study model illustrated in **Figure 1**. The ellipses represent constructs (also known as latent variables) evaluated by a series of items, and the arrows represent hypotheses numbered 1 to 9.

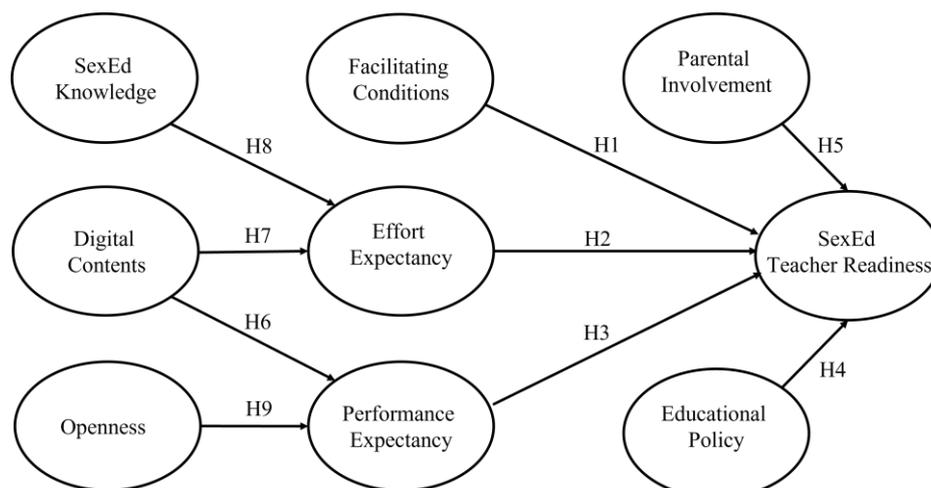


Figure 1. The proposed theoretical model with hypotheses from H1 to H9

### 3. Methodology

#### 3.1 Participants and Data Gathering Tools

Nonprobability, purposive sampling was used to collect study data in order to overcome the problem of being unable to identify the members of the population individually (Stratton, 2021). The online survey was developed using Google Forms and distributed via online channels. A Google Form with an invitation message was shared via emails and social media channels (such as Facebook, Twitter). The interest group is made up of primary school SexEd teachers in the north, middle, and south of Vietnam. Those who participated in the survey were recruited on an opt-in basis, and they can opt out at any time. Through the authors' community, the snowball sampling technique is expected to reach 700 users. The survey consists of 4 questions to gather participants' demographic information, and 29 Likert-type questions to examine various points of view teaching SexEd in primary schools during the covid-19. There was no specific personal information revealed in this investigation, so no ethical approval was required.

Kock and Hadaya (2018) suggested a tool (Soper, 2016) to estimate the appropriate sample size, and that tool was used to determine the sample size in this study. Using the tool, the following settings were adjusted: anticipated effect size (0.3), desired statistical power level (0.8), number of latent variables (9), number of observed variables (29), probability level (0.05). Thus, the sample size for this study was 184.

#### 3.2. Measures

A review of the survey questions using the research methodologies led to the selection of 29 questions for the study (see Table 1). A five-point Likert scale (1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree) was used to measure teachers' readiness to teach SexEd in primary schools.

**Table 1. Construct and items**

<p><b>Performance Expectancy</b></p> <p>(PE1) I would find the devices/tools/apps useful for teaching SexEd.</p> <p>(PE2) I think using devices/tools/apps will help me deliver contents that I want my students to know.</p> <p>(PE3) I think using devices/tools/apps will help me improve my ways of teaching.</p>
<p><b>Effort Expectancy</b></p> <p>(EE1) I would find the online learning environment (e.g., devices/tools/apps) easy to use.</p> <p>(EE2) It would not take me long to figure out how to use devices/tools/apps for teaching kids.</p> <p>(EE3) I will be able to interact with devices, tools, and apps clearly and understandably.</p> <p>(EE4) Being skilled at using devices/tools/apps is easy for me.</p>
<p><b>Parental Involvement</b></p> <p>(PI1) I can contact students' parents whenever it is needed while teaching SexEd online.</p> <p>(PI2) Students' parents are accessible at any time while the class is running.</p> <p>(PI3) Students' parents are presented to help kids focus on learning.</p>
<p><b>Facilitating Conditions</b></p> <p>(FC1) I have the devices/tools/apps necessary to teach SexEd online.</p> <p>(FC2) I am familiar enough with the devices/tools/apps to utilize them.</p> <p>(FC3) The devices/tools/apps are working properly.</p> <p>(FC4) The service provider can assist me if I am having trouble using the devices, tools, or apps.</p>
<p><b>Educational Policy</b></p> <p>(EP1) I was provided necessary guidelines/policies from schools and states that help me carry my class online easily.</p> <p>(EP2) The guidelines/policies are understandable and easy to follow.</p> <p>(EP3) It is not difficult for me to follow the guidelines/policies while delivering class lessons.</p>
<p><b>Digital contents</b></p> <p>(DC1) I have digital materials for SexEd.</p> <p>(DC2) Digital materials are appropriate for kids.</p> <p>(DC3) Digital materials are easy to operate and delivered via an online learning environment.</p>
<p><b>SexEd Knowledge</b></p> <p>(SK1) I feel confident when delivering SexEd.</p> <p>(SK2) I can look at SexEd from different points of view.</p> <p>(SK3) I can justify SexEd in different settings. We believe that teachers should make fewer efforts if they have more knowledge.</p>
<p><b>SexEd Openness</b></p> <p>(OP1) I'm open-minded to sensitive topics.</p> <p>(OP2) I am willing to discuss sexual content with others</p> <p>(OP3) I talk with kids considering their emotions and behaviors.</p>
<p><b>SexEd Teacher Readiness</b></p> <p>(TR1) I feel that I am ready to teach SexEd for children.</p> <p>(TR2) I feel confident that I can mentor my students.</p> <p>(TR3) I think that I can organize my classes online efficiently.</p>

### 3.3. Data Analysis

The proposed study model was evaluated using Generalized Structured Component Analysis (GSCA), a method that was chosen over Partial Least Squares Structural Equation Modeling (PLS-SEM) because it could be applied to small samples without having to assume rigid distributions (Hwang & Takane, 2014). GSCA is a method for examining relationships between observed variables and latent variables by using components of observed variables as proxy variables. As an additional benefit to PLS-SEM, GSCA should have fewer assumptions regarding distributions (multivariate normality is not required for parameter estimation), unique component score estimates, and circumventing incorrect solutions in small samples. For hypothesis testing as well as supplementary investigations, GSCA Pro (Hwang et al., 2021) for generalized structural component analysis was employed (e.g., internal consistencies, correlations). This software allows users to view results and create models with ease using a graphical user interface.

### 4. Results

Inappropriate replies were eliminated during data collection (46 invalid answers due to picking just one option, 25 responses due to missing values). The total number of observations that remained in the study was 383 (accounted for 84.36% of 454 responses). The present study met the sample size requirements since its actual sample size was 383, exceeding the minimum suggesting criteria of 184. **Table 2** presents demographic information of respondents from the survey, with males accounting for 16.18%, while females accounting for 83.82%. 38.38% of the respondents are under the age of 25, 47.00% are between the ages of 26 and 35, 10.7% are between the ages of 36 and 45, and 3.92% are over 45. In terms of years of experience, 4.44% have been in education for less than two years, 19.06% have been in education for five years, more than half of the respondents (66.58%) have been in education for almost ten years, and 9.92% have more than ten years of experience. The vast majority of participants (90.34%) stated that they work in public schools, whereas just a small percentage work in private institutions (9.66%)

**Table 2. Demographic information about the participants**

Variable	Item	Frequency	Percentage
Gender	Male	62	16.48
	Female	321	83.82
Age	18-25	147	38.38
	36-35	180	47.00
	36-45	41	10.70
	Over 45	15	3.92
Year of Experience	Less than 2 years	17	4.44
	2 - 5 years	73	19.06
	6 - 10 years	255	66.58
	More than 10 years	38	9.92
Working Sector	Public schools	346	90.34
	Private schools	37	9.66
<b>Total</b>		383	100.0

### Quantitative Analysis

Table 3 displays the descriptive data for each construct item. Means exceed the average point of 2.5, while standard deviations vary from 0.698 to 1.191.

**Table 3. Construct, Means and Standard Deviations of the indicators**

Construct	Item	Mean	SD
Performance Expectancy	PE1	4.230	0.814
	PE2	4.005	0.900
	PE3	3.684	1.105
Effort Expectancy	EE1	4.052	0.889
	EE2	3.982	0.924
	EE3	4.117	0.784
	EE4	4.099	0.861
Educational Policy	EP1	3.843	0.984
	EP2	3.807	0.956
	EP3	3.948	0.892
Facilitating Conditions	FC1	3.867	0.991
	FC2	3.979	0.830
	FC3	3.159	1.121
	FC4	3.958	0.927
Parental Involvement	PI1	4.316	0.698
	PI2	4.423	0.732
	PI3	3.950	0.961
Digital Contents	DC1	3.760	0.972
	DC2	3.836	0.946
	DC3	3.812	0.915
SexEd Knowledge	SK1	3.770	0.996
	SK2	3.937	0.957
	SK3	3.911	0.924
SexEd Openness	OP1	4.065	0.907
	OP2	4.120	0.837
	OP3	4.010	0.911
SexEd Teacher Readiness	TR1	4.316	0.738
	TR2	4.110	0.860
	TR3	3.875	0.964

Three indicators were used to evaluate the internal consistency and convergent validity for each component (see Table 4). Cronbach's alpha is denoted by Alpha. It is a measure of the internal consistency of an instrument or scale developed by Cronbach (1951); it ranges between 0 and 1. In terms of internal consistency, all of the items in a test measure the same concept, so it is related to how closely they relate to each other. Different studies recommend a range of acceptable values for alpha, from 0.70 to 0.95 (Tavakol & Dennick, 2011). The measurements internal consistency values in this study are mostly within the range of recommended values, except facilitating conditions (Alpha = 0.68), but it is close to 0.7, indicating an acceptable value. Rather than relying solely on Cronbach's alpha to evaluate

each construct's dependability, Dillon-rho Goldstein's was presented to verify each construct's internal consistency and dependability criteria (Hwang & Takane, 2014). All results were more than 0.7, above the required reliability estimate (Hwang & Takane, 2014). Average Variance Extracted (AVE) was examined to determine whether it was convergent. AVE's values were greater than 0.5, suggesting convergent validity (Hwang & Takane, 2014).

**Table 4. Internal consistency and convergent validity.**

Construct	Alpha	Dillon-Goldstein's Rho	AVE
Performance Expectancy	0.783	0.873	0.835
Effort Expectancy	0.806	0.873	0.795
Educational Policy	0.888	0.931	0.904
Facilitating Conditions	0.680	0.807	0.720
Parental Involvement	0.705	0.836	0.794
Digital Contents	0.866	0.918	0.888
SexEd Knowledge	0.833	0.900	0.866
SexEd Openness	0.868	0.919	0.889
SexEd Teacher Readiness	0.714	0.840	0.799

Table 5 shows standard errors (SEs) and 95% bootstrap percentile confidence intervals (CIs) calculated from item loading estimates simulations, as well as respective lower and upper bounds. 100 bootstrap samples were used to determine the confidence intervals (CIs). If a 95 percent confidence interval did not include zero, the parameter estimates were considered significant at the 0.05 level. All loading estimates were statistically significant, showing that all items were reliable predictors of constructs.

**Table 5. Estimates of loadings.**

	Estimate	Standard Errors	95%CI_LB	95%CI_UB
SexEd Knowledge				
SK1	0.881	0.019	0.837	0.906
SK2	0.895	0.013	0.870	0.917
SK3	0.820	0.024	0.763	0.865
Digital Contents				
DC1	0.899	0.012	0.875	0.922
DC2	0.861	0.021	0.822	0.897
DC3	0.905	0.017	0.869	0.931
SexEd Openness				
OP1	0.910	0.015	0.872	0.933
OP2	0.864	0.022	0.815	0.906
OP3	0.894	0.015	0.863	0.925
Facilitating Conditions				
FC1	0.803	0.026	0.747	0.849
FC2	0.773	0.027	0.719	0.826
FC3	0.491	0.075	0.334	0.611
FC4	0.770	0.033	0.701	0.838

Effort Expectancy				
EE1	0.797	0.024	0.740	0.842
EE2	0.753	0.045	0.645	0.826
EE3	0.835	0.020	0.795	0.873
EE4	0.792	0.030	0.731	0.850
Performance Expectancy				
PE1	0.828	0.020	0.787	0.860
PE2	0.833	0.019	0.790	0.874
PE3	0.843	0.021	0.795	0.879
Parental Involvement				
PI1	0.803	0.029	0.742	0.852
PI2	0.847	0.024	0.795	0.896
PI3	0.728	0.028	0.664	0.772
Educational Policy				
EP1	0.914	0.011	0.890	0.934
EP2	0.929	0.009	0.907	0.943
EP3	0.869	0.017	0.833	0.898
Teacher Readiness				
TR1	0.836	0.023	0.784	0.879
TR2	0.838	0.022	0.777	0.879
TR3	0.716	0.040	0.639	0.787

**Table 6** presented that GSCA gave FIT = 0.551 (SE = 0.0113, 95% CIs = 0.5425 - 0.5851), AFIT = 0.548 (SE = 0.0116, 95% CIs = 0.5293 - 0.5923), GFI = 0.973 (SE = 0.0062, 95% CIs = 0.962 - 0.9878), and SRMR = 0.071 (SE = 0.0145, 95% CIs = 0.069 - 0.0782). The variation of the data explained by a particular model specification was examined by both FIT and Adjusted FIT (AFIT). FIT and Adjusted FIT (AFIT) were used to estimate how much variation in the data can be explained by specific model specifications. If the number is higher, more variance is explained by linear regression. Thus, the model accounted for a total variance of 55.1% and 54.8%, respectively. FIT and AFIT were significantly different from zero (no inclusion of zero value in CIs range). Additionally, goodness-of-fit indexes (GFIs) and standardized root mean square residuals (SRMRs) are indicators of the closeness between sample covariance and covariance as additional measures of the fit of an overall model. Based on a recent study, the following cut-off criteria for GFI and SRMR have been suggested in GSCA (Cho et al., 2020); For sample sizes > 100, a GFI  $\geq$  .93 or an SRMR  $\geq$  .08 indicates a good fit. Results from **Table 6** indicated that GFI and SRMR satisfied the recommended value.

**Table 6. Model FIT.**

	Estimate	SE	95%CI_LB	95%CI_UB
FIT	0.551	0.0113	0.5425	0.5851
Adjusted FIT (AFIT)	0.548	0.0116	0.5293	0.5923
GFI	0.973	0.0062	0.962	0.9878
SRMR	0.071	0.0145	0.069	0.0782

The path coefficients are shown in **Table 7** as well as their 95% confidence intervals and standard errors in the structural model. The results indicated that the

influence of facilitating condition on SexEd teacher readiness was statistically significant and positive (H1 = 0.14\*, SE = 0.06, 95% CIs = 0.9768 - 0.9977). Teacher Readiness was statistically significant and positively influenced by Educational Policy (H4 = 0.306\*, SE = 0.091, 95% CIs = 0.123 - 0.468). Parental Involvement had a statistically significant and positive influence on Teacher Readiness (H5 = 0.371\*, SE = 0.062, 95% CIs = 0.23 - 0.473). In addition, Digital Contents positively influenced Performance Expectancy (H6 = 0.26\*, SE = 0.061, 95% CIs = 0.16 - 0.383). Digital Contents positively predicted Effort Expectancy (H7 = 0.151\*, SE = 0.073, 95% CIs = 0.031 - 0.346). Furthermore, SexEd Knowledge had a positive influence on Effort Expectancy (H8 = 0.445\*, SE = 0.077, 95% CIs = 0.251 - 0.568). Finally, Performance Expectancy was statistically significant and positively influenced by SexEd Openness on delivering SexEd in primary schools (H9 = 0.434\*, SE = 0.063, 95% CIs = 0.292 - 0.525).

The hypotheses H2 (Effort Expectancy (H2) → Teacher Readiness), H3 (Performance Expectancy (H3) → Teacher Readiness) were not supported as zero values were found in the CIs.

**Table 7. Estimates of path coefficients.**

	Estimates	Std Error	95% CI_LB	95% CI_UB
Facilitating Conditions (H1) →Teacher Readiness	0.14*	0.06	0.025	0.251
Effort Expectancy (H2) →Teacher Readiness	0.08	0.066	-0.044	0.201
Performance Expectancy (H3) →Teacher Readiness	-0.129	0.06	-0.212	0.005
Educational Policy (H4) →Teacher Readiness	0.306*	0.091	0.123	0.468
Parental Involvement (H5) →Teacher Readiness	0.371*	0.062	0.23	0.473
Digital Contents (H6) →Performance Expectancy	0.26*	0.061	0.16	0.383
Digital Contents (H7) →Effort Expectancy	0.151*	0.073	0.031	0.346
SexEd Knowledge (H8) →Effort Expectancy	0.445*	0.077	0.251	0.568
SexEd Openness (H9) →Performance Expectancy	0.434*	0.063	0.292	0.525

\* Statistically significant at 0.05 level.

## 5. Discussion

In Holsapple and Lee-Post (2006)'s research, teachers who score 4 on a Likert-type scale are considered e-ready. The primary teachers' responses had a mean of 4.1, meaning that cohorts were moderately ready or slightly over the teacher readiness threshold. The current finding was in line with (Cabrerros, 2012) where the author reported that teachers acknowledged a modest readiness to teach kids about sex education subjects. Additionally, Effort Expectancy (mean = 4.063), Parental

Involvement (mean = 4.230), and SexEd Openness (mean = 4.065) all have comparable scores and interpretations when using the same threshold. On the other hand, Performance Expectancy (mean = 3.978), Educational Policy (mean = 3.866), Facilitating Conditions (mean = 3.740), Digital Contents (mean = 3.803), SexEd knowledge (mean = 3.872) produced means slightly below the threshold level. In contrast to what one might expect that government, schools, and third-party organizations would provide strong support for teachers/students for teaching and learning at home to sustain education in the context of the Covid-19 pandemic, the mean of facilitating conditions was lower than the expected threshold. One plausible explanation for this shortage may be attributed to the fact that network conditions, infrastructure, and supporting technological devices were not kept up with the suddenly increased demand, especially in developing countries (Fauzi & Khusuma, 2020; Wu, 2021). It was not surprising that digital contents expectancy for SexEd was lower than the threshold value. Traditionally, digital teaching has served only as a complement in elementary and secondary schools. As a result, elementary school teachers have limited time to produce engaging digital material or even switch to an online environment (Fauzi & Khusuma, 2020; Lestari & Gunawan, 2020). This is also true for less popular subjects, such as SexEd. In terms of educational policy with guidelines, our finding was aligned with existing studies (Almazova et al., 2020; Andarwulan et al., 2021; Fauzi & Khusuma, 2020) where teachers faced difficulties in transitioning to the virtual space, thus there is a need to provide clear guidance for teachers, especially in the elementary sector. In terms of SexEd knowledge, the survey suggested that knowledge confidence in SexEd was slightly below the threshold, and our findings were consistent with (Javadnoori et al., 2016; Martin et al., 2020), where the results were reported that teachers lacked comprehensive understanding and awareness on child sex-related issues.

### **5.1 Theoretical implication**

One of the most noteworthy findings was the amount of variation that explained the hypothesized model (55.1%). The current study's findings validated the majority of the predicted correlations among the factors in the proposed model. The notable exception is that Effort Expectancy was not found to predict Teacher Readiness, and Performance Expectancy was not found to influence Teacher Readiness for delivering SexEd via virtual space. One probable reason for these non-significant findings is that, as described in the previous section, not all teachers received the same educational training/guidelines, especially for primary teachers. Thus, the level of expectancy for these factors varied. As such, in the subsequent studies, there is a need to investigate these two factors in more detail, considering a specific context.

Nevertheless, findings of this study contribute to the body of knowledge in two folds: (1) it empirically verified the effects on relationships embedded in existing theories, thus it can be employed as a reference in a similar setting, and (2) for hypotheses which were not supported, more studies are called to investigate these non-significant behaviors.

## 5.2 Practical implication

The study's context stems from the fact that primary teachers and children were forced to study from home. SexEd teachers are undoubtedly encountered many challenges for their readiness. As a result, there is a strong need to study or investigate factors that influence their behaviors.

In terms of teacher readiness, the findings from the proposed model revealed that Facilitating Conditions, Educational Policy, and Parental Involvement all had a relationship with Teacher Readiness. Policymakers should focus on training primary teachers to use digital devices/apps more efficiently, the clearer guidance the better teacher readiness. Since the availability of devices/tools/apps is a reliable predictor in this context, governments and institutions should constantly improve infrastructure, provide teachers with modern devices, and build robust tools/apps. In terms of Parental Involvement, teachers and parents should cooperate in providing SexEd to children, especially when the class is running. This is vital not only in SexEd but also in other subjects or classes since children are easily distracted, unfocused, or exhausted. In terms of SexEd digital content, it is challenging for teachers to create engaging materials but use existing videos or slides. As a result, professionals are brought in to help with this procedure. To attract researchers/developers from different areas, the government and colleges might fund the content creation via institutional or national grants. SexEd openness is another important component supported by the research model; thus, teachers should participate in public speaking or social media to build their confidence and readiness to share and educate people about the relevance of SexEd in childhood. As for the SexEd knowledge, teachers should keep learning progressively to broaden their knowledge. In addition to self-learning, teacher competency standards for SexEd should be revised to accommodate the social changes (Nhunh Nguyen Thi Phuong et al., 2021) and policymakers can utilize these findings to justify training programs.

## 5.3 Limitations

Even though the conclusions are grounded on the contributions, they will necessarily be limited by a variety of restrictions. These constraints, when combined with unexpected discoveries, point to a viable future study framework. First of all, non-probability sampling was used for this study to ensure that all respondents are SexEd primary teachers. The study's sampling method, although widely accepted in the literature, limits the generalizability of findings beyond those in the study. Second, because this study examined teacher readiness during a short period, particularly considering Covid-19, the study's conclusions must be revisited after the outbreak. Furthermore, because the current study's theoretical framework was only based on variables obtained from selected factors, other mediators and moderators not included in the proposed model were not assessed.

## 6. Conclusion

This study examined the factors influencing primary school teachers' readiness to provide children with SexEd in terms of digital contents, sexual knowledge, openness, facilitating conditions, effort expectancy, performance expectancy, educational policy, and parental engagement. The study's findings, based on data

from 383 individuals, verified many of the expected correlations between the factors in the proposed model, that is, Facilitating Conditions, Educational Policy, and Parental Involvement all had a relationship with Teacher Readiness. Digital Contents positively influenced Performance Expectancy and Effort Expectancy. SexEd Knowledge had a statistically significant and positive influence on Effort Expectancy. Finally, SexEd Openness had a statistically significant and positive influence on Performance Expectancy on delivering SexEd in primary schools. The significant exceptions were that Effort Expectancy was not found to predict Teacher Readiness, and Performance Expectancy was not found to influence Teacher Readiness for delivering SexEd in an online environment. The reasons for these non-significant correlations were briefly discussed and more studies on this topic are called to investigate these unexpected outcomes in more detail.

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