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Mobile Smart Parenting Teacher (MSPT) Application to Improve the Life Skills of Parents, Teachers, and Elementary School Students

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One of the technological advancements in the era of 4.0 is the android based mobile phone. Android-based mobile phone technology allows users to connect with the source of information available in android anytime, including for educational purposes. The study aims to: 1) produce an android application (Mobile Smart Parenting Teacher) as media to deliver information about life skill facing limited face-to-face learning in Covid-19 era; 2) asess the validation process of Mobile Smart Parenting Teacher as media in improving life skill education; 3) describe the effectiveness of Mobile Smart Parenting Teacher application in providing knowledge about lifeskills to students, teachers, and parents. The study employed the 4D (Define, Design, Develop, Disseminate) developmental research method. The Mobile Smart Parenting application was assessed by experts of information and technology experts, teachers of Psychology and Guidance in Education, and teachers of elementary school. Before conducting a field trial, groups of 45 parents, 45 teachers, and 45 students were given a pretest. At the end of the field trial, the posttest was distributed. Findings show that using the Mobile Smart Parenting Teacher application significantly affects teachers, parents, and students' understanding of conceptual life skills to face the limited face-to-face learning in the Covid – 19 era. The gain score (N - gain) from the normalized test performed on pretest and post test scores were in the high category (0.85).

Keywords: mobile smart parenting teacher, life skills, elementary students, leaning, limited face-to-face leaning

INTRODUCTION

The issuance of an educational policy in Indonesia, limited face-to-face learning in the Covid-19 pandemic era, has challenged the psychological readiness of parents, teachers, and students to face new learning culture with new regulations. Some rules applied in the limited face-to-face learning included the maximum number of students in the

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classroom, which was 50% of the classroom capacity, the distance between seats (1 - 1.5 meters), duration of each subject (30 minutes), and school days (2). Other regulations included the obligation to wear a mask and to wash hands and the prohibition of the use of canteen and to conduct sports activities and flag ceremony. The rule applied not only in Indonesia but also in many parts of the world. In Australia, the US, and the UK, learning activities should be conducted outside the classroom and apply creative learning models like project-based learning (Hira & Anderson, 2021). The learning activities had to obey the strict health protocol like wearing a mask, washing hands, or using hand sanitizer (Aboagye et al., 2021; Nwakaego et al., 2021).

At the elementary school level, the implementation of limited face-to-face learning in the Covid-19 pandemic era still needed guidance. Preparing students' mental readiness becomes the priority before they follow the lesson. Managing psychological, social, mental, and academic aspects was an integrated part of limited face-to-face learning (Etxebarria et al., 2021: Mantasiah et al., 2021). It became the main priority since elementary school students were vulnerable to being infected by the Covid - 19 virus. Children were potentially contaminated by the Covid - 19 virus and transmitted it to other family members when they did not understand the prevention methods that should be applied at school or at home. Children needed guidance from parents and teachers, but it is undeniable that they could not get control all day.

One alternative to solve this problem was by equipping parents with knowledge on how to face the limited face-to-face learning by applying life skill-based *mobile smart parenting teacher* (MSPT) considering that they hold the major responsibility on their kids at home. This study aimed to develop the application of life skill-based *mobile smart parenting teachers* (MSPT) to prevent the spread of the Covid - 19 virus. In the pandemic era, parents should involve in their children learning activities and collaborate with teachers to maximise the learning outcomes. MSPT application developed in this study is very helpful for parents with children studying at the elementary school level as it provides materials about various life skills to prevent the spread of covid - 19, like how kids know and understand the food they should consume, how they should interact at school, what they should do after back to home, and what kind of games they can play that do not potentially spread the Covid-19. Ten life skills that should be mastered in the 21st century include creative thinking, critical thinking, metacognitive thinking, communication, collaboration, information literacy, digital literacy, nationalism, work and career, and individual and social responsibility skill (Trilling & Fadel, 2009; Binkley, et al., 2012).

During the implementation of limited face-to-face learning, children and parents should follow the new normal learning at school by obeying the health protocol. Although parents were happy that their children were let to study at school again, they were worry as the Covid-19 pandemic in the country had not stopped yet. Students were also worried about studying at school but felt optimistic they would learn with a better method. The study examined how safe, comfortable, and unworried children and parents are after using *Mobile Smart Parenting Teacher* (MSPT), which provided stories and videos describing and guiding attitudes that can prevent the spread of Covid-19. The

purpose of the study was to develop and examine a life skill - based *Mobile Smart Parenting Teacher* (MSPT) application that can educate students to interact with friends at school and make a positive decision in the Covid-19 spread prevention system.

MSPT application developed in this study was useful for parents who had children studying at the elementary school level to explain them how they should behave to prevent the spread of Covid-19 like kinds of food they should consume, how they should interact at school in a pandemic situation and what they should do after arriving at home. Studies conducted by (Hodge et al., 2017; Barros et al., 2019; Garrett et al., 2019) explain that MSPT is designed as a life skill - based smart parenting program that parents can use to act as a facilitator to replace teachers in teaching life skills to students (teachers act as coordinator and evaluator). This is a R*esearch and Development* (R & D) study designed to create a product. The product here is the life skill-based *mobile smart parenting teacher* (MSPT) application to prevent the spread of Covid - 19 embedded in the android developer system. Life skills integrated into the MSPT system include: 1) Attitude and Character; 2) Maintaining A Healthy and Balanced Diet; 3) Communication and Collaboration; 4) Self-Regulation; 5) Creativity and Innovation; 6) Personal Awareness; 7) Cyberbullying; 8) Coping Skill; 9) Digital Literacy, and 10) Problem - Solving. (Nivedita & Singh, 2016; Sumitha & Jose, 2016; Ardhyani & Khoiri, 2017; Huda et al., 2017; Grundke et al., 2018; Blakemore & Agllias, 2020).

The MSPT application was a media to educate the users to behave well based on the social learning theory proposed by Albert Bandura. In this case, someone will try to change their behavior after observing others' behavior (Bandura, 1977). In this context, observations were made through the MSPT application which contains animated videos and some other educational information that demonstrates life skill behaviors such as how to be independent, communicate well, behave well, and be wise in using media. The target users of this application are teachers, parents, and students (Yarberry & Sims, 2021). For more details, the theoretical framework for this research can be seen in the following figure:

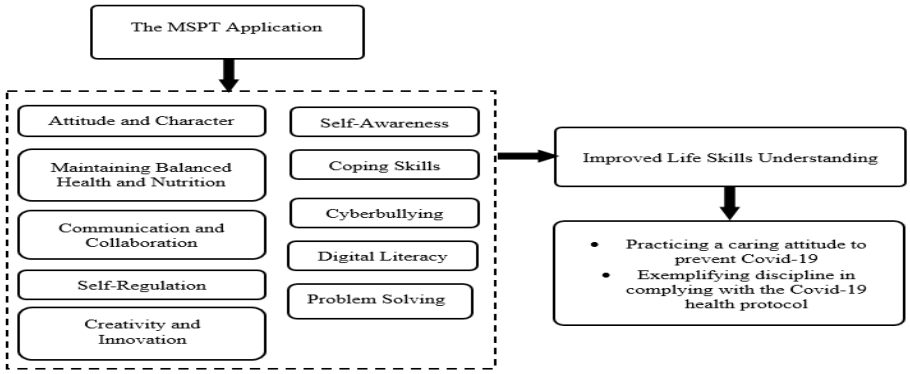

Figure 1
Theoretical framework

Research Aims

The aims of this study are 1) to develop an android application *(Mobile Smart Parenting Teacher)* as media to deliver information about life skill education facing limited face-to-face learning in Covid-19 era; 2) to assess the validation process of Mobile Smart Parenting Teacher as media in improving an understanding of life skill education; and 3) to assess the effectiveness of Mobile Smart Parenting Teacher application in assisting students, teachers, and parents in understanding the life skill education.

METHOD

Research Design

The main aim of this study was to develop life skill education-based Mobile Smart Parenting Teacher *(MSPT)* application model that can guide parents, teachers, and elementary school students to prevent the spread of Covid-19 . This study occupied Research and Development approach by adopting 4D development model introduced by Thiagarajan. The model consists of four stages: Defining, Designing, Developing, and Disseminating (Thiagarajan, 1974). There are a number of older studies focusing on a application development (Wirjawan et al., 2020; Ristanto et al., 2018; Putra et al., 2020). The study adopted 4D development model to develop an application. Therefore, it was considered as a viable model to develop life skills-based Mobile Smart Parenting Teacher *(MSPT)* application. The components of each stage are explained in Figure 2. The research procedure and development have two main goals that are 1) to develop the product and 2) to evaluate the product's effectiveness in achieving the targets (Borg & Gall, 2003).

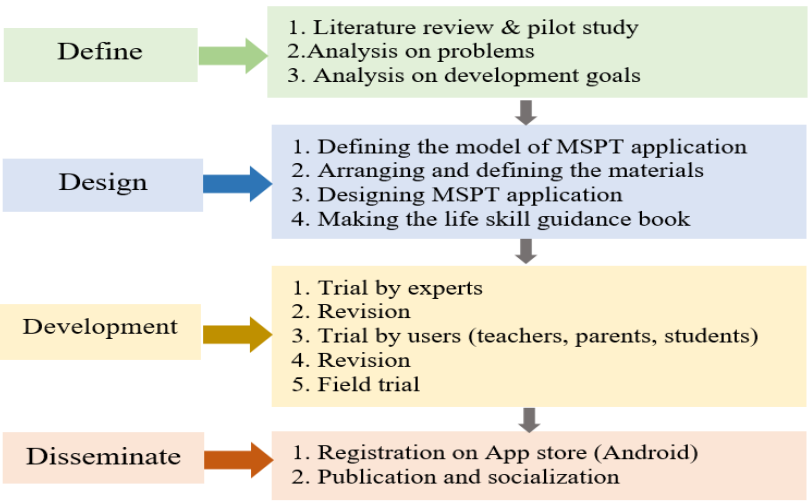

Figure 2.
Four phases of 4 D

Research Instruments

Before applying MSPT, the quality of the application was tested. The quality of the application was assessed by experts in information and technology and psychology in education and guidance, elementary school teachers, parents, and students selected using purposive sampling method. The revision was done after receiving input from experts and teachers through questionnaires. The questionnaire asked about 1) the validity of life skills theme concepts; 2) the accuracy of the life skills theme concepts; 3) the suitability between conversation about life skills and theme goals; 4) the easiness to understand the life skill themes; 5) the depth of life skill themes; 6) consistency and systematic of theme orders, and 7) the feasibility of illustration provided in conversation in each life skill themes. The questionnaire used the Likert scale 1 - 5 (1 - 2 - 3 - 4 - 5). Score 1 means that it is not appropriate/ not suitable/ not feasible. Score 2 means that it is less appropriate/ less suitability/ less feasible. Score 3 means quite appropriate/ quite suitable/ quite feasible. Score 4 means appropriate/ suitability/ feasible. Score 5 means very appropriate/ very suitable / very feasible. To convert the score to five scales, we used the converter guidance of quantitative data into qualitative data as presented in Table 1.

Table 1
Guidance to convert quantitative data to qualitative data of scores of each question item (Scale 5)

No	Formula to Determine Score Ranges	Calculation	Score Ranges	Categories
1	$Mi + 1.8SDi \leq X$	$4.21 \leq X$	4.21 – 5.00	Very Good
2	$Mi + 0.6SDi \leq X < Mi + 1.8SDi$	$3.40 \leq X < 4.21$	3.40 – 4.20	Good
3	$Mi - 0.6SDi \leq X < Mi + 0.6SDi$	$2.60 \leq X < 3.40$	2.60 –3.39	Fair
4	$Mi - 1.8SDi \leq X < Mi - 0.6SDi$	$1.79 \leq X < 2.60$	1.79 – 2.59	Bad
5	$X < Mi - 1.8SDi$	$X < 1.79$	1.00 – 1.78	Very Bad

X : average score of each aspect
Xi : 1/2 (maximum ideal score + minimum ideal score)
SDi = 1/6 (maximum ideal score - minimum ideal score)

The effectiveness of the MSPT application was measured using pre-test and posttest about parents, teachers, and students' understanding of the implementation of limited face-to-face learning. The tests measured ten life skills, including 1) Attitude and character; 2) Maintaining health and a balanced diet; 3) Communication and collaboration; 4) Self-regulation; 5) Creativity and innovation; 6) Self-awareness; 7) Cyberbullying; 8) Coping Skill; 9) Digital literacy, and 10) Problem - solving.

Data Analysis Technique

Data were analysed using descriptive statistics method based on average scores and standard deviation score of data from the evaluation performed by experts and users. Following that, the results of the analysis were interpreted. Average scores were interpreted according to the quality as classified in Table 1. The classification was based on the average ideal score (Xi) and ideal standard deviation (SDi). To calculate the difference between the respondents' understanding before and after using the MSPT

application, the N - gain score was calculated using the formula below (1). The interpretation criteria are presented in Table 2.

$$N - Gain = \frac{\%\ Posttest\ score - \%\ pretest\ score}{100 - \%\ pretest\ score} \quad \text{.....(1)}$$

Table 2
Criteria of N - Gain Score

N - Gain Score	Criteria
$g > 0.7$	High
$0.3 \leq g \leq 0.7$	Medium
$g < 0.3$	Low

FINDINGS AND DISCUSSION

This developmental study used the 4D model (*Define, Design, Development,* and *Disseminate)*. Results of each stage are explained below:

Defining Phase

Defining phase aimed to determine and define development criteria. In this step, we conducted a need analysis. In general, problems related to parenting teachers, life skills, and the need for a Mobile Smart Parenting Teacher were analyzed in this stage. The needs of teachers and parents were identified using a questionnaire. It measured parents' and teachers' understanding of life skills needed in the limited face-to-face learning. In this stage, the digital life skill content of the Android phone was also developed. Information related to parents' expectation and wish regarding the limited face-to-face learning was also sought. It was identified that parents and children did not need to worry, or panic and should always be optimistic that the spread of the virus can be prevented by obeying the health protocol. Parents needed mobile guidance that they, students, and teachers could use to create safe and comfortable limited face-to-face learning during the Covid-19 pandemic.

Designing Phase

This phase aimed to design the model of life skill - based MSPT application. It began by designing the waterfall model development method using steps: 1) *Engineering and Modeling System/Information,* 2) *Software Requirements Analysis*, 3) *Design.* 4) *Coding,* 5) *Testing,* and 6) *Maintenance*. After gathering data related to parents, teachers, and students who needed an application to provide information on how to interact the limited face-to-face learning at school, the steps were performed. Thus, the prototype of the application of life skill guidance on how to do interaction was developed. The guidance was made in digital form and integrated into Android smartphones. Parents, teachers, and students use smartphones daily, and the media can provide friendly visual material. The application was named Mobile Smart Parenting Teacher (MSPT), a digital life skill guidance. It contains ten life skills including 1) Attitude and character; 2) Maintaining health and balanced diet; 3) Communication and collaboration; 4) Self-regulation; 5) Creativity and innovation; 6) Self-awareness; 7)

Cyberbullying; 8) Coping Skill; 9) Digital literacy, and 10) Problem-solving. As a media to guide the interaction, each theme had components including purposes, concepts, story, and important message. Each theme was presented in texts, audios, and videos to accommodate the learning styles of teachers, parents, and especially elementary school students.

MSPT application allows parents, teachers, and students to choose a theme to guide them doing interaction by obeying the health protocol to prevent the spread of Covid-19. For example, Theme 1, Attitude and Character, aims to guide parents, teachers, and children/students to think positively when leaving their homes for school during the Covid-19 pandemic. The display of the Menu is shown in Figure 3 below:

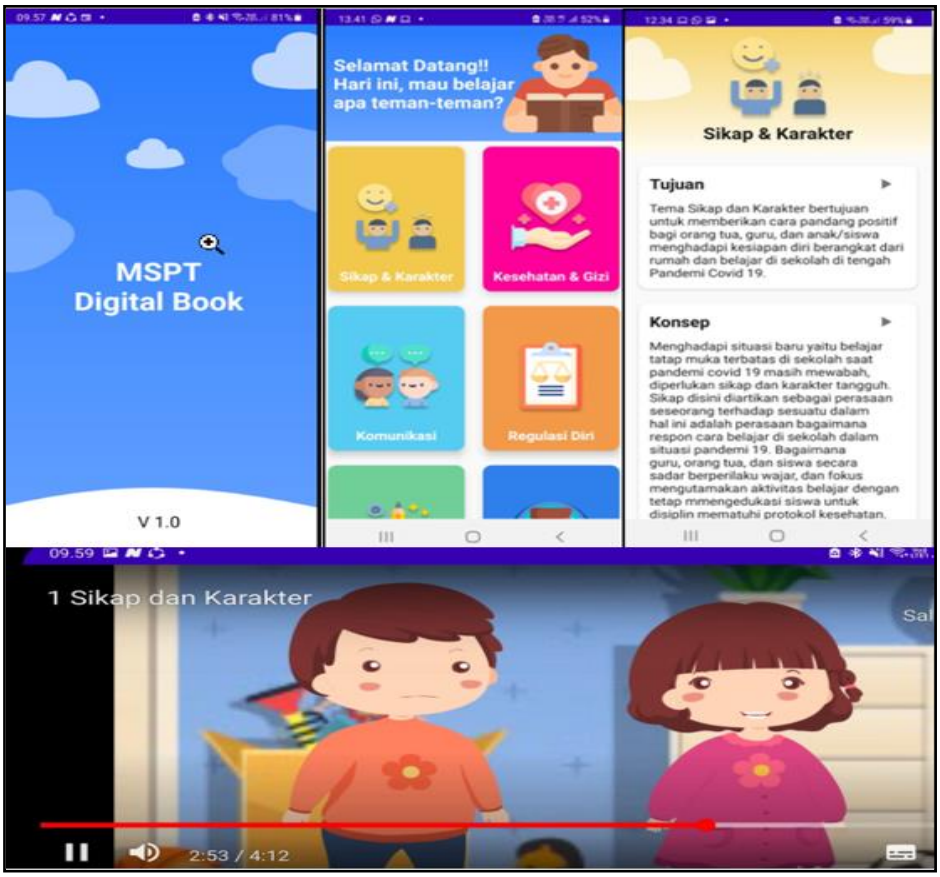

Figure 3
Display of menu of android based life skill themes

The figures above show the Menu of Themes and the Theme of Attitude and Character that can be chosen in order. The picture on the left shows the menus of the main themes

while the picture on the right is the theme of Attitude and Character containing Purposes and Concepts. Each theme has Purposes and Concepts which provide information about the target on how far the users should understand a theme. The figure below shows the menus of story and conversation videos:

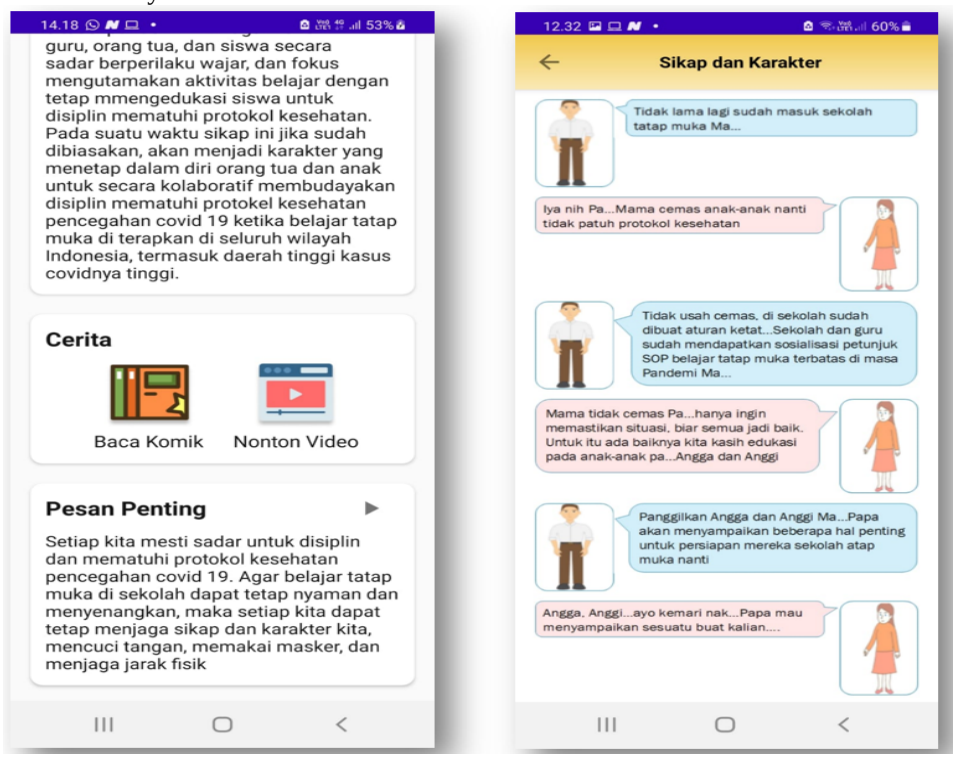

Figure 4
Display of MSPT menus of story and important messages

In the next step, a Menu of stories and an important message of a selected theme are presented. When we click the story menus and read a comic, the Menu will be switched to a comic with conversation. The conversation presents a practical understanding of how each theme should be introduced to students, teachers, and parents. It guides teachers, parents, and students to implement attitude and interaction under the Covid-19 health protocol.

Development Phase

The development phase of the study included the evaluation by experts (Information Technology and Psychology in Education and Learning), assessment by elementary school teachers, parents, and students, and field trial. The assessment conducted by the expert in Information Technology focused on seven aspects, namely: 1) functionality, 2)

reliability, 3) usability, 4) efficiency, 5) maintainability, and 6) portability. Qualitatively, the experts in information technology stated that:

1) The **Functionality** aspect of MSPT is very good in educating students/ children in following the limited face-to-face learning through their understanding of the life skills to obey the health protocol.
2) The **Reliability** aspect indicates that the MSPT is reliable enough to educate students/children to follow the limited face-to-face learning through their understanding of the life skills to obey the health protocol
3) The **Usability** aspect of MSPT shows that the media is friendly, easy, and not complicated to use in any condition.
4) The **Efficiency** aspect of MSPT indicates that the application can be used efficiently as it does need a long time to be accessed.
5) The **Maintainability** aspect of MSPT is good as it can be updated anytime to be renewed or developed as demanded.
6) The **Portability** aspect of MSPT allows the application to be used in any condition. Thus, it can be adapted to the learning environment of Elementary Schools, which are various in each region.

The assessment by experts focused on 1) the quality of life skill themes and 2) the quality of language. The quality of the theme includes: (1) the properness of the life skill theme concept, (2) the properness of selected life skill concept, (3) the suitability between life skills and the theme purpose, (4) the ease in choosing life skill themes, (5) the depth of life skill themes, (6) the consistency and systematics of theme orde, (7) the feasibility of illustration presented in conversation in each theme, and (8) the ease in understanding the important message in each theme. While aspects related to the language quality include: (1) the accuracy of language use in the theme, (2) the clarity of the language used in the theme, and (3) the ease of language used in the theme. The tabulation of scores from the assessment performed by the expert in Information Technology is presented in Table 3 below:

Table 3
Results of Assessment Done by Experts of Information Technology on MSPT Application

Aspects	Scores*	Criteria
Functionality	4.80	Very good
Reliability	4.25	Very good
Usability	5.00	Very good
Efficiency	4.33	Very good
Maintainability	4.60	Very good
Portability	4.80	Very good

** score interval: 1 - 5*

Limited trials were performed on three groups of users consisting of 45 parents, 45 teachers, and 45 students to measure their conceptual understanding of life skill values. The measurement was conducted using pretest before using the MSPT application and posttest at the end of the treatment. After conducting the pretest, the MSPT application was shared to parents, teachers, and students to be installed on their phones and used as the media to mediate the interaction model that should be applied during a limited face-to-face learning at school. Results the assessment by material experts are depicted in the following table:

Table 4
Results of validation by experts of life skill materials

No	Assessment Aspects Quality Aspects and Language of Life Skill Themes	Scores from Validators
1	properness of life skill theme concept	5
2	the properness of the life skill concept	4
3	the suitability between life skills and the theme's purpose	5
4	the ease in choosing life skill themes	5
5	the depth of life skill themes	4
6	The consistency and systematic of theme order	4
7	the feasibility of illustration presented in conversation in each theme	5
8	the ease in understanding the important message in each theme	5
	Quality of Language	
1	the accuracy of language use in the theme	4
2	the clarity of the language used in the theme	5
3	the ease of language used in the theme	5
Total Scores		51
Average		4.64
Percentage		92.7%
Criteria		Very Valid

Based on Table 4, analysis of the scores obtained from the experts of life skill material resulted in the value of 51 (92.7 %) with an average score of 4.64 (Very Valid). The criteria show that the material experts categorized the life skill content as good and can be presented in the digital form in the application and accessed as an android application. The next assessment was performed by users, including teachers, parents, and students. Results of the assessment by those groups are presented in Table 5 below:

Table 5
Results of validation of life skill materials by users

No	Assessment Aspects	Scores from Validators (Users)		
		Teachers	Parents	Students
1	properness of life skill theme concept	5	4	5
2	the properness of life skill concept	4	5	5
3	the suitability between life skills and the theme purpose	5	4	5
4	the ease to choose life skill themes	4	4	4
5	the depth of life skill themes	5	5	4
6	The consistency and systematic of theme order	4	5	5
7	the feasibilty of illustration presented in conversation in each theme	4	4	5
8	the ease to understand the important message in each theme	5	5	5
9	the clarity of the language used in the theme	4	5	5
10	the ease of language used in the theme	5	5	5
Total score		45	46	48
Average score		4.5	4.6	4.8
Percentage		90 %	92 %	96 %
Criteria		Very Valid		

Table 5 shows the results of the analysis of the scores obtained from validation performed by teachers, parents, and students. Assessment by 45 teachers shows a percentage of 90 with an average value of 4.5 (very valid). Evaluation performed by 46 parents shows a percentage of 92, and the average score was 4.5 (very valid). An assessment conducted by 48 students resulted in 96% with a mean score of 4.8 (very valid). The criteria show that the three groups of users, including teachers, parents, and students, considered the content of life skills good and can be used in digital life skills to provide it through the android application.

After a while, a post-test was conducted again by distributing similar instruments about the conceptual understanding of life skill values. Inferential statistical analysis was performed by calculating the N - gain score using equation (1), referring to the categorization of gain score in Table 2. The average scores of pretest and post-test evaluating the life skill values are presented in Figure 4. The score resulting from the limited trials on groups is 0.85. It indicates that students, teachers, and parents understood attitudes, responsibility, self-awareness, problem-solving, and other life skills related to attitudes obeying health protocols in interaction in the limited face-to-face learning at school.

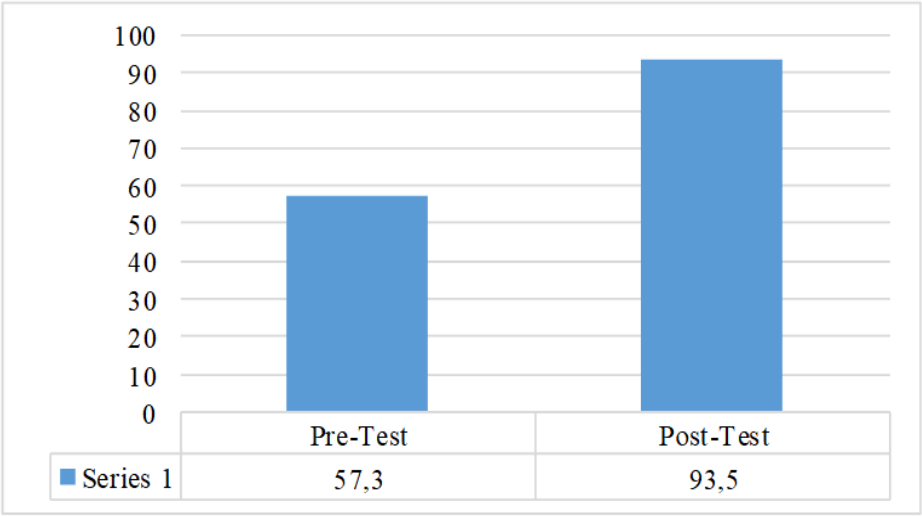

Figure 5
The result of pretest and posttest of understanding on life skill education

This study is in line with (Ahsani & Mulyani, 2020; Livari et al., 2020; Bahfen & Fitri, 2020; Velasco et al., 2022) discovering that many parents, teachers, and elementary school students need portable guidance that can be read or accessed anywhere and anytime when parents need to educate their children on social life skills they must have in learning during the Covid-19 pandemic. MSPT application is interesting for parents because the content is easy to understand, and can be accessed using a handphone. Furthermore, each character's information on each life skill theme has plots, like parents, including father and mother, teacher, and student or children. Each character plays a role in visualizing real life at home and school. Findings show that social life skills strongly influence how someone establishes their personal concept, collaboration, self-awareness, self-regulation, and coping skills for social interaction (Wati et al., 2020; Helwida et al., 2021; Kirchhoff & Keller, 2021). Besides that, interactive media, which loads messages on life skills, assist everyone to receive information as part of positive media literacy to run their life role as an individual (Bancin & Ambarita, 2019; Saravanakumar, 2020).

The statement emphasizes that elementary school students who were missing back school to study, and teachers and parents who were worried about the children studying at school for joining limited face-to-face learning could feel more optimistic due to the availability of applications that can educate students/ children on how to join the limited face-to-face learning at school during the Covid-19 pandemic era in the country as we know that children are the social group vulnerable to be infected with Vovid 19 virus because they have not had personal awareness, communication skill, personal regulation, and attitude to take a decision and problem-solving skills. Thus, they still need education from parents and teachers when they are at home or school attending limited face-to-face learning. Values discussed here refer to life skills that can form

children's characters to be disciplined and responsible in managing themselves to behave and socialize through Guided instructions and training (Dorji & Yangzome, 2018; Mugo, 2018; Behera, 2020).

The development of android based MSPT with life skill content used the theory of learning media. Android-based multimedia applies the media constructivism learning theory in the industrial revolution era of industry 4.0, which presents material contents in portable digital form that is easy to be updated anywhere and anytime using a smartphone. The smartphone was chosen as a learning media because it has some advantages like 1) it can connect between users (multi-users), 2) it provides access to an ebook that can be a reference used anytime and anywhere to inform useful content like life skill (Sam et al., 2017; Rather, 2019; David & Roberts, 2021). Besides that, the use of MSPT application as life skill learning application media is based on the theory of learning social by Albert Bandura that the learning process happens through observation and modeling others' behavior and attitude (Devi et al., 2017). Social learning in the family system will behaviorally form the attitude and become an external social stimulus to build the generation's character (Ainiyah, 2017; Yanto & Syaripah, 2017; Muali & Rohmatika, 2019).

The findings of this study are concepts and the application of technology for teachers, parents, and students in teaching disciplinary behavior related to the Covid-19 health protocol. Through the use of the MSPT application which contains educational information and life skills video, teachers, parents and students can be more discipline in keeping distance, using masks, and washing hands. These actions are based on health protocols to maintain a healthy lifestyle, and reduce risk of being exposed to Covid-19 both at home, and at school (Islam et al., 2021; Vandormael et al., 2021; Velasco et al., 2022). Being discipline in enforcing health protocols as shown in the MSPT video should be implemented in everyday life to cut the Covid-19 transmission. Likewise, social interactions, especially in the school, have returned to normal as in life before Covid-19 pandemic. Here, social media plays important role during a pandemic (Boonroungrut et al., 2022) such as MSPT application-based video media that contains messages to implement the concept of life skills into real life

CONCLUSION

The study developed a Mobile Smart Parenting Teacher (MSPT) which is an application providing life skill content about 1) Attitude and character; 2) Maintaining health and balanced diet; 3) Communication and collaboration; 4) Self-regulation; 5) Creativity and innovation; 6) Self-awareness; 7) Cyberbullying; 8) Coping Skill; 9) Digital literacy, and 10) Problem-solving. The MSPT application presents a simple dialog with language that is easy to be understood by teachers, parents, and especially elementary school students. Assessments were performed by experts in Information Technology (IT), Psychologist in Education and Guidance, users (teachers, parents, and students). The application is categorized as very good by the Information Technology expert and very valid by the material and users (teachers, parents, and students). A field trial was also performed on the limited group and based on the N - gain score analysis. The MSPT

application can build an understanding of values of life skills related to the discipline to comply with the Covid-19 spread prevention protocol in the limited face-to-face learning at school.

LIMITATIONS AND RECOMENDATIONS

The limitations of this study were the number of research participants and intervention process given to the research participants. This study only involved 45 parents, 45 teachers, and 45 students as research participants. In the further study, it is pivotal to increase the number of participants especially number of students, and it is important to involve secondary and senior high school students. The second limitation is in the intervention process. There was no control group involved in this study, and the further study needs a control group to obtain data for comparison.

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