

## Module to Support Independent Learning of Elementary School Students in the Pandemic Period

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**Abstract:** Lost learning during a pandemic causes students' learning outcomes to drop. An alternative solution to the child's learning problem is learning with modules. Learning modules suitable for elementary school students need to be developed. Therefore, the study aimed to: (1) Discover the condition of elementary school students learning during the pandemic period; (2) Investigate the importance of independent learning; (3) Examine the use of modules as a supporting tool; (4) Delivering module illustration that can be developed for students. Furthermore, this study used a qualitative method with a phenomenology approach, and elementary school students, parents, and teachers serve as informants. The data were collected by interview and document, using the citation technique known as snowball citation, while the data was analyzed using data triangulation. The following conclusions were drawn: (1) Students felt uncomfortable learning during the pandemic; (2) Independent learning was important for elementary school students; (3) All parents agreed that the module could facilitate independent learning during the pandemic period; (4) The module illustration developed for elementary school students was completed by examples or real-life application. In cooperation with relevant individuals, the learner can make the decisions necessary to meet their learning needs and comprises internal and external components. Reflective skills are a combination of the learner's cognitive, metacognitive, and affective abilities, which we will refer to as their "internal components." The learner's "external environment" refers to the learning facility, time available, and peer and facilitator interaction. It contained learning material, objectives, question model, and evaluation and was understandable, attractive, and pleasing to learn. Also, this was completed by video link, adapted to the learning needs, and contained character development.

**Keywords:** elementary school, independent learning, module, pandemic period.

## 疫情期间支持小学生自主学习的模块

**摘要：**在大流行期间失去学习会导致学生的学习成果下降。解决孩子学习问题的另一种方法是使用模块学习。需要开发适合小学生的学习模块。因此，本研究旨在：(1) 了解疫情期间小学生的学习情况；(2) 考察自主学习的重要性；(3) 检查模块作为辅助工具的使用；(4) 提供可以为小学生开发的模块插图。此外，本研究采用现象学方法的定性方法，小学生、家长和教师作为信息提供者。数据是通过访谈和文件收集的，使用称为滚雪球引文的引文技术，而数据则使用数据三角剖分进行分析。得出以下结论：(1) 学生在疫情期间感到学习不舒服；(2) 自主学习对小学生很重要；(3) 全体家长一致认为该模块可促进疫情期间的自主学习；(4) 为小学生开发的模块图解，通过实例或实际应用完成。与相关个人合作，学习者可以做出必要的决定以满足他们的学习需求，并且包括内部和外部组件。反思技能是学习者的认知、元认知和情感能力的组合，我们将其称为它们的“内部成分”。学习者的“外部环境”是指学习设施、可用时间以及同伴和辅导员的互动。它包含学习材料、目标、问题模型和评估，并且易于理解、有吸引力和令人愉快的学习。此外，这是通过视频链接完成的，适应学习需要，并包含角色发展。

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**关键词：**小学，自主学习，模块，大流行时期。

## 1. Introduction

In developed nations, education is reflected, generating human resources that build their country. According to Dewi & Primayana [3], ideally, education does not just encourage students to develop talents adapted to the knowledge gained in schools, but education also aims to improve human quality. According to Law Number 20 of 2003, qualified human beings are faithful and fearful of God Almighty, noble, personable, independent, with advanced character, tough, smart, creative, skilled, disciplined, with work ethic, professional, responsible, productive, and physically and mentally healthy.

Learning is the primary process of education, and experts have presented numerous definitions of learning. For example, Gagne in [4] argued that learning is a process in which an organization changes its behavior due to experience. According to this definition, someone who learns is reflected in behavior change before and after the learning experience.

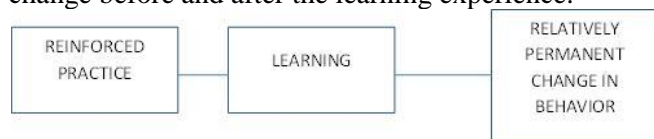


Fig. 1 Learning events according to Gagne [1]

Independent learning is an active learning activity forced by a motivation to master a competence and built by initial knowledge or competence [5]. Nguyen Gia Cau mentioned, "Self-learning is a process of self-actualizing knowledge acquisition and skills training without the guidance of teachers and the control of educational and training institutions" [6]. Nagpal et al. in [7] conveys about the definition of independent learning. It is a process, method, and educational philosophy, in which a student acquires knowledge with their efforts and develops the capacity for critical inquiry and evaluation.

The definition is relevant to the constructivism learning theory. According to the constructivism paradigm [5], using initial knowledge to obtain the new one is a learning principle. Therefore, this is a foundation of independent learning because the success is determined by how far the learner has relevant knowledge as initial basic to get the new one due to the stimulus of the accepted new information. The new information can be obtained from the teacher, others, or other learning sources.

Mujiman [5] stated that the objective of independent learning could be achieved by an active learning strategy, which is principally characterized by active learners' qualities. In several learning models, an active learning strategy can be combined with a completed

learning strategy. This approach aims to master learning material or competency suitable for an individual learner's capability.

Active learning is an appropriate strategy for achieving independent learning objectives since the learning activity is natural, creating happiness without force, resulting in a stress-free learning environment, and allowing the achievement of learning objectives. For active learning, motivation is a requirement fulfilled and developed first.

According to Mujiman [5], there are six particular activities in independent learning: (1) Learning objective determination; (2) Learning success evaluation; (3) Reflection process during independent learning; (4) Reviewing experience; (5) Strong learning motivation; (6) Active learning. Their achievement determines the learning success.

During the pandemic era, learning material is a recommended strategy. Furthermore, Covid-19 has recently spread worldwide, including in Indonesia, and this has caused uncontrollable victims. According to the information from wikipedia.org, retrieved on September 10, 2021, the first positive case in Indonesia was identified on March 2, 2020, with verifying two infected persons by the Japanese. On April 9, 2020, the pandemic spread to 34 provinces, with DKI Jakarta, West Java, and Central Java being the most infected areas in Indonesia with SARS-CoV-2 [8].

By September 9, 2021, Indonesia has reported 4,153,355 positive cases making this country the first rank of most cases in Southeast Asia. In case of death, Indonesia was the third rank of most death in Asia. However, the death number was predicted to be much higher than the data reported due to the uncounted deaths because of acute Covid-19 symptoms not confirmed or tested. Meanwhile, it was announced that 3,887,410 people had recovered, while the remaining 127,829 cases were being treated. The Indonesian government has tested 22,661,808 people from a total 269 million of citizens, meaning only 84,056 people per million citizens were tested.

In response to the pandemic, several regions implemented big-scale social limitations (PSBB) in 2020. However, this policy was replaced by implementing social activity limitation (PPKM) in 2021.

Implementing both social limitations of PSBB and PPKM was a way to prevent the spread of Covid-19, followed by long-distance learning (PJJ). It is hoped that all educational institutions will not carry out activities as usual. This can diminish the spread of Covid-19. The same has been done by various countries exposed to this disease, with lockdown or

quarantine policies carried out to reduce the interaction of many people, which can increase the spread of the Covid-19 [9].

Students studied at home and not at school through synchronized and not-synchronized online media, while parents had to oblige the rule of work from home (WFH). The change in the learning and working created uncomfortable conditions. Hence, many students and parents experienced considerable stress. Brown [10] reported that greater COVID-19-related stressors, high anxiety, and depressive symptoms are associated with higher perceived parental stress. This is reinforced by research results in [11] that parents' stress level in accompanying their children in learning is 75.34 percent in the moderate category and 10.31 percent in the high category.

The coronavirus pandemic has put heavy pressure on groups of society who live in poverty. When teaching and learning activities cannot be face-to-face, children from low-income families do not have the facilities to access digital learning. Indigent parents have difficulties affording cellular credits, let alone buying internet data plans. Since the middle of 2020, the ministry of education has distributed subsidies in the form of internet data plans. However, it was not a sufficient answer to the problems of online education [12]. In addition, there is data that conveys the existence of lost learning among elementary school students after a long time they do not learn face-to-face.

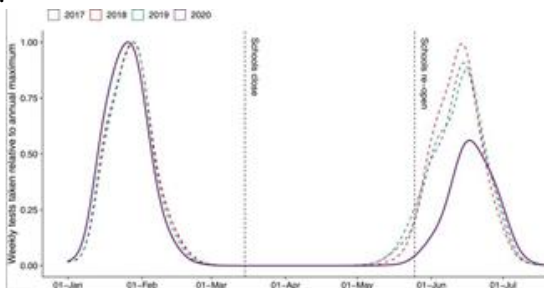


Fig. 2 Learning loss due to school closures during the COVID-19 pandemic [2]

Fig. 2 shows the distribution of testing dates 2017-2020 and timeline of 2020 school closures. Density curves show the distribution of testing dates for national standardized assessments in 2020 and the three comparison years, 2017-2019. Vertical lines show the beginning and end of nationwide school closures in 2020. Schools closed nationally on March 16 and reopened on May 11 after 8 wk. of remote learning. Our difference-in-differences design compares learning progress between the two testing dates in 2020 to that in the three previous years [2].

Therefore, a strategy was needed to make the children feel comfortable learning, and parents could work. One of such ways is the learning module. The module is an alternative to learning material that can be developed. Sukirman in [13] said that the module is a package of programs for the study that covers

materials, methods, and evaluation that can be used independently. Likewise, Rufii in [14] said that the module is the one medium that can make students work independently. According to Daryanto [15], the module is one of the learning materials covered systematically and orderly, containing a range of planned learning experiences designed to assist students in mastering specific learning objectives. Daryanto [15] also said that a module has the following characteristics: (1) Self-instruction allowing someone to learn independently; (2) Self-containment, which means the entire material is summarized in the module; (3) Standing alone, showing independence from other learning material and not using together with other learning material; (4) Adaptivity, which means that it can be adapted to the development of knowledge and technology and is flexible to use on various hardware; (5) User-friendliness, which means that each instruction and presentation of the material is designed to assist the user. Additionally, the module is practical because each content summary has been presented. A module contains several learning activities which students must complete in a certain period. At the end of each learning activity, there is feedback and the following action [16]. Furthermore, learning by using a module is the best way to understand the material.

According to [17], the module has many advantages, which include: (1) Making it clear and easy to present no verbal messages; (2) Solving limited time, space, and senses for students; (3) Can be used properly and variedly; (d) Increasing students motivation and spirit for learning; (5) Developing students' competence in having direct interaction with the environment and other learning sources; (6) Allowing students to learn independently based on their competence and passion; (7) Allowing students to measure or evaluate their learning achievement.

The characteristics of users must be considered when developing the module. Modules for kindergarten, elementary school, junior high, senior high, and higher education students are different. Hence, a module for elementary school students must be adapted to their specific requirements because they are usually aged 6-12. Piaget in [18] stated that they have characteristics from final pre-operation, concrete operation, and initial formal operation.

According to Montessori [19], the age of 6-12 is a good time to enter elementary school because experience teaches us that, at this time, children can adapt to the mental work system demanded by the school, they can understand the teacher's intentions and are quite patient in listening and learning.

Furthermore, based on psychosocial development, elementary school enrollment helps children develop thinking and acting abilities and a more complex social attitude. In this era, children are egocentric or focus on themselves and begin to have self-confidence and self-inferiority. The lower-class elementary students begin

to try to demonstrate their maturity. They feel that they can do the assignment themselves. Therefore, this stage is called "I can do it myself." During this period, they become able to complete the assignment themselves. For the upper-class elementary students, the concentration level begins to grow. They can spare more time to complete the tasks they choose with a pleasant feeling. Also, this stage promotes independent action, group cooperation, and acting acceptably in their environment. Additionally, they begin to care about the fair games, and during this stage, they begin to assess themselves by comparison with others. Therefore, these students grow continuously and use social comparison to evaluate and assess their abilities.

The upper-class elementary school students seem to be more mature because of physical and cognitive structure changes. They want to be treated as adults, and there are significant differences in their social and emotional life. In addition, they believe that becoming a part of a group will make them more valued. As a result, not being accepted might cause significant emotional issues since their friends are essential to them. Therefore, acceptance from peers and friendship are critical.

According to Arrow [20], elementary school students like to play, and this characteristic requires the planning of learning models that allow for games. Play-based learning helps engage elementary students in their education and has cognitive, physical, social, and emotional benefits. However, this developed model should be both serious and enjoyable.

According to the elaboration above, producing a module for students throughout the pandemic to make them happy is extremely important.

## 2. Methodology

This was a qualitative study that used a phenomenology approach. According to Creswell [21], the qualitative study method explored meaning derived from social problems and humanity. The study process involved important efforts such as asking questions and procedures, collecting specific data from the participants, analyzing data inductively, from specific to broad themes, and interpreting the meaningful data. Riessman in [21] stated that phenomenology was a research design derived from philosophy and psychology, where the researcher described human life experience concerning such a phenomenon as explained by the participants. This description came to the core of several individuals undergoing the phenomenon. [22] says that, in phenomenological research, informants are encouraged to tell their own stories or life journeys in their own words. In other words, participants are considered experienced experts.

The present study subjects were students, parents, and teachers of an elementary school in the Solo Raya area. Meanwhile, the informants as data sources were determined using the snowball citation technique,

which was a citation technique in which the data source increased through time. Furthermore, interviews and documents were used to collect data. The interview was conducted with the students of elementary school, their parents, and teachers. Also, students' interviews were used to get information about their learning conditions during the pandemic era. Meanwhile, the interview for parents was used to get information about (1) the learning condition of elementary school students during the pandemic era, (2) the importance of independent learning for students, (3) the use of the module to facilitate independent learning of the students, and (4) the module illustration which could be developed for elementary school students. Additionally, the teachers' interview was used to get information about the module illustration to be developed for students. The document technique was performed by taking data concerning students' and parents' stress during pandemics from online media.

Subsequently, the data were analyzed using data triangulation, in which the data collected from the different data sources were checked and rechecked to get a general conclusion.

## 3. Result

The data showing students' and parents' stress levels during the pandemic were obtained from online media and presented the results of the interviews with elementary students, parents, and teachers.

From the data results, the stress of both students and parents was worrying. This was supported by the result of the interview with elementary school students and their parents.

From the results of interviews with children and parents, information can be obtained about the learning conditions of elementary school students during the pandemic. Most students are not comfortable studying for different reasons: tiredness from staring at the screen, noise in Zoom meetings, no friends, lack of ability to catch lessons, signal interference, piled-up tasks, lack of concentration, boredom, tiredness, and temptation to play games or watch movies on YouTube on a cellphone or laptop.

While extracting information about the importance of independent learning for elementary school students, interviews were conducted with the parents of the students. According to them, independent learning is needed by elementary school students because it will help children have a sense of responsibility in fulfilling their obligations; parents do not need to spend much time accompanying children to learn; habituation to independent learning since childhood will be useful in the future, as all parents agree, if the module is used as a means of independent learning for elementary school students, including during the pandemic. From the interviews with teachers, there is reinforcement about the use of modules for more independent learning at home for students, especially when it comes to distance

learning. Modules can be read and studied repeatedly and done at any time at home to help students understand the learning material [33]. For teachers, the module can facilitate assignments because it is already available in the module and makes it easier for teachers to teach material and monitor student abilities.

The description of the modules that can be developed for elementary school students is obtained from interviews with parents and elementary school teachers. According to the results of these interviews, it is a learning module accompanied by examples or applications in everyday life; there are clear instructions on activities that students must do, learning materials and objectives, model questions, practice questions that are adequate but not too many so that students are not bored, interactive and interesting material easy to understand and fun to learn (colors, not too small fonts, interesting pictures, game interludes, interesting displays), video links which can be scanned so that it can be studied through other learning media, according to lessons and learning needs and raising awareness of good behavior (character education).

#### 4. Discussion

Life was abnormal during the pandemic era because students could not study at school while parents had to work from home as they did every day. Study- and work-from-home regulations for students and parents to prevent the spread of the pandemic must be obeyed by society. Therefore, students must study using long-distance learning. The type of learning was done by using the gadget. However, they faced signal trouble that disturbed learning. As a result, students did not understand the learning material. Parents who worked from home had an additional duty of guiding their children in learning. This went on for a long time and increased the stress levels of children and parents. This condition should not be ignored and must be solved immediately.

Using gadgets by children for learning also had another unexpected impact: children are tempted to play games or watch movies on YouTube, where they can not necessarily filter out which ones can be seen and which ones cannot be seen. This usually makes children fall into harmful content that displays pornography or porn action; these contents are very dangerous for children's character education. Of course, a solution like this must be found immediately. Children should not be allowed to linger with gadgets. Children should be protected from the effects of excessive use of gadgets, especially for their growth and development [23]. In addition, children who use gadgets from time to time from the specified time limit make them addicted and less sensitive to the surrounding environment [24].

In this emergency condition, a safe learning strategy is needed for children, and children can learn in a conducive manner. Independent learning, whose

activities are in the form of self-study at home, is the right choice. Independent learning for elementary school students can be trained. They are trained to be responsible for their learning activities. Independent learning is an activity that has the characteristics of active learning and high motivation. Students need to be encouraged to be active in learning. Active learning can be in searching for learning resources needed to do assignments. Elementary school students need teachers' and parents' guidance in learning because independence has not developed yet. The assignment given should not be very complicated but challenging and enjoyable.

Independent learning must be developed to achieve optimum study results at home. Ideally, independent learning should have begun when students enroll in formal education and should have continued throughout their role in the community, and this reflected long-life education.

Parents agreed that their children must be independent learners as young as possible. The independent learners would be responsible, and parents were not to be disturbed about guiding their children's learning. Therefore, independent learning was useful for their future.

Parents stated that the recommended independent learning facility was a learning module that could be used safely and anytime to study. The module must be suitable for elementary school students' character. Therefore, the following was suggested by parents and teachers as a suitable module for elementary school students:

1. Learning modules should be completed with examples of real-life applications. This was important so that the students easily understood the material related to their daily life. Elementary school children more easily understand the tangible objects around them. This approach is called Contextual Teaching and Learning (CTL). According to Yuwandra and Arnawa [25], the CTL approach can improve students' ability to understand concepts and solve problems so that learning outcomes can improve;

2. It contained learning material and aimed at explaining material concepts that the students should understand. The material presented starts from a simple one clarified with pictures. This conforms to the theory of learning conveyed by Piaget that, at the stage of concrete surgery (ages of 7-11), they can understand logical operations with the help of concrete objects, in the book can be presented with pictures [26];

3. There were learning objectives that were delivered so that the students were motivated and knew the reason for learning the module. [27] stated that the purpose of learning is a clear declaration and shows the appearance or skills of students that can be achieved in learning activities;

4. There was a question model which was useful for students to complete the exercise, especially the mathematic module so that students could



independently finish their tasks;

5. There was an exercise that was useful for students to test their competence in solving problems easily;

6. The module was understandable, and the language used was suitable for children and was completed with pictures to make the concept clearer;

7. The module was attractive and pleasing to study. The module was printed in full color, with not too small font, compiled with interesting pictures and an attractive layout. This may be completed with games to make it more interesting. Games are fun activities [28-31]. Children will feel happy and cheerful when playing and after playing, so it can impact the next activity. The presentation of the game in the learning module can be in the form of guessing words, guessing numbers, mazes, coloring, and others;

8. There must be a video link, which could be scanned and studied by using other learning media to prevent boredom;

9. It was suitable for learning material and needs at school. The material in the learning module must certainly be adjusted to the school curriculum so that it strengthens learning in school;

10. There should be character development, which must be effective throughout the elementary school years. As a result, the module must include character development to motivate students to have a good attitude. The development of character education is very strategic for the sustainability and excellence of the nation in the future. Such development must be done with good planning, appropriate approaches, and effective learning and learning methods [32]. For example, in the learning module, character education could be delivered in quotes, pictures, or interesting stories.

## 5. Conclusion

This study came to the following conclusions: (1) Students felt uncomfortable learning during the pandemic for different reasons; (2) Parents stated that independent learning was important for elementary school students because it helps them take responsibility for completing their obligation. Therefore, they did not need to spare their time to guide their children in learning, which resulted in a good habit of preparing for their future; (3) Every parent agreed that the module could support independent learning in the pandemic period; (4) The module illustration created for elementary school students included learning material, objectives, question model; the evaluation was understandable, attractive, pleasing to learn, completed by video link, adapted to the learning needs, and contained character development. Through observations, surveys, and focus groups, this study provides insight into appropriate educational techniques promoting the internal aspects of independent learning, including cognitive abilities (creativity and critical thinking), metacognitive skills

(ability to reflect on the learning process), and affective abilities (adaptive creativity). Giving the students independence to decide on their research project promoted creativity via a sense of ownership of the learning process. Incorporating assessment criteria that formally reward creativity also played a crucial influence. In a facilitative position, the supervisor fostered critical thinking amongst the kids, which is limited to primary education only from the third to fourth grade.

Several suggestions can be given from the results of this study: (1) Attention from the government and education practitioners about the discomfort of elementary school-age children in learning in the pandemic period; (2) Efforts from teachers and parents to motivate elementary school children to learn independently; (3) Encouraging teachers and other education practitioners to compile learning modules for elementary school-aged children.

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