



Strengthening Learning Based on Independent Learning to Overcome Learning Loss During The Pandemic Covid-19 at Senior High School 1 Simo

Laily Nur Yustiana^{1*} and Harsono Harsono²

^{1,2} Accounting Education, Faculty of Teacher Training and Education, Universitas Muhammadiyah Surakarta, Indonesia

* a210190117@student.ums.ac.id

Abstract. This study aims to analyze the strengthening of independent learning-based learning to overcome learning loss. Based on the problem formulation and the right type of research is quantitative, the research design is a census. With non-probability sampling techniques, the sample is saturated or equal to the total population. The object of the study was grade X students of SHS 1 Simo for the 2022 school year, as many as 358 students. The data collection instrument is in the form of a questionnaire, which is disseminated through a google form. Data measurement using likert scale, data analysis using outer model and inner model on SmartPLS 3.0. Through differentiated learning from independent learning. So, the results of this study are (1) Learning content has a positive and significant effect in overcoming learning loss with a T-statistics value of 4,496 (2) The process of learning activities has a positive and significant effect in overcoming learning loss with a T-statistics value of 6,760, (3) and the product has a positive and significant effect in overcoming learning loss with a T-statistics value of 5,492. The results of this study show that strengthening learning based on independent learning to overcome learning loss has a positive and significant effect in overcoming learning loss. From direct effect analysis, it was found that the product has a greater direct influence which is 0.385 compared to the direct influence of process and content of 0.330 and 0.214 in overcoming learning loss.

Keywords: Freedom of learning, Learning loss, Process

1 Introductions

The global threat caused by the coronavirus (CoV) has been declared a pandemic by the international health agency as COVID-19 [1]. The COVID-19 pandemic situation has an impact on all aspects of human activity globally[2]. The education sector has suffered greatly due to the impact of the COVID-19 pandemic. Many schools around the world have decided to close to break the chain of transmission of COVID-19 [3]. This raises many pros and cons. Parents duties apart from taking care of the household and working are now required to supervise children studying at home [4]. In addition, closing schools will also increase dropout rates, lose interest in childrens studies, and increase crime. According to [5] the impact of school closures due to COVID-19 has had a major impact on children and parents. To anticipate unwanted events, educators and students can take advantage of technology and technology platforms. Learning

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during a pandemic can be carried out through virtual meetings, webinars and electronic conferences [6]. This requires facilities such as internet network and electrical installation [7].

The teacher is an important element in education and the implementation of learning [8]. Teachers also have an important role in collaborative learning [9]. With collaborative learning can improve communication, students can learn from each other. However, competence is difficult to build during online learning. As in research [10] there are obstacles in the online learning process, including practicums that are not optimal and the network is unstable. As well as the facilities owned by each individual are inadequate and the learning methods are not appropriate. According to [11] online learning has a positive influence, namely online learning is feasible, inexpensive and can be utilized. Online learning that takes too long creates new problems such as decreased student interest in learning. Although in research [12] that online learning supports independent learning. According to [13] High and quality learning achievement can be produced from a quality learning process.

Inappropriate learning methods will certainly reduce the quality of the learning process to a decrease in student achievement. Especially regarding the decline in student interest in learning, which will affect their knowledge and learning outcomes. Even though interest in learning is a very important aspect of learning [14]. There are three important aspects that can increase and encourage student interest in learning are the intensity of goals, learning, and high curiosity. Someone who has high attention and curiosity about something, usually there is an interest in wanting to know it more deeply [15]. According to [16] in his research estimated that closing schools for just three months could lead to a year's loss of learning. The potential for learning loss or often referred to as learning loss will be even greater. Learning loss is the loss of knowledge and skills in students both specifically and in general and can occur in the short or long term [17]. The lack of interaction is as a result of learning loss both interactions with teachers, friends, and the surrounding environment as well as teacher competence or expertise that is still not optimal [18]. This can also occur due to disruption of the learning process from face to face to online learning [19]. According to [20] effective learning is by carrying out three phases, namely: before class, during class, and after class.

Curriculum and learning plans according to [21] teachers and principals are two elements in realizing the successful implementation of the curriculum. It is difficult if in an emergency situation you have to achieve all the basic competencies, the possibility that what will happen is a gap. The independent curriculum is a government solution that was developed from the 2013 curriculum. By looking at the perspective of students' interests and talents and aiming to provide educational convenience in managing learning [22]. With the aim of connecting learning materials with the development of student character [23]. Indonesia has experienced a learning crisis for quite a long time since the COVID-19 pandemic [24]. This causes children in Indonesia to lose knowledge and skills. For that we need a curriculum that is simple, flexible, easy to understand and implement in order to create an innovative learning culture [25]. Freedom to learn is part of the new policy set by the Kemendikbud RI. The meaning of independent learning itself shows an ability, freedom, and empowerment in achieving happiness which has the aim of returning the management authority of education which is manifested in the form of flexibility in schools and local government.

Differentiated learning becomes a teaching and learning method that allows students to get subject matter according to the abilities, interests and needs of each individual. Differentiated learning according to [26] teachers do not only have one way, strategy or method in teaching and learning activities. This is so that the material is easily conveyed and in accordance with the learning profile of students. There are three aspects in differentiated learning, namely the content aspect to be taught, the process aspect or the activities of students in class, and the third aspect is an assessment in the form of making a product which is carried out at the end which is able to measure the achievement of learning objectives. Each element in learning content, processes, and products can be differentiated based on learning readiness, interests, and/or learning profiles of students that are different from one another. According to [27] the application of student learning styles in the aspect of differentiated content includes Student Activity Sheets, reading materials, videos, charts, as well as curves and graphs. Changes in the learning process during pandemic conditions, and the implementation of online learning, have caused learning loss for students. Of course, simplification and improvement of the curriculum is necessary as a result of the COVID-19 pandemic, the teaching system will change according to the current situation and needs.

Learning based on independent learning has been implemented by schools to improve the condition of students at this time. So that researchers are interested in researching directly about strengthening learning based on independent learning at SHS 1 Simo. For this reason, the researcher chose the title "Strengthening Independent Learning-Based Learning to Overcome Learning Loss in Senior High School 1 Simo". The purpose of this research is to analyze whether differentiated learning can overcome learning loss, whether strengthening learning based on independent learning can overcome learning loss. Many studies have been conducted related to differentiated learning, including the results of research there is a discrepancy between the application in differentiation learning with the teacher's perception by [28]. Study [29] demonstrated that differentiated learning is affected by the number of professional development hours. Research results by [30] the level of students' critical thinking skills is better with differentiated learning than students who receive ordinary learning. Learning feels more fun and is able to shape the character of students according to the Al-Quran and Hadith. Based on research [31] there are learning styles or profiles of class IX students, namely audio, visual, and kinesthetic. This is the teacher's consideration in choosing student learning content. The results of research [32] show that differentiated learning can increase students' enthusiasm in doing reflection on religious lessons.

2 Method

In this study, researchers used a quantitative approach with a descriptive design.. This research was carried out within two months. The population used is students of class X SHS 1 Simo. The amount of samples in this study was 358 samples using non-probability sampling techniques, namely saturated samples or equal to the total population. The data collection method used in this study was a questionnaire in the form of a google form.

This study uses likert scale as a research instrument. Data analysis techniques using SmartPLS 3.0 software consist of evaluating the outer model and inner model.

Evaluation of the outer model has a validity and reliability test stage. By taking into account individual item reliability, internal consistency or construct reliability, average variance extracted (AVE), internal consistency reliability of Cronbach's Alpha and Composite Reliability (CR) values. While hypothesis testing is done with Path coefficient, T-statistic, and R-squared value.

3 Results

The results of the analysis describe the data used in the study. In testing this data description, researchers try to analyze the condition of respondents who are sampled in this study. With endogenous variables namely content (X1), process (X2), product (X3). And the endogenous variable of this study is learning loss (Y). The main aim of this study is analyze the strengthening of independent learning-based learning to overcome learning loss during the COVID-19 pandemic at SHS 1 Simo. With the object of research as many as 358 students. Data collection is carried out by distributing questionnaires through google forms and testing data using the help of the SmartPLS 3.0 program.

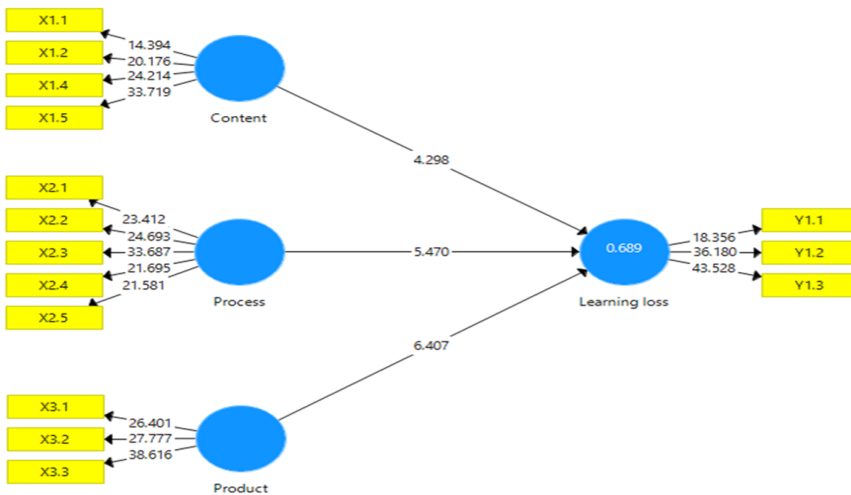


Fig. 1. Ouput T-Statistic

From the figure above, a research model was formed along with the results of significant numbers from the bootstrapping results and it has been confirmed that the loading factor value meets the criteria, so the next step is to conduct an outer model analysis and inner model to get a deeper understanding and seek the T-statistic value for hypothesis testing.

Table 1. Outer loading

Variable	Content	Learning loss	Product	Process	Description
X1.1	0,745				Valid
X1.2	0,730				Valid
X1.4	0,764				Valid
X1.5	0,794				Valid
X2.1				0,733	Valid
X2.2				0,775	Valid
X2.3				0,834	Valid
X2.4				0,728	Valid
X2.5				0,733	Valid
X3.1			0,786		Valid
X3.2			0,822		Valid
X3.3			0,821		Valid
Y1.1		0,728			Valid
Y1.2		0,825			Valid
Y1.3		0,850			Valid

Based on the table outer loadings above shows that all indicators have an outer loading value of ≥ 0.7 . This means that the indicator can be said to be valid for measuring its construct. In the content variable, there are 5 indicators that have a loading factor value of > 0.7 . In the learning loss variable, there are 5 indicators that have a loading factor value of < 0.7 . And in the product variable, there are 3 indicators that have a loading factor value of < 0.7 . And in the process variable, there are 3 indicators that have a loading factor of < 0.7 .

Table 2. Validity Test

Variable	<i>Cronbach's Alpha</i>	<i>rho_A</i>	<i>Composite Reliability (CR)</i>	<i>Average Variance Extracted (AVE)</i>
Content	0,758	0,767	0,844	0,576
Learning loss	0,722	0,730	0,844	0,644
Product	0,738	0,743	0,851	0,656
Process	0,819	0,820	0,873	0,580

Convergent validity or test the validity of the data is measured through the value of Average Variance Extracted (AVE), by looking at the Average Variance Extracted (AVE) table it is known that all constructs have AVE values greater than 0.5. That is, the above indicators have good convergent validity or latent variables can explain on average more than half the variance of the indicators. And it can be said that the

indicator is valid. All constructs have Cronbach's Alpha and Composite Reliability (CR) values greater than 0.7. This means that latent variables have good reliability or reliability and are consistent in measuring their constructs.

Table 3. Discriminant validity

Variable	Content	Learning loss	Product	Process
X1.1	0,745	0,429	0,396	0,508
X1.2	0,730	0,469	0,419	0,513
X1.4	0,764	0,574	0,578	0,569
X1.5	0,794	0,616	0,490	0,633
X2.1	0,543	0,613	0,588	0,733
X2.2	0,511	0,521	0,489	0,775
X2.3	0,563	0,575	0,523	0,834
X2.4	0,648	0,642	0,497	0,728
X2.5	0,525	0,507	0,574	0,733
X3.1	0,423	0,568	0,786	0,536
X3.2	0,466	0,580	0,822	0,570
X3.3	0,621	0,669	0,821	0,597
Y1.1	0,433	0,728	0,572	0,567
Y1.2	0,625	0,825	0,644	0,607
Y1.3	0,613	0,850	0,593	0,651

On the table cross loadings table above, All indicators have a higher correlation value than the correlation value in other blocks. Therefore, each indicator in the block is really an integral part of that construct, or in other words, it has strong discriminant validity.

Table 4. R-Square

Variable	<i>R Square</i>	<i>R Square Adjusted</i>
Learning loss	0,689	0,687

Learning loss variable has an R Square value of 0.689 (68.9%). This shows that the variables of content, process, and product give an influence value in overcoming learning loss of 68.9%. In other words, exogenous variables of content, processes and projects are close to perfect in predicting learning loss variables.

Table 5. Path Coefficient

Variabel	<i>Original Sample (O)</i>	<i>Sample Mean (M)</i>	<i>Standard Deviation (STDEV)</i>	<i>T Statistics (O/STDEV)</i>	<i>P Values</i>
Content -> Learning loss	0,214	0,215	0,048	4,496	0,000
Product -> Learning loss	0,385	0,384	0,057	6,760	0,000
Process -> Learning loss	0,330	0,331	0,060	5,492	0,000

From the path coefficient table above, the magnitude of the hypothesis value can be seen in the T-statistics column, namely:

1. The first accepted hypothesis shows that the T-statistic value of $4.496 \geq 1.96$ or the P-value of $0.000 \leq 0.05$ then H1 is accepted, so it can be concluded that the content has a positive and significant effect in overcoming learning loss.
2. The second hypothesis shows that the T-statistic value of $6.760 \geq 1.96$ or the P-value of $0.000 \leq 0.05$ then H2 is accepted, so it can be concluded that the process has a positive and significant effect in overcoming learning loss.
3. And the third hypothesis shows that the T-statistic value of $5.492 \geq 1.96$ or the P-value of $0.000 \leq 0.05$ then H3 is accepted, so it can be concluded that the product has a positive and significant effect in overcoming learning loss.

Table 6. Direct effect

Variable	Learning loss
Content Learning loss	0,214
Product Learning loss	0,385
Process Learning loss	0,330

Direct influence analysis is carried out to find out how strong the influence of a variable is on other variables directly. The results of calculating the direct influence using SmartPLS 3.0 are that the product has a greater direct influence in overcoming learning loss, namely 0.385 compared to the direct influence of process and content of 0.330 and 0.214 in overcoming learning loss.

4 Discussion

These findings support research from research [33] The result shows that Reinforcement of Independent Learning-Based Learning has a positive and significant effect in overcoming learning loss as seen from differentiated learning which consists of content, processes, and products. The results of the research prove that the application of

independent learning-based learning with project-based learning can improve students' critical thinking and collaborate with colleagues. The results of this study also support and provide additional research [34] that with PTMT (Limited Face-to-Face Learning) by creating Wellbieng Lessons and Pembelajaran Hybrid Learning it can foster student activity and creativity as much as 58.1% agree and 27.9% state strongly agree and foster learning motivation in students as much as 44.2% strongly agree. With differentiated learning on independent learning that learning content has a very positive and significant effect on overcoming learning loss.

In addition, this research also supports research [35] the result of his research is that blended learning can maximize independent learning at home and still be able to interact with teachers without face-to-face meetings. Blended learning makes it easy for students to obtain teaching materials, such as subject matter, learning videos, student worksheets, audio, images, and other web-based applications. Therefore, the blended learning model can be applied in learning during the COVID-19 pandemic. Then this study supports research [36] the teacher must have the "Learning, Teaching, and Working" feature. With the aim that the content and learning process of students must provide understanding and foster learning encouragement. These results support research from [37] the implementation of differentiation learning in the independent curriculum can be done by using diagnostic tests to understand student learning needs and adapting content, processes, and learning products according to student learning styles. The evaluation and follow-up of this implementation depends on the ability of teachers to develop their competencies and increase their use of technology.

This study also supports research [38] that differentiated learning can help accommodate students' needs. However, this research does not support the research there is a discrepancy between the application in differentiation learning with the teacher's perception by [28]. The effort required by the teacher to prepare is to differentiate instructions regarding process, content, product, and learning environment. In addition, this research also does not support the research results [39] which shows that learning is differentiated in South Korea and the Netherlands, the teacher does not have expertise and knowledge, so that the process of teaching and learning activities is not optimal and effective. Differentiated learning itself is a teaching and learning method and strategy that allows students to get subject matter according to the abilities, interests and needs of each individual. With a proactive nature, emphasizing on quality, oriented towards learners and has several approaches. Independent learning provides learning opportunities in a comfortable, happy, without pressure by paying attention to interests and talents. With these differentiated elements, it is expected to be able to realize independent learning through differentiated learning in overcoming learning loss.

5 Conclusion

Based on the findings of research using SmartPLS 3.0 software, it can be concluded that:

1. Content has a positive and significant effect in overcoming learning loss with t-statistic values of $4.496 \geq 1.96$ or p-values of $0.000 \leq 0.05$.
2. The process has a positive and significant effect in overcoming learning loss t-statistical values of $5.492 \geq 1.96$ or p-values of $0.000 \leq 0.05$.

3. The product has a positive and significant effect in overcoming learning loss t-statistic values of $6.760 \geq 1.96$ or p-values of $0.000 \leq 0.05$.
4. And the results of direct effect calculations that products have a greater direct influence in overcoming learning loss, which is 0.385 compared to the direct influence of content and processes in overcoming learning loss of 0.330 and 0.214.
5. The results of this study show that strengthening independent learning-based learning to overcome learning loss at SHS 1 Simo has a positive and significant effect in overcoming learning loss. And products have a greater influence in overcoming learning loss than content and processes.

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