



Implementation of chromebooks in the learning process in elementary schools (Case study at sd inpres leleko)

Nofry Vincensius Wongkar, Mersty E Rindengan, Roeth AO Najoan

Faculty of Education and Psychology, Manado State University, Tondano, Indonesia

Abstract

A study has been conducted on the implementation of chromebooks in the learning process in elementary schools. This study aims to describe how to implement Chromebooks in learning at SD Inpres Leleko so that student learning outcomes increase with case study techniques. Data collection techniques were carried out using interviews, observations, and documentation. The results show that the implementation of chromebooks makes the learning process more dynamic, increases students' enthusiasm for learning, motivation, effectiveness, and efficiency of teachers in delivering learning materials. Obstacles in utilizing chromebook implementation are management, teacher readiness in learning. Efforts made to overcome obstacles in learning using chromebooks are that Chromebooks must be utilized by teachers optimally and teachers must be given training on the implementation of chromebooks periodically, so that teachers can teach creatively and innovatively.

Keywords: Chromebook implementation, learning process, elementary school

Introduction

The progress of a nation is determined by its education, and the progress of education is determined by its people. Therefore, education requires effective and efficient learning. Learning in Indonesia is no longer centered on teachers, but students are asked to find their own learning materials, while teachers only provide an outline. Here teachers must be smart and creative in finding learning media to help students understand. The development of technology has an impact on human life both in social, economic, speed and ease of accessing and disseminating information, and changes in summarizing a job. In the present and future, the Indonesian nation must be able to face fierce competition globally. Therefore, a generation of Indonesian children is needed who have high competitiveness and qualified abilities. Many things can be done to meet these needs. One thing that must be prepared is good intellectual ability and proficient in the use of technology (Ghufron, 2018). The mandate of Law No. 20 of 2003 concerning the national education system is to develop the potential of students to become people who believe and are devoted to God Almighty, have good character, are skilled, have disciplined work ethics, become democratic citizens and are responsible both physically and spiritually. In an effort to achieve learning goals, it is necessary to create a more conducive learning environment system.

A teacher at the elementary school level is expected to be able to guide students in learning by acting as a close friend who provides more guidance, is creative and finds many things in teaching, makes learning situations interesting, stimulates students' desire to learn, and is not boring for students. So a dynamic teacher requires creative imagination and knows the learning process theoretically and through experience, teachers must be able to find what children should get in the scope of mental, vision and emotional growth. Educational innovation is a basic effort to improve aspects of education in practice. Hamijo (2018)^[8] states that "educational innovation is a new and qualitative change that is different from what existed before and is deliberately attempted to improve the ability to achieve goals in

education". To improve and enhance the quality of education in overcoming students' passive attitudes, learning media has various uses, including arousing learning enthusiasm, focusing/attracting attention, enabling or at least increasing direct interaction with the real environment, providing the same stimulus to equalize experiences, and creating the same perception. (Hermawan *et al.*, 2018).

According to Hasan *et al.* (2021), learning media is anything that teachers use as an intermediary or liaison with students to encourage interest in learning and make learning more meaningful. The use of learning media certainly develops the mindset of teachers and students. Teachers are creative in their use, and of course teachers do not need to spend too much time explaining. And students understand the material being taught faster. Learning media is one component of learning that plays an important role in the learning process. The use of media should be a part that must receive the attention of teachers as facilitators in every learning activity. In the scope of education, especially in the school area. There needs to be an update in the learning system that is in line with meeting the needs of the times. Learning methods that include various formulations ranging from organizing teaching materials, delivery strategies and managing activities by paying attention to the goals, obstacles, and characteristics of students in order to obtain effective, efficient results and create learning appeal must be improved and adjusted (Reflianto & Syamsuar, 2019). Especially in terms of learning effectiveness, many learning models are offered by education experts, one of which is the use of chromebook learning media in the learning process.

The problems that researchers found in observations at SD Inpres Leleko were the lack of interest and attention of students in participating in learning activities, the lack of media used by teachers in learning activities even though at school there are several media that can be used by teachers in the learning process, one of which is Chromebook. In addition to being minimalist, the Chromebook operating system (OS) uses Chrome-OS which is developed directly by Google Education from Google. There is no local storage system in Chromebook, all are linked to the Google account

storage system. So that its operation can run well and be controlled in one main parent account, in this case the school parent account which is systematic and connected to all student devices. Google and Chromebook services like this are the added value compared to other types of technology and devices (Bonheur, 2018)^[4].

Therefore, each teacher needs to learn how to determine learning media in order to effectively achieve learning objectives in the teaching and learning process. In reality, learning media is still often neglected for various reasons including: limited time to prepare teaching for teachers as educators, difficulty in finding the right model and type of media, lack of funds that some complain about, and others. This actually does not need to happen if every educator already has knowledge and skills regarding learning media. Therefore, this study focuses on the use of chromebook learning media in the learning process at SD Inpres Leleko. This study aims to describe the concept of chromebook learning media at SD Inpres Leleko so that learning outcomes increase, to describe how students understand learning materials through chromebook learning media, and to describe the obstacles in utilizing materials through chromebook learning media.

Methods

The design used in this study is a case study, this study attempts to explain, describe and study the use of Chromebooks in the learning process at SD Inpres Leleko. (Gudnanto, 2011)^[7] defines a case study as a method applied to understand individuals more deeply by practicing comprehensively. In addition, (Cresswel, 2013) explains that a case study occurs when researchers explore a single entity or phenomenon (the case) that is limited by time, activity and collection of detailed information using various data collection procedures during that time.

The subjects in this study were teachers and students of SD Inpres Leleko. The reason the first research subject is the teacher because they regulate the learning process, or the teacher can be called the main actor in the learning process. Data collection techniques are interviews, participatory observation, and documentation. The data analysis techniques used are organizing data, grouping by category, theme and answer pattern, testing assumptions or problems that exist against the data, looking for alternative explanations for the data, and writing research results.

In checking the data, the triangulation data checking technique is used. According to Moleong (2010: 330)^[10] Triangulation is a data validity checking technique that utilizes something else. Outside the data for checking purposes or as a comparison to the data. This technique is to eliminate differences in the construction of reality that exist in the context of a study in collecting data on various events and relationships from various views. The steps used in this data triangulation technique are by using sources and methods.

Results and Discussion

Results

1. Implementation of Chromebook in the Learning Process

a. Teacher Resources as Presenters of Learning Using Chromebook

The results of observations at the research location showed that the teacher who provided learning material by

implementing Chromebook was a grade V teacher. The results of an interview with a grade V teacher stated that "with the presence of Chromebook devices, students are generally more active and focused during learning. They enjoy and concentrate more in the learning process. Students also pay more attention to the material presented by the teacher, especially accompanied by audio visuals that attract attention so that children will find it easier to understand the learning material. When compared to learning without Chromebook devices, students are less concentrated and some students even look sleepy".

Likewise, the results of an interview with one of the grade V students "I am very happy with the presence of Chromebooks for learning activities at school because by using Chromebooks, our students find it easier to grasp the material being taught. So we can be more enthusiastic in learning. I am also proud that my school has used Chromebooks and is not inferior to other schools. As far as I know, not all schools use Chromebooks in their learning, so my school can be said to be advanced and not inferior to other schools".

Likewise, what was conveyed by the principal "that in order to support students' abilities in developing in the field of science and technology, teachers at SD Inpres Leleko have been equipped with skills in using learning media, namely laptops are provided for teachers, LCDs in classrooms, and Chromebooks that can be used by teachers and students in the learning process in class, so that the learning process becomes more interesting and makes students not feel bored. Chromebooks are also used in the Computer-Based National Assessment (ANBK) so the use of Chromebooks is very beneficial for teachers and students".

b. Learning Materials

Regarding the learning materials presented using Chromebooks, it turns out that not all subjects use Chromebooks. This is as conveyed by the fifth grade teacher, as follows: Not every lesson implements Chromebooks in the learning process because it is adjusted to the material being taught. The subjects that use Chromebooks are Science, Pancasila Education, Indonesian, Mathematics, and Art. While the Physical Education subject is not taught using Chromebooks but rather directly carries out practice.

Before the learning is carried out, the teacher chooses the right learning material to be delivered by implementing Chromebooks. Meanwhile, learning that does not use Chromebooks, is presented by teachers by utilizing other types of learning media owned by the school. Thus, students can more easily absorb information related to learning materials. Because of the importance of the benefits that can be obtained from using Chromebooks, SD Inpres Leleko implements Chromebooks in the learning process. The implementation of Chromebooks at SD Inpres Leleko is supported by: school facilities and infrastructure, teacher and student resources, and parents of students.

1. Facilities and Infrastructure

One of the missions of SD Inpres Leleko is to prepare students who excel in the field of science and technology. To support this mission, SD Inpres Leleko is provided and equipped with facilities and infrastructure, namely by providing Chromebooks. These tools can be used for learning for students and teachers. Students and teachers can

use and utilize the Chromebooks to develop and improve student learning outcomes.

2. Teacher and Student Resources

In addition to providing facilities and infrastructure, teacher and student resources at SD Inpres Leleko are accustomed to carrying out teaching and learning activities using Chromebooks. In order to support this program, the principal of SD Inpres Leleko said that: "In order to support students' abilities in developing in the field of science and technology, teachers at SD Inpres Leleko are also equipped with skills in using Chromebooks that can be used in the learning process in the classroom, so that the learning process becomes more interesting and makes students not feel bored. Chromebooks are also used in the Computer-Based National Assessment (ANBK) so the use of this Chromebook is very beneficial for teachers and students."

3. Parents of Students

The development of students in order to improve their knowledge of skills in using Chromebooks is also inseparable from the support of parents as expressed by one of the students: "In addition to learning to use Chromebooks at school, there are also laptops at home, I also practice learning to use laptops at home with my family so that I quickly master the basics of using computers or Chromebooks." Here it is clear that parents also have a role in supporting the success of students, so that students have many opportunities to learn to understand the use of Chromebooks.

2. Obstacles Faced and How to Overcome Them

Elementary schools are formal educational institutions at the basic level and as a foundation for moving on to the next level of education in line with the learning process. However, in the implementation of the learning process that utilizes Chromebooks, there are still obstacles that need to be solved.

a. Obstacles that hinder the Implementation of Chromebooks in the Learning Process at SD Inpres Leleko

1. Management Obstacles

The management of Chromebooks, which are a means of learning processes using information and communication technology, is inadequate. This is because sometimes when the learning process begins, the internet network is down so that the learning process using Chromebooks cannot be carried out.

2. Barriers to Teacher Readiness

In order to be able to carry out learning using Chromebooks based on the curriculum and in accordance with developments, teacher readiness is needed who have an attitude of guiding, training and teaching. Teachers should be ready to be resource persons, willing to pay attention to the characteristics of their students, willing to create active, creative, innovative, effective, and enjoyable learning. But there are teachers who sometimes when teaching are less creative and innovative, sometimes students are only given assignments and then left because the teacher has to complete other school assignments.

3. Barriers to Implementing Chromebooks in Learning

The use of learning resources in the learning process in schools has a very important role in helping students to

recognize and understand learning materials, especially with the implementation of Chromebooks will further help students develop their recognition of information and communication technology. But in the field, teachers are still found not always implementing the Chromebooks that are available and teachers do not want to implement them in learning activities. So the implementation of Chromebooks in the learning process is not optimal.

b. How to Overcome Obstacles that Hinder the Implementation of Chromebooks at SD Inpres Leleko

1. Management

The management of Chromebooks, which are a means in the learning process for students in using inadequate information and communication technology, can be overcome by always checking each Chromebook device periodically so that there are no problems during practical use. In other words, Chromebook devices must always be ready to be used for maximum learning.

2. Teacher Preparation

In order to carry out maximum learning using Chromebooks, teachers who have the attitude of guiding, training and teaching are needed. Teachers should be resource persons, willing to pay attention to the characteristics of their students, willing to create active, creative, innovative, effective and enjoyable learning. For this reason, teachers need to be given training on the implementation of Chromebooks periodically, so that in the field teachers can teach creatively and innovatively. 3) Implementation of Chromebooks in Learning

Utilization of learning resources in the learning process at school has a very important role in helping students to recognize and understand learning materials, especially with the implementation of Chromebooks will further help students develop their recognition of information and communication technology.

3. Impact of Chromebook Implementation in the Learning Process

The implementation of chromebooks in the learning process that always involves students, teachers, and media. By implementing Chromebooks, it is expected to provide positive benefits to the quality of learning at SD Inpres Leleko. The impacts that can be seen from several aspects include the following:

a. Student Involvement

Student involvement in learning activities by implementing Chromebooks at SD Inpres Leleko is very enthusiastic. Students in following the learning presented by the teacher look active, no students play alone, always follow the learning steps taken by the teacher, the interaction between students and teachers is dynamic. Such conditions make learning focused and student concentration is not disturbed.

The condition of students who are more focused and concentrated in following the learning process is as expressed by the fifth grade teacher as follows: "With the Chromebook, students are generally more active and focused during learning. They enjoy and concentrate more in the learning process. When compared to learning without using Chromebooks, students are less concentrated and some students even look sleepy". Based on the opinion expressed by the fifth grade teacher, a picture can be

obtained of the condition of students who are attentive and concentrated in following learning using Chromebooks. This phenomenon shows that the implementation of Chromebooks in the learning process is a tool to improve students' focus and concentration in following the learning process.

b. Student Learning Motivation

The implementation of Chromebooks as a learning medium at SD Inpres Leleko has a positive impact on student learning motivation. This is as expressed by a student named Farrel Turang, a fifth grade student as follows: "I am very happy with the existence of Chromebooks for learning activities at school because by using Chromebooks, our students find it easier to grasp the material being taught. So we can be more enthusiastic in learning. I am also proud that my school has used Chromebooks and is not inferior to other schools. As far as I know, not all schools use Chromebooks in their learning, so my school can be said to be advanced and not inferior to other schools." The opinions expressed by students show that Chromebooks as a learning medium increase students' enthusiasm for learning. This is due to the implementation of Chromebooks which make it easier for students to absorb or understand the learning material given by the teacher. The results of research in the field strengthen the opinions expressed by students. During the learning process by implementing Chromebooks, students appeared to show high enthusiasm for learning. The students showed curiosity about all the material presented by the teacher by asking various questions, students competed to ask questions to the teacher faster, and there was a happy attitude towards the learning material being discussed together. This kind of atmosphere is always seen in every learning using Chromebooks in each class.

The enthusiasm for learning is also reflected in the students' happy expressions towards the use of Chromebooks as a learning medium. As conveyed by a fifth grade student. This expression is manifested, among other things, through the students' pride because their school has Chromebooks as a learning medium. This pride arises because not all elementary schools in Minahasa Regency have used Chromebooks as a learning medium. The advantages of their school make students more enthusiastic in following the learning process.

c. Student Learning Achievement

Chromebooks as a learning medium at SD Inpres Leleko have a positive impact on student learning achievement. In the last few years, especially since learning with Chromebooks was implemented, student learning achievement at SD Inpres Leleko has shown an increase. The increase in student learning achievement can be seen from the cognitive and affective aspects, both of which show a positive increase or development. The cognitive aspect is seen from students, each aspect can be explained in more detail as follows:

1. Cognitive Aspect

As the success of student learning in the cognitive aspect can be seen in academic values as indicated by the absorption value in the 2022/2023 academic year in semester I reaching 73.5%, semester II reaching 73.6% and the absorption value in semester I of the 2023/2024

academic year reaching 75.4% and semester II reaching 75.96%.

2. Affective Aspect

Success in the affective aspect can be seen in student behavior which is shown by a friendly, polite and courteous attitude, always greeting and shaking hands with guests who come to school. Thus students are able to show and develop a positive attitude towards others.

d. Teacher Motivation

Teachers in presenting learning by implementing Chromebooks have prepared plans, and appear enthusiastic in presenting them, actively guiding students who find it difficult to follow the lessons. The increased motivation of teachers with the presence of Chromebooks in learning cannot be separated from the benefits that can be gained by teachers through the implementation of Chromebooks as a learning medium, increasing the effectiveness and efficiency of teachers in delivering learning materials. This is as conveyed by a grade V teacher: "With Chromebooks, teachers only need to prepare materials in the form of files and deliver them to students. This is very helpful for teachers because delivering material is easier. Students also seem happier and understand more easily. Teachers also no longer need to write material on the board."

Another motivation that also emerged in teachers, in relation to the implementation of Chromebooks in learning, was the growing desire to learn skills using Chromebooks. As conveyed by a grade V teacher: "because there are Chromebooks as learning media, teachers are required to be able to operate Chromebook devices properly. If not, learning can be disrupted. That's what makes teachers enthusiastic about learning to use Chromebooks." Based on further data collection, the motivation of teachers to improve their ability to implement Chromebooks was acknowledged by the Principal of SD Inpres Leleko, by conveying the following: "We see that teachers have a strong desire to be able to improve their ability to implement Chromebooks. This has indeed become a necessity because with the existence of Chromebooks as learning media, teachers inevitably have to be able to implement Chromebooks in learning activities."

The principal of SD Inpres Leleko further said that in order to improve their ability to implement Chromebooks, teachers are given the opportunity to learn or practice using the school's Chromebooks with the assistance of teachers who are already proficient in using them. The time is after school hours are over or during breaks, so as not to interfere with class hours. Based on the findings of the research results, various positive results were obtained from the Implementation of Chromebooks in the learning process at SD Inpres Leleko. This can be seen from the increased enthusiasm of students and their activeness in participating in learning, making teachers more effective and efficient in delivering lesson materials, so that the learning process takes place more dynamically. The impact of all of this is an increase in learning achievement achieved by students. Based on the description above, it can be concluded that the implementation of Chromebooks makes the learning process more dynamic, increases students' enthusiasm for learning and learning achievement, and increases teacher motivation,

effectiveness, and efficiency in delivering learning materials.

Discussion

1. Implementation of Chromebook in the Learning Process at SD Inpres Leleko

a. Implementation of Chromebook

The results of the implementation of Chromebook at SD Inpres Leleko are as follows: ^[1] Supporting students' knowledge of technology, especially Chromebooks, and developing students' interest in learning using Chromebooks, ^[2] using Chromebooks and information sources to analyze, process and present information, ^[3] implementing Chromebooks and information sources to analyze, process and present information in the form of images, tables, and presentations.

This is the same as what Norazah (2006) said that in the era of development and globalization, teachers need to have the knowledge and skills to integrate the use of Chromebooks in the learning process. Bitner (2002: 95-100) ^[3] concluded that teachers are actually the determining factor in the development and utilization of technology in the classroom. From the results of the researcher's observations, the implementation of Chromebooks is as ^[1] Presentations, ^[2] Demonstrations, ^[3] Virtual experiments.

b. Obstacles that Inhibit the Implementation of Chromebooks

The implementation of Chromebooks as a means of the learning process to improve students' skills in using information technology is inadequate. This is because sometimes during the learning process the Internet network is down, so that the learning process does not run optimally, besides that teachers are not innovative in providing lessons, sometimes they are only given assignments then the teacher takes care of matters outside of school, there are also teachers who do not want to use the Chromebooks available at school on the grounds that they have not mastered the use of the Chromebook device, so that only a few teachers use it in learning activities.

c. How to Overcome Obstacles that Inhibit and Results Achieved in the Implementation of Chromebooks at SD Inpres Leleko

According to Scheffler & Logan, a study needs to be conducted for teachers to get to know and implement Chromebooks, so that teachers are proficient in implementing Chromebooks in learning. These skills include: implementing Chromebooks, setting up and using Chromebooks and others. The solution to overcome the obstacles that hinder the implementation of Chromebooks in the learning process ^[1] Before using Chromebooks, a check must be carried out first, so that if they are used in the learning process there are no disruptions so that the learning process can run optimally, ^[2] Teachers should be resource persons, willing to pay attention to the characteristics of their students and create active, creative, innovative, effective and enjoyable learning. For this reason, teachers need to be given training on the use of Chromebooks periodically, ^[3] The use of learning resources in the learning process at school has a very important role in helping students to recognize and understand learning materials, especially with the implementation of Chromebooks will

increasingly help students develop their recognition of information and communication technology.

2. Results achieved in the Implementation of Chromebooks in the Learning Process at SD Inpres Leleko

a. Implementation of Chromebooks Makes the Learning Process More Dynamic

In the learning process by implementing Chromebooks at SD Inpres Leleko, there is complete student involvement. Complete student involvement means that students can be more focused and fully concentrate on following the learning guided or directed by the teacher. In addition, students are also actively involved in following lessons and obediently follow the learning steps according to the directions given by the teacher. Students who are more focused and concentrated in following learning are further strengthened by the presence of learning videos containing examples of facts or real events related to the subject matter given by the teacher. In addition to making it easier for students to understand, the existence of examples of real events has attracted students' attention so that students can be more focused on following the learning process.

The implementation of Chromebooks as a learning medium at SD Inpres Leleko has also built good interaction between students and teachers in the learning process. This interactive atmosphere can be seen from good communication between teachers and students. Teachers do not dominate the learning process, in the sense that teachers only provide material to students and students simply listen and take notes on the material presented by the teacher. This shows that the learning process does not take place one way, in the sense that it is only a communication process between teachers and students, but takes place through a two-way communication process, because both students and teachers are equally active. This condition is the same as Oemar Hamalik's opinion that what is meant by educational media is the tools, methods and techniques used in order to make communication and interaction between teachers and students more effective in the education and teaching process at school. In this context, Chromebooks as a learning medium at SD Inpres Leleko have provided real benefits in improving communication and interaction between teachers and students in the learning process at school.

b. Increasing Students' Enthusiasm for Learning and Their Learning Achievements Implementation of Chromebooks as Learning Media at SD Inpres

Leleko has increased students' enthusiasm for learning. In reality in the field, it can be seen that in the learning process by implementing Chromebooks, students are very enthusiastic about participating in learning. A very great curiosity about the subject matter given by the teacher arises in students. This is evident in the enthusiasm of students in asking questions to the teacher or answering questions raised by the teacher related to the subject matter being given. In line with that, students also emphasized the benefits of Chromebooks to make it easier to absorb or understand the subject matter given by the teacher.

Along with the increasing enthusiasm of students in participating in learning, the absorption and learning achievement of students also increased. Based on the data that has been presented previously, it is known that the

absorption value of students in the 2022/2023 academic year in semester I reached 73.5%, semester II reached 73.6% and the absorption value of semester I in the 2023/2024 academic year reached 75.4%, semester II reached 75.96%. From the data above, it is known that the absorption value is higher than in previous years.

The increase in the value achieved above, the implementation of Chromebooks is not the only factor that influences or determines student learning achievement. The availability of complete Chromebook devices will not mean much if the Chromebook is not used optimally for learning activities. However, it must be admitted that the implementation of Chromebooks as a learning medium at least greatly helps achieve good student learning achievement. For this reason, Chromebooks must be utilized optimally in the learning process and also be able to generate interest, enthusiasm, and passion in students in participating in learning.

c. Improving Teacher Motivation, Effectiveness, and Efficiency in Delivering Learning Materials

Chromebook is one of the devices or media that can bring various benefits to its users. In this regard, the Implementation of Chromebook in the learning process at SD Inpres Leleko also brings several advantages or positive conditions for teachers. These benefits are increasing teacher motivation in preparing learning material plans. The implementation of Chromebook also makes it easier for teachers to build an interactive atmosphere in the learning process. This is in accordance with the opinion of Edi Suardi (Djamarah and Zain, 2002: 81) who stated that in teaching and learning activities, teachers act as guides. In their role as guides, teachers must try to enliven and provide motivation, so that a conducive interaction process occurs. Teachers must be ready as mediators in all situations of the teaching and learning process.

Another motivation that also emerged among teachers at SD Inpres Leleko was the growing desire to learn the skills of implementing Chromebooks. This is considered very important to facilitate the delivery of learning materials to students. Age is not an obstacle to learning to implement Chromebooks. In the context of teaching and learning interactions, teachers must be skilled in utilizing it, either as a teaching aid or as a learning medium. In line with that, Ashar Arsyad (2002: 75) ^[1] stated that one of the criteria that needs to be considered in selecting media is that teachers are skilled in using it. This is the main criterion. Whatever the media, teachers must be able to use it in the learning process. Based on this opinion, the motivation of teachers at SD Inpres Leleko to improve their ability to implement Chromebooks is a very positive thing to support learning activities.

Conclusion

1. The implementation of Chromebooks in the learning process at Inpres Leleko Elementary School makes the learning process more dynamic, can increase students' enthusiasm for learning and their learning achievements, and increase teacher efficiency in delivering learning materials.
2. Obstacles in the Implementation of Chromebooks are: management, teacher readiness in learning.
3. Efforts made to overcome obstacles in learning using Chromebooks are that Chromebooks must be utilized

by teachers optimally and teachers must be given training on the implementation of Chromebooks periodically, so that teachers can teach creatively and innovatively.

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