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# Analysis of online learning based edmodo in pandemic era in atomic structure classes x at senior high school harapan 1 Medan

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**Abstract:** Education in Indonesia since middle-March 2020 has undergone significant changes. Online learning to answer questions is a solution to the virus problem that has spread to cut cases of the Covid-19 virus using online media. Edmodo is a learning application that the application can use in bold type learning, including atomic structure material. This study analyzes the Edmodo-based understanding used for learning media on atomic structure material and how students respond to the Edmodo application in chemistry learning, especially atomic structure material. The research method used is descriptive qualitative. The results showed that the effectiveness of learning was 69%, application sustainability during the pandemic was 76%, ease of access was 97%, ease of communication was 61%, the clear assessment was 84%, and understanding of the material Edmodo was 59%. Implementing chemistry learning consists of (1) choosing Edmodo as a bold learning medium in chemistry learning based on analyzing student needs with reasoning and mastery of applications; (2) planning the application as a student learning medium as described in the Semester Learning Plan; (3) implementation in Edmodo-based online learning is carried out well and smoothly based on semester learning plan; and (4) edmodo as an application can help carry out chemistry learning in atomic structure subjects to measure student learning outcomes. So it can be concluded that Edmodo is a practical application to use during the Pandemic of Covid-19.

**Keywords:** Covid-19 virus, edmodo, implementation of edmodo, online learning

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## 1. Introduction

Coronavirus disease (Covid-19) is a deadly virus and spreads rapidly by infecting the respiratory tract. Diagnosis of people who have typical symptoms in the form of fever,

cough, difficulty breathing, and causing death due to close contact with the perpetrator who has been infected. Covid-19 began appearing in Wuhan China at the end of January 2020 and spread to almost all countries. The World Health Organization (WHO) in February 2020 has designated this phenomenon as a Covid-19 pandemic (Mahase, 2020)

The covid-19 pandemic that attacks the world has made various efforts by the State to break the chain of Covid-19 transmission from multiple aspects of life. Through the Indonesian Minister of Education, the State of Indonesia decided to conduct online learning or study from home. This is done to prevent widespread and transmission due to massive interactions. Appeals to Physical Distancing, wearing masks, washing hands with soap, or using a Hand sanitizer is some of the efforts and strategies of hope to break the chain of covid-19 transmission (Nadeak, 2020).

One of the efforts to prevent the Covid-19 pandemic is being carried out by the Ministry of Education and Culture for educational institutions, namely with a policy of learning from home, online learning, and eliminating the National Examination year (Rusdiana et al. 2020). At the behest of the Ministry and Cultural Education, the Chancellor of Higher Education and Principals from Kindergarten to Senior High School were forced to do online learning and study from home. The education system in schools, especially Senior High Schools, has changed significantly, entering the end of March 2020. Social interaction limitation in various places requires learning to be carried out using a remote system via a network. Learning online (online) is a solution so that the learning process can take place anywhere and anytime (Ningsih, 2020; Novira et al. 2021).

One of the benefits of website-based learning (online) is that it is able to foster student independence to review and monitor students' abilities shown in mastery of concepts. The selection of a website (online) also makes it easier to access information both through the internet with hardware such as laptops, cellphones and can be done anytime and anywhere (Susilo & Ramlan, 2015). In addition, the rapid development of technology supports humans to use technology. The use of information technology in education is no exception, adapted to the design of learning needs during this pandemic. Students can use information technology such as e-learning very easily and comfortably (Efendi et al. 2017)

Online learning prioritizes the network/signal on the cellphone card quota and as a place to convey information in the form of learning anywhere and anytime. Online learning should be carried out to complement the knowledge and facilitate student learning. One solution to improve student understanding during the Covid-19 pandemic is through Edmodo online learning. Edmodo is an educational site based on social networks in which there are types of content for education and learning; teachers can post learning materials (Zwang, 2010). Edmodo provides an easy and safe way for classroom-based learning to connect and collaborate with parents (Prabowo & Bachri, 2017). Parents can view each assignment and job assigned by the teacher to find out or know their child's progress. Edmodo is a site that is similar to Facebook but has more exclusive features and can be used for learning. Edmodo quickly makes communication exciting and can help teachers assign assignments, quizzes, or access to student outcomes (Apriliyana, 2017).

However, learning during the Covid-19 pandemic is the primary and safe way to learn at Senior High School of Harapan 1 Medan. Edmodo is used and developed as an alternative solution in group-based class management and social media. (Dharmawati, 2017). Not only as a place to provide information, but teachers can provide quizzes and exercises and can

provide comments on the Edmodo platform. Edmodo is a safe and easy way for classes to connect and collaborate in the learning process well, answer assignments, and carry out specific projects. Edmodo also facilitates a feature in time-based licenses that can be set and appropriately locked before the task will be answered on the specified day.

Atomic structure is an introductory study of the unit of matter consisting of an atomic nucleus and its electrons. The atomic system studied at Senior High School of Harapan 1 Medan starts from the theory of atomic development to calculate quantum numbers and arrange their series. In this lesson, the teacher prepares teaching materials in the form of instructional videos and quizzes and exercises inducted on the Edmodo platform and distributed to the group link class X-Mathematics and Science of Senior High School Harapan 1 Medan. Implement online learning on Edmodo-based atomic structure material during the Covid-19 pandemic reviewed from several aspects, namely (1) Edmodo-based online learning planning (2) analysis of Edmodo-based online learning (3) Evaluation of Edmodo-based online learning in atomic structure learning. And the responses of users of the Edmodo application for chemistry teachers and students of class X in Senior High School of Harapan 1 Medan.

## **2. Methods**

The approach used in this research is a qualitative descriptive approach. Qualitative research is a type of research whose findings are not obtained through statistical procedures or other forms of calculation that aims to reveal symptoms holistically-contextually through collecting data from a natural setting by using the researcher as a critical instrument (Sugiarto, 2015).

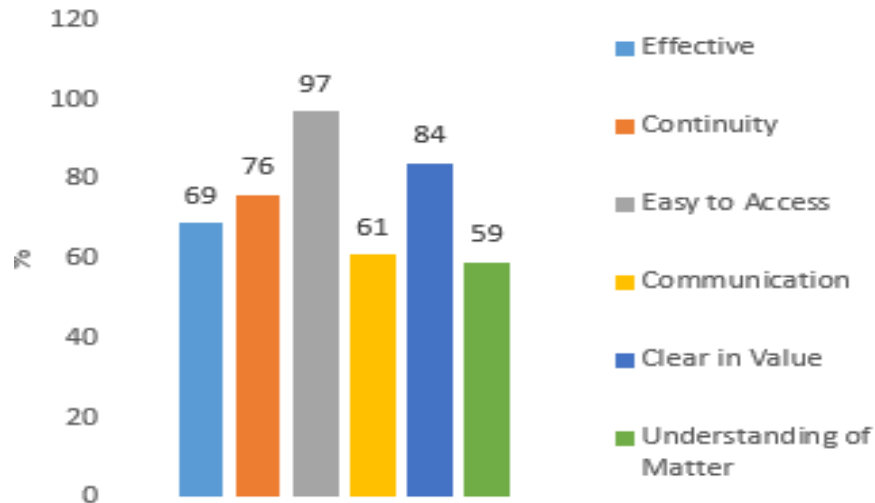
The object of this research is the Edmodo media used in chemistry subject matter atomic structure. The subject of this study was a chemistry subject teacher at Senior High School of Harapan 1 Medan. Simultaneously, the data in this study were obtained by researchers from the observation process carried out on class X-Mathematics and Science students at Senior High School of Harapan 1 Medan.

Researchers made direct observations with google form on chemistry teachers and students of class X – Mathematics and Science of Senior High School Harapan 1 Medan. The data analysis technique used was data reduction, data collection, data presentation, verification, and taking a conclusion. Data validation using triangulation (a combination of methods, theory, and planning). Meanwhile, the data presentation is done in the form of a brief description.

## **3. Results and Discussion**

This study describes the implementation of Edmodo-based learning used by students in Senior High School of Harapan 1 Medan in class X- Mathematics and Science in Chemistry subjects on atomic structure material. Based on the results of the respective observations that have been filled in by students X- Mathematics and Science in Senior High School of Harapan 1 Medan, 64 student responses are representing their classes on the google form questionnaire from class X- Mathematics and Science 1- X Mathematics and Science 5 with the results of student respondents, namely the effectiveness of learning using the Edmodo

application was 69%, the sustainability of the use of the Edmodo application during the pandemic was 76%, the ease of accessing the Edmodo application was 97%, Edmodo was easy in communication by 61%, the clarity of assessment is 84%, and the understanding of the material using the Edmodo application is 59%. Students' responses can be seen in Fig 1.



**Fig 1.** The results of student responses of classes X Mathematics and Science to Edmodo applications during pandemic covid-19

This study describes implementing Edmodo-based online learning used by SMA Harapan 1 Medan students in class X-MIPA in Chemistry subjects. Based on direct observations about Edmodo learning in chemistry subjects, atomic structure material. It can be concluded that the implementation of Edmodo-based online learning media makes it easy for teachers and students in chemistry subject matter atomic structure. This is supported by research from Wan & Niu (2018) and Lubis & Dasopang (2021).

Implement stage to online learning in chemistry subjects on atomic structure material in Odd Semester 2020 on September 25 at 08.00 AM. Following the documentation obtained, the meetings conducted each week by providing information in the form of learning videos and accompanied by quizzes and exercises. The documentation can be seen in Fig 2.

A questionnaire was distributed via Google Form with 44 students as respondents were taken randomly in each class X. X Mathematics and Science 5 about the Edmodo online media used 70.45% of students chose Edmodo to use for the most mastered reason because the Edmodo system is easy to learn and access from 2 chemistry teachers who were given a Google Form questionnaire that Edmodo was easy to use in providing assignments of teaching materials each week without having to meet face to face with students accompanied by easy access.

Teachers who already have an Edmodo account as teachers are then included in groups that have been created by the vice principal in the field of the curriculum with names according to their respective classes. Then students are asked to join the garden class group by using the code "jk34cp" until all levels can join the Edmodo virtual class group according to the roster schedule of teaching materials that have been given by the teacher in the Edmodo virtual classroom. The documentation can be seen in Fig 3.

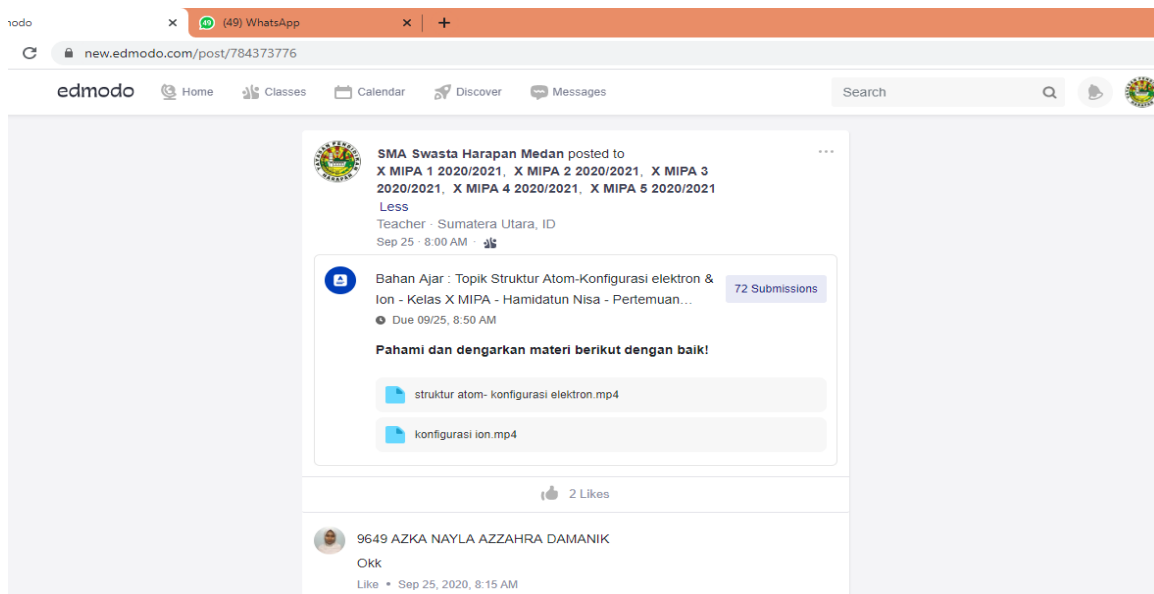


Fig 2. The planning stage in the delivery of the material subject

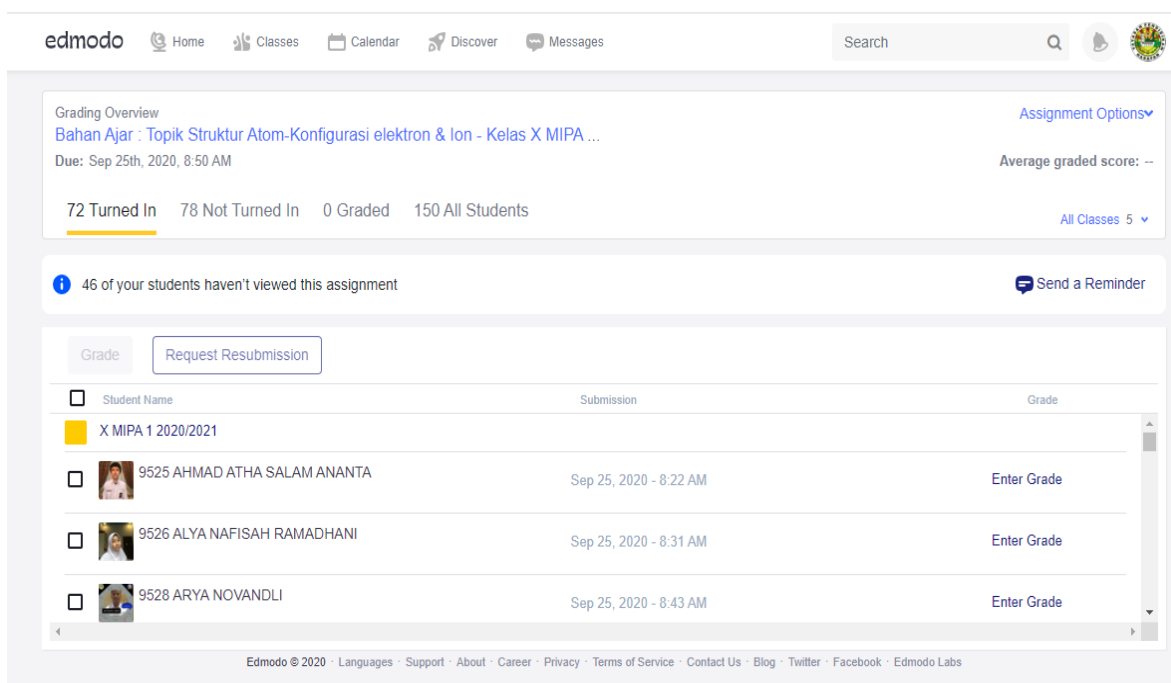


Fig 3. The Implementation stage responses who have seen teaching materials

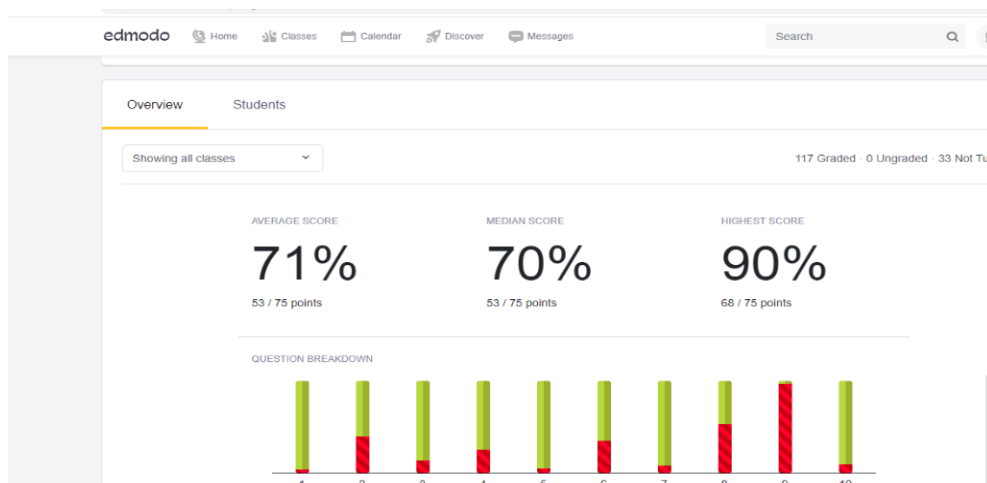
In chemistry learning, the teacher can see whether students have answered the teacher's questions along with the hours and grades listed on the Edmodo account. At this stage, the teacher provides learning teaching materials distributed to students in the class group. The teacher can see the learning results and correct them quickly anywhere and anytime without meeting face-to-face.

Based on the documentation carried out, the teaching materials are adjusted to the design of the learning process by changing the online learning material that is carried out

and uploaded in the Edmodo account for class X Mathematics and Science 1- class X Mathematics and Science 5. Based on the teacher's Google Form questionnaire, information is obtained that the teaching materials have been uploaded 95% help teachers carry out the learning process well.

Based on the documentation results, several methods, namely providing teaching materials, viewing teaching materials, question, and answer, giving quizzes, assignments and answering them for students in Senior High School of Harapan, are carried out by several methods 1 Medan. The technique used is implemented by utilizing several menus applied by Edmodo. Implementation of learning chemistry subjects on atomic structure material. The performance of chemistry learning is carried out online and starting with the assignment method and providing information by working independently.

Edmodo will provide an online discussion forum to channel people's aspirations in the form of ideas and questions containing text, images, and numbers. This Edmodo forum in learning can be used as a medium in communicating with internet users (Kurniawan et al. 2018). In the learning process, teachers can quickly assess without having to correct these questions. This attempts to facilitate the Edmodo feature for educators. The following is the result of the percentage of value in students can be seen in Fig 4.



**Fig 4.** Evaluation stage in scoring exams, quizzes, and exercises

Apart from reducing physical contact and implementing social distancing during the Covid-19 pandemic, learning teaching materials through online Edmodo (internet) will provide many benefits. By utilizing the internet, learning can be done anywhere and anytime online without corrections and scribbles by subject teachers in assessing student exercises and quizzes. The cognitive aspects and learning outcomes of chemistry in students after being taught using internet media such as e-learning will have a major effect on the cognitive aspects of students by 77.4% (Anna et al. 2014)

Whereas in the second evaluation activity, namely UTS (Mid-semester Exam) and Remedial UTS (Mid-Semester Examination) on week XI and X with an online system based on Edmodo. Like the Mid-Semestre Exam, the teacher provides UTS (Mid-Semester Exam) questions uploaded and validated by the curriculum field's vice-principal. This can be seen in Fig 5.

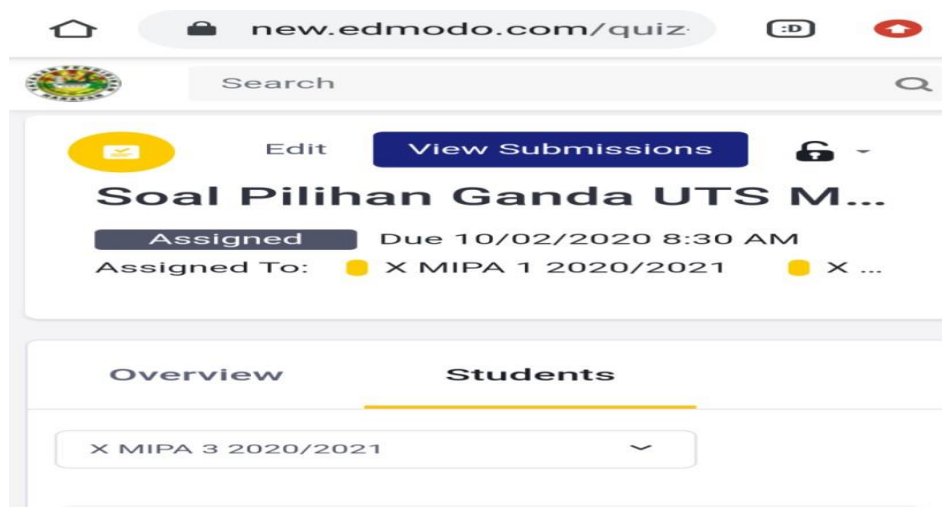


Fig 5. Making midterm exam questions

Based on the results of the documentation, it is known that from an average of 30 students in the class X Mathematics and Science 1 - X Mathematics and Science 5, as many as 95% take the midterm exam, and as many as five people from several classes who are working on the following and cannot enter the system because the task system is automatically locked if students work late. This arrangement controls student discipline in starting and completing midterm exam questions for some students who do not meet the minimum completion criteria score, namely 75. Then students are expected to take the remedial of the Midterm Exam Again to obtain expected results. The documentation can be seen in Fig 6.

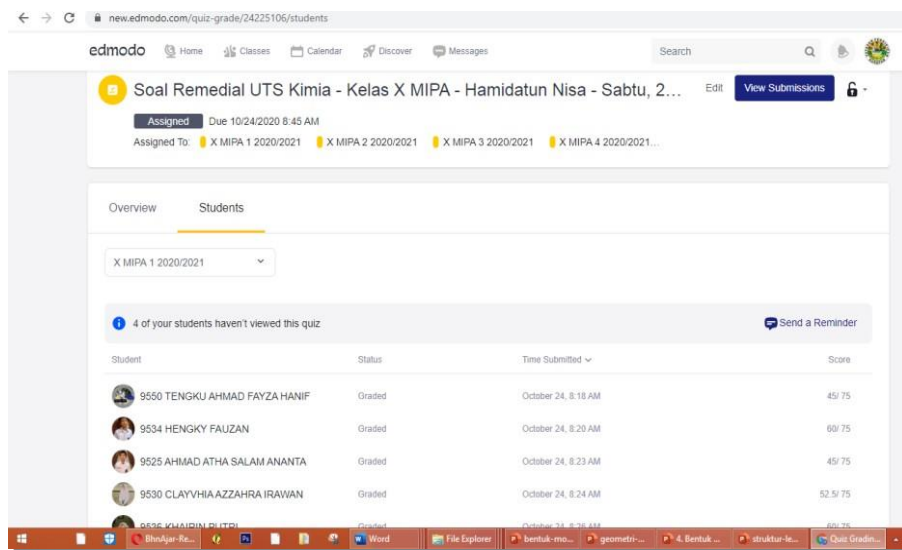


Fig 6. Midterm exam remedial

This is the same as Ningsih (2020) and Rais & Hoiriyah (2020) that Edmodo is beneficial as an alternative in online learning during the current Covid-19 pandemic. Meanwhile, the effectiveness of online learning that was obtained was quite effective in using the Covid-19

pandemic even though there were various obstacles such as network problems, power outages, and poorly understood material because the teacher only gave assignments without explaining (Abidin & Hudaya, 2020). Meanwhile, the findings obtained that the effectiveness of using Edmodo-based e-learning on mathematical communication skills show that Edmodo media is effective on the mathematics communication skills of mathematics material in class B41 Primary Education Program with a very high category (Ompusunggu & Sari, 2019). Supported by the research of Sulisworo & Agustin (2017), Ibrahim & Suardiman. (2014), Iwantara et al. (2014), Aurora (2019), Wicaksana et al. (2020), and Syarif (2012) said that online learning could increase student learning motivation and will increase understanding learners.

Internet use has become viral in providing information sources. This is felt by educators and students alike in utilizing technology-based learning by providing teaching materials, assignments, answering questions, and arranging to learn (Arkorful & Abaidoo, 2015). During the pandemic, education is carried out remotely where students stay at home and do all assignments, not at school. However, even though the learning process was carried out at home in a flexible and easy-to-access manner.

This is also following Arkorful's opinion that there are several advantages when implementing online learning, including (1) flexibility, students have the opportunity to choose a suitable time and place as desired, (2) can increase knowledge because of the ease in accessing large amounts of information ; (3) provide more significant opportunities for students in discussion forums, (4) Online is considered cost-effective because there is no need to spend money to travel (Ompusunggu & Sari, 2019).

With the implementation of Edmodo-based online learning in chemistry subjects, atomic structure material continues to run according to the specified time—a collection of quizzes and exercises to measure the fluency in the implementation of learning.

However, there are some obstacles to Edmodo. Based on the questionnaire distributed to students, information was obtained that students' problem in some Edmodo-based online learning meetings was the internet network or power outages. Most of the students could not fill in the questions and quizzes given because of the network. Another difficulty for educators is that the teacher cannot directly assess students' learning process in answering quiz assignments or exercises that are given.

This is following the opinion of Arkorful & Abaidoo, which states that: (1) lack of interaction with each other; (2) online classifications, explanations, and methods may be less effective than face-to-face learning; (3) lack of support in terms of increasing skills, online may be able to improve knowledge well, but the absence of skills in online learning, (4), not all disciplines can be used in fields, for example in practical or contextual knowledge, (5) it can cause access to access becomes slow (overload) on several sites that are opened via cellphone or laptop (Arkorful & Abaidoo, 2015).

#### 4. Conclusion

Based on the research and discussion results, it can be concluded that online learning based on Edmodo on atomic structure material is useful for use during the Covid-19 pandemic, with complete facilities in the Edmodo an application making access easy in receiving information to students and assignments. The material presented through the



Edmodo application can be understood. The implementation runs smoothly, starting from planning by adjusting the online-oriented lesson plans on the material, the learning process using teaching materials uploaded to the Edmodo account, assignments and evaluation activities in the form of (quizzes, exercises, exams) which are run online as well as an accurate assessment.

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