

## Social Media-Based E-learning and Online Assignments on Algebraic Materials

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### Abstract

This study aims at evaluating the application of social media-based e-learning and online assignments during Covid-19 pandemic based on: (1) the availability of facilities and infrastructure in implementing social media-based e-learning and online assignments during the Covid-19 pandemic, (2) comprehension and management of e-learning and online assignments by lecturers and students, (3) social media-based e-learning and online assignments. This study is a qualitative descriptive study using the CIPP evaluation by evaluating each component, including context, input, process and product/outcome. The sources of study data involved lecturers and students of Informatics Engineering at Muhammadiyah University Sorong in Matrix Algebra course. The instruments of primary data collection was online assignments and Google Form questionnaires, while secondary data was obtained through observation, literature study, documentation and interviews. The results show that students obtained an overall average score (mean) of 76.4 from the maximum score of 100, and a percentage of assignment collection of 65.78%. This results were categorized as *adequate*, in meaning it is rather effective for theory comprehension, and was categorized as *moderate* in terms of boosting students' motivation in doing social media-based online assignments, depending on the type of assignment. This signifies that the evaluation of CIPP in social media-based e-learning and online assignments in algebra has positive outcome in terms of infrastructure, management, and use.

**Keywords:** E-Learning, Online Assignment, Social Media

### Abstrak

Tujuan penelitian ini untuk mengetahui evaluasi penerapan pembelajaran e-learning dan penugasan online berbasis media sosial pada masa pandemik *Covid-19* berdasarkan: (1) ketersediaan sarana dan prasarana dalam melaksanakan pembelajaran *e-learning* dan penugasan online berbasis media sosial selama pandemik *Covid-19*, (2) pemahaman dan pengelolaan pembelajaran e-learning dan penugasan online yang dilakukan oleh dosen dan mahasiswa, (3) pembelajaran *e-learning* dan penugasan online berbasis media sosial. Penelitian ini merupakan penelitian deskriptif kualitatif dengan menggunakan evaluasi CIPP yaitu mengevaluasi setiap komponen konteks, input, proses dan produk/hasil. Sumber data penelitian adalah dosen dan mahasiswa Teknik Informatika di Universitas Muhammadiyah Sorong dengan mata kuliah Aljabar Matrik. Pengumpulan data primer menggunakan instrumen penugasan online dan *questionnaire google form*, sedangkan data sekunder diperoleh melalui observasi, studi literatur, dokumentasi dan wawancara. Dari aspek hasil, mahasiswa memperoleh nilai rata-rata (*mean*) keseluruhan sebesar 76,4 dari skor maksimal yang bernilai 100, dan memperoleh persentase pengumpulan tugas sebesar 65,78%. Aspek hasil termasuk dalam kategori cukup yang artinya cukup efektif dalam penguasaan materi mahasiswa dan berkategori sedang dalam meningkatkan motivasi dalam penugasan online berbasis media sosial dengan bergantung jenis penugasan online. Hal ini berarti evaluasi CIPP dalam e-learning dan penugasan online berbasis media sosial pada materi aljabar mempunyai hasil yang baik dalam hal sarana prasarana, pengelolaan, serta penggunaannya.

**Kata Kunci:** *E-Learning*, Penugasan Online, Media Sosial

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## INTRODUCTION

Algebra is a branch of mathematics that aims at solving mathematical problems by transferring the form of numbers or symbols. Algebra is a major course in informatics engineering, due to its functionality in the field of informatics, such as digital security (Rahmawati & Soekarta, 2018).

Conventional learning methods are implemented in Algebra, including problem solving by answering questions and drilling. The lecturer will explain the material, give sample questions, and hold a discussion. Covid-19 pandemic has affected the field of education around the world, one of which occurred in the United States through school closures (Richmond, Cho, Gallagher, He, & Petchauer, 2020). The school closures also occurred in higher education throughout Indonesia. The pandemic hinders teaching and learning activities that are normally done face-to-face. A similar thing happened to educational studies, as they are also affected by the Covid-19 pandemic (Dematthews, Knight, Reyes, Benedict, & Callahan, 2020). During the pandemic, studies investigating proper teaching methods are conducted on account of smooth learning process. Online learning method becomes one of the solutions so that teaching and learning activities can continue to run well during this pandemic. Lecturers are required to design learning media as innovations by utilizing online media such as learning videos while taking several types and objectives into account (Joo et al., 2016). This can be done in line with the development of information technology and technology 4.0, resulting in a more effective learning process. Digitalization and the messaging through social media is a current trend, and studies reveal their impacts in the field of education (Hollis & Was, 2016). Students are required to stay at home, in accordance with the Circular Letter Number 4 of 2020 regarding the Implementation of Educational Policies during the Emergency Period of the Spread of Corona Virus (*Covid-19*) (Kemdikbud, 2020), which will certainly be a challenge. From the explanation above, the pandemic makes the students study remotely with distance learning, requires them to use technology and social media in education. This study investigates the use of social media in e-learning, which is expected to be a means of online learning and online assignments during the Covid-19 pandemic.

As written in (Setyosari, 2007), Balogun & Knapp (1996) stated that the delivery of material through technology is better than delivery through textbooks. In other words, technology is more effective for delivering material than direct delivery by lecturers through conventional lectures. The use of e-learning web which is a method of delivering materials with technology has a positive and significant effect on the quality of learning. Influence on the quality of learning is a strong category (Suharyanto & Mailangkay, 2016). For instance, making learning videos (Brame, 2016) provides active learning through videos. Dealing with the challenges that emerge with online learning during the Covid-19 pandemic, such as learning algebra materials that include solving arithmetic problems and proving a statement which are usually held face-to-face are the college's demand to produce quality lecturers. During this pandemic, lecturers are challenged to optimize e-learning, especially in Algebra which is usually done face-to-face using a conventional whiteboard. It includes e-learning contents/materials, e-learning counseling/training, collaborative learning, and virtual classes (Ghirardini, 2011). It inspired by a study conducted by (Saputra, 2019), almost all students who used social media such as WhatsApp enabled social media-based learning as one of the e-learning media solutions during the pandemic. The concept of e-learning is distance learning that utilizes computer technology or commonly called the Internet (Horton, 2003). Social media such as WhatsApp is one

of the social media included in e-learning media that can be used. The Group Chat feature on WhatsApp can be used for lecturers like to provide access to materials for students and grant liberty in discussions. In this study, the use of social media in e-learning can be used for the purpose of material collections, learning, understanding Algebraic materials and discussing the solutions to Algebraic problems. Therefore, it is hoped that social media will also provide an opportunity for lecturers to interact with students in e-learning. Various practices using social media can also be carried out by students, with a platform such as google classroom.

Evaluation on e-learning system is carried out to improve the quality of learning. One of the studies evaluating e-learning (Riyanda, Herlina, & Wicaksono, 2020) concluded that the results were good with a positive impact. This was possible due to one of the determining factors, that was the availability of the Internet connection. Learning experience during this pandemic is different, in a way that every student is in a different place so that e-learning is done remotely. One of the ways to learn Algebra is solving arithmetic problems. A supporting solution to e-learning is online assignments. Giving online assignments is assumed to be a way to tackle the obstacles of e-learning during the Covid-19 pandemic, in which lectures are done without face-to-face meetings. This method is also very suitable to compensate the abundant learning materials, given limited time in class. Djamarah and Zain (Bariah & Imania, 2018) stated that an assignment is a method of presenting materials in form of certain tasks given by the lecturers in order to stimulate learning activities. Online assignments given to students can be done anywhere and anytime according to the due date given by the lecturer. A previous study of giving online assignments by making YouTube videos in Algebra learning was conducted (Rahmawati & Fathurrahman, 2020). As an attempt to improve the quality of e-learning, further studies regarding the evaluation of e-learning and online assignments are conducted. This issue was investigated in this study, including the implementation of evaluation on social media-based e-learning and online assignments during the Covid-19 pandemic. This study aims at evaluating the effectiveness of e-learning learning and social media-based online assignments during the Covid-19 pandemic based on: 1) the availability of facilities and infrastructure, 2) comprehension and management by lecturers and students, and 3) the use of social media in e-learning and online assignments.

## **METHODS**

This study employed CIPP evaluation model (Hakan & Seval, 2011). CIPP, in accordance with what it stands for, focuses on evaluating context, input, process, and product. Proactively, questions can be postulated from these four objects of evaluation: What needs to be done? How should it be done? What has been done? Did it work?. While retrospectively, is this learning directed towards clear objectives that are based on the assessed competences for student needs? Is the targeted learning responsive? Has the learning process been implemented effectively? Is the learning process

successful?. The purpose of this evaluation study is to measure the effectiveness of social media in e-learning and online assignments during the Covid-19 pandemic. The aspects to be evaluated are as followings: (1) the context, by paying attention to the facilities supporting each student, (2) the input, by paying attention to the ability of lecturers to conduct and manage e-learning, (3) the process, by paying attention to the interactions between the lecturers and the students during e-learning process and online assignments, (4) the results, by paying attention to the ability of the students in completing online assignments independently. For these reasons, the approach employed is a qualitative approach. With a qualitative approach, it is expected to gain experience and in-depth understanding of the meaning supported by proofs found during the learning process. For understanding responses and behaviors related to the e-learning process, in-depth observations and testing are needed. To make this possible, the involvement of researchers or lecturers in the e-learning process is an obligation in order to find and understand the facts that occurred.

The study was conducted at each home of each student majoring in Informatics Engineering, Muhammadiyah University of Sorong, West Papua. The subjects of study involved two lecturers of Informatics Engineering and 144 students who took courses in Linear and Matrix Algebra. This study employed various methods for data collection: (1) Observation and literature study, by observing the objects of social media-based e-learning and online assignments; (2) Questionnaires, by collecting data using a list of questions in form of a *google form* distributed to lecturers and students; (3) Documentation, by recording the e-learning process in form of videos, e-learning files, and online assignments, as well as an assessment, as well as the evaluation results that have been carried out.

## RESULTS AND DISCUSSION

It takes several criteria for an evaluation to be categorized as *good*. The evaluation criteria that are suitable according to (Smith & Freeman, 2002) are “*validity, objectivity, and practicability*“. As Stufflebeam (Stufflebeam, 2001) suggested that three aspects (cognitive, affective, and psychomotor) affect one another. The existence of these three aspects at once make a good learning. Evaluation on learning outcomes should provide explanations and assessments to what extent that the students can understand the theory and apply it in their daily life. Thus, achieving a learning outcome cannot be separated from the teaching and learning process (Siahaan, 2005). As for the teaching and learning process, many factors play their roles; educators, students, curriculum, tools and environmental factors. The lecturers need to make an evaluation using CIPP model (Context, Input, Process, Product) to determine whether or not the specific learning objectives have been achieved. There are several ways to evaluate e-learning, one of which is by keeping tracks on the development of online assignment results (Goetz et al., 2012) as well as by participating in the discussion during the question and answer session during in the virtual meetings or social media (Google Classroom and WhatsApp).

**Context (Facilities and Infrastructure)**

Algebra materials such as matrices is one of the compulsory subjects in the Informatics Engineering study program, Muhammadiyah University of Sorong. Therefore, the algebra materials support the realization of the vision and mission of the Faculty of Engineering as described in the curriculum and syllabus. The data were obtained from observing the syllabus and learning designs made by lecturers that were adapted according to the implementation of competency-based curriculum. Similarly, the results of interviews show that the lecturers have prepared facilities and infrastructure to support social media-based e-learning, as described in Table 1 below.

**Table 1.** Context data (lecturer)

Aspect	Indicators	Percentage
Lecture	Location	80%
	Laptop	100%
	Handphone	100%
	Internet quota	100%
	Signal	80%
	Syllabus	100%
	Social Media App. (WhatsApp, Google Classroom, Zoom)	100%
	e-learning design	100%
	Schedule	90%
	e-learning media (Pen Tablet)	100%

The lecturers used e-learning media such as *Wacom pen tablet* to make it easier for explaining mathematical problems. E-learning is a form of distance learning concept (Suharyanto & Mailangkay, 2016). The form of e-learning has a broad scope. For example, a portal that contains educational information can be regarded as an e-learning site, hence it is safe to say that e-learning combines learning methods and technology as a means of learning. In e-learning and online assignments, a software is undoubtedly needed as a place, method, and evaluation of learning. Thus, lecturers need a software for delivering information as well as discussions related to e-learning lectures during the Covid-19 pandemic. Social media, according to (Akram & Kumar, 2017) is one of the online media to socialize and to interact with others without the limitation of space and time. This definition implies that social media can be used to share knowledge, facilitate learning, and have discussion without having to meet face to face. This serves as the foundation of using social media as e-learning media. WhatsApp appears to be the most popular and the most used social media (Saputra, 2019). Data collected from (Yustitia & Ashrianto, 2020) suggested that Indonesians have used social media such as WhatsApp as an access to information during the Covid-19 pandemic.

Table 1 shows that the use of WhatsApp, Google Classroom, and Zoom meetings is effective in delivering information related to course materials in e-learning and online assignments. Lecturers mostly used Microsoft Office for delivering material (Word and Power Point) that is presented through virtual meetings using Zoom meeting application. Occasionally, the lecturer used a virtual whiteboard to explain Algebra calculations. Some lecturers also used *GeoGebra* when practicing linear equations. In making learning videos, similarly, several applications are required to record the materials and edit videos. Lecturers prepare them using *Bandicam* and video editors. Furthermore, the most important thing is to organize the materials during e-learning process (Gold, Pfirrmann, & Holodynski, 2020) so that students could access the material easily by using Google Classroom. Information regarding materials, online assignments, and assessments are done using in Google Classroom. For lecturers, it becomes easier to organize materials such as attendance form in each lecture meeting, schedule, delivered materials, assignment distribution, and assignment score distribution.

**Table 2.** Context data (student)

Aspect	Indicators	Percentage
Student	Location	60%
	Laptop	80%
	Handphone	100%
	Internet Quota	45%
	Signal	60%
	Social Media App. ( <i>WhatsApp, Google Classroom, Zoom</i> )	90%

From Table 2, it can be inferred that the availability of tools in form of hardware was not a problem because all students had cellphones and laptops, it is normal for students majoring informatics engineering. The application of e-learning has a positive effect on the quality of learning and indirectly improves learning outcomes (Suharyanto & Mailangkay, 2016). This implies that the purpose of e-learning system is to expand access for education and to improve the quality of learning. The most helpful means in terms of learning during the pandemic is to use media that is habitually used daily, such as mobile phones. During e-learning and online assignments using social media, it is necessary to take Internet needs into account, such access stability, internet coverage, access speed with the Indonesian standard of 3 Mbps so that it does not hinder the e-learning process.

### **Input**

Lecturers were already equipped with the competence to implement e-learning beforehand. This Algebra course was handled by 1 lecturer, and the other 1 lecturer serves as a lecturer for

validation of the assignments. Lecturers in Algebra are graduates of Master's Degree of Mathematics with an interest in Algebra who provide maximum material readiness, as presented in Table 3 below.

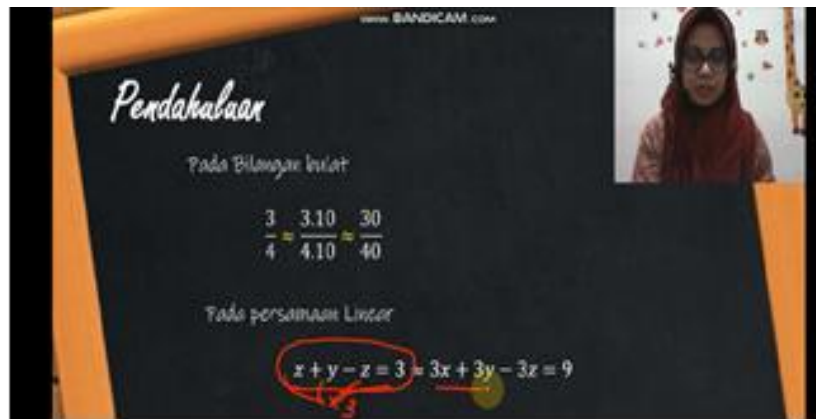
**Table 3.** Input data

Aspect	Total	Attendance (virtual meeting)	Material Readiness
Lecture	2 Course lecturer: 1 Validation lecturer: 1	100%	100%
Student	144 (registered in Course Selection sheet/KRS) 82 (completed <i>questionnaire</i> )	75.76%	36.67%

The lecturers' ability to use software and social media devices supported the smoothness of social media-based e-learning and online assignments process. This can be seen from the result of observation on Google Classroom documents. Additionally, students' attendance in each meeting was fairly high. Students' attendance can be seen from their presence in virtual meetings, the number of downloads of lecture materials, and the number of listeners of learning videos. Virtual learning makes it easier to meet face-to-face online, although students often turned off their camera for the network stability that the lecturers could not monitor students' movements. There were several factors that cause student to miss the class, one of them is unstable internet connection. It caused them to miss virtual meetings so they only watched learning videos. From Table 3 it can be inferred that some students did not prepare the materials, they preferred to receive materials from the lecturer and prepared the materials after getting an online assignment. In this case, students were less active in preparing the materials prior to online lectures. From the observations it was confirmed that almost all students who filled out Course Selection Sheet (KRS, *Kartu Rencana Study*) and attended virtual meeting lectures did not have textbooks or lecture guide book.

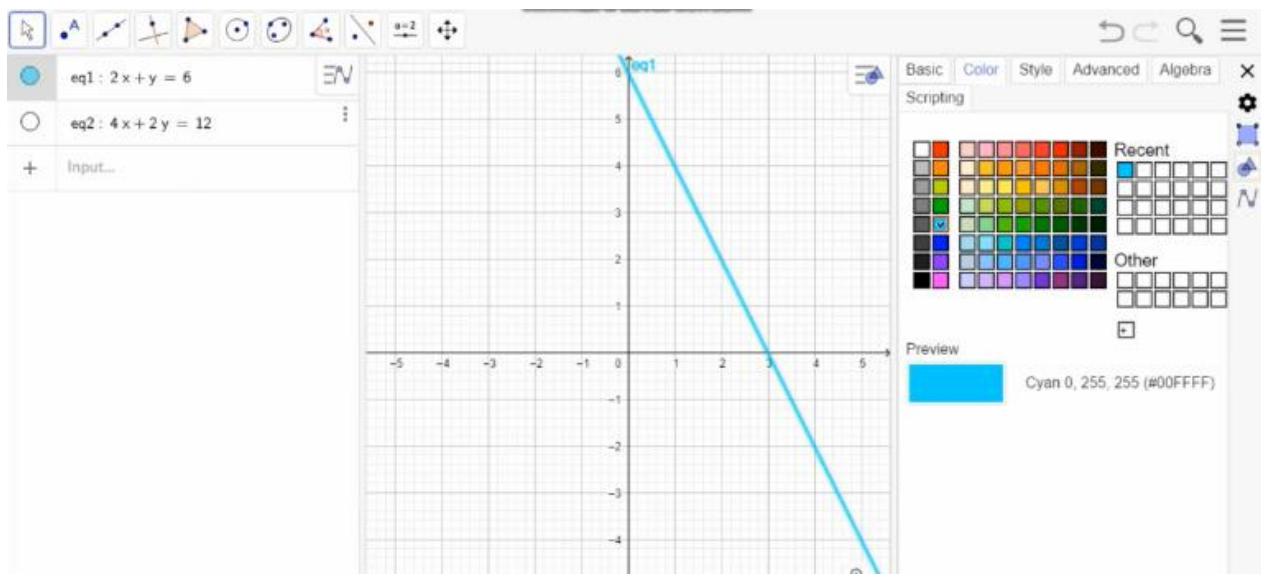
### ***Process***

The design of e-learning using social media (Dwi, Amelia, Hasanah, & Putra, 2020) and online assignments had been prepared by the lecturer. E-learning and online assignments using social media during the Covid-19 pandemic were done in several stages of learning activities. These stages were part of the lesson plan for each session. In each session, three means were used in delivering the materials, including virtual meetings, materials in form of articles, and learning videos that have been adapted to the quality of learning videos. Here are some video screenshots during the social media-based e-learning process on Algebra (Figure 1-4).



**Figure 1.** E-learning process

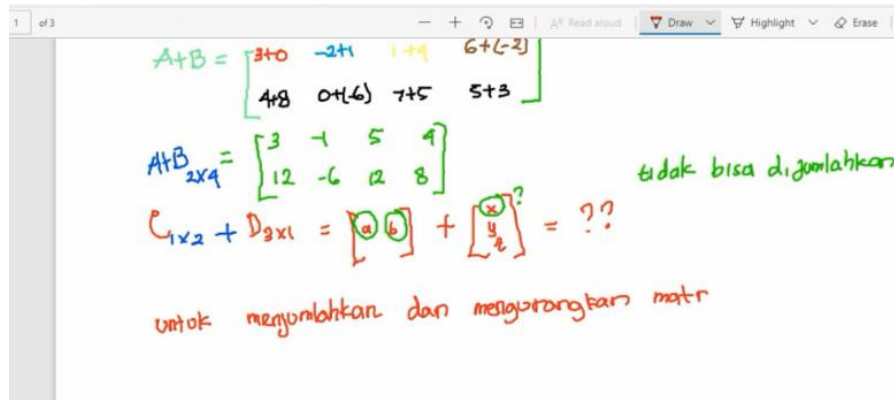
In minimizing the use of Internet quota and network problems, one solution was to provide learning videos that are interesting and stimulating the students' active participation. As shown in Figure 1, *Power Point* slides were designed with interesting animations to display interesting materials. As for practice, *GeoGebra* can be used to make assignments more interesting, students can learn new things by using *GeoGebra* application (Figure 2).



**Figure 2.** E-learning process (Geogebra)

The lecturer can use a virtual whiteboard, inviting students to solve mathematical problems using a pen tablet (Figure 3). Algebra materials can be delivered easily by using a tablet as effortless as teaching on a whiteboard. Students can easily follow the example of the flow of algebraic calculations.





$$A+B = \begin{bmatrix} 3+0 & -2+1 & 1+4 & 6+(-2) \\ 4+8 & 0+(-6) & 7+5 & 5+3 \end{bmatrix}$$

$$A+B_{2 \times 4} = \begin{bmatrix} 3 & -1 & 5 & 4 \\ 12 & -6 & 2 & 8 \end{bmatrix}$$

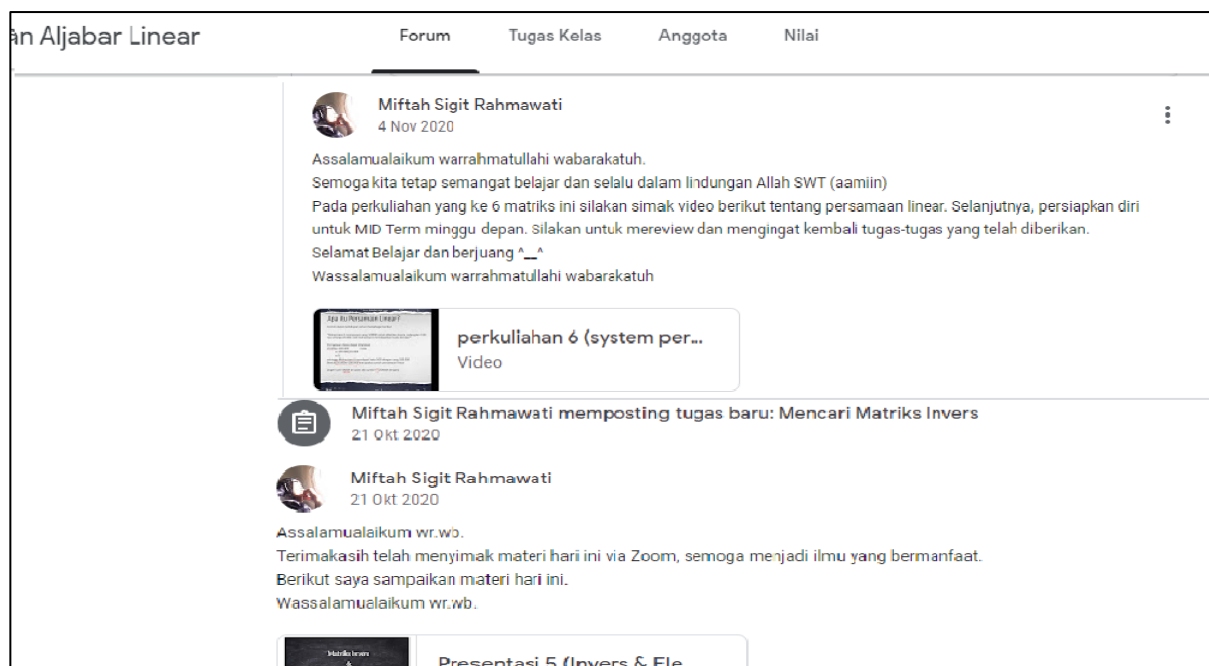
$$C_{1 \times 2} + D_{2 \times 1} = \begin{bmatrix} 0 & 6 \end{bmatrix} + \begin{bmatrix} x \\ 2 \end{bmatrix} = ??$$

tidak bisa dijumlahkan

untuk menyumbangkan dan mengorganisir matri

**Figure 3.** E-learning process (pen tablet)

Later on, the material can be downloaded or learned in *Google Classroom* in which the students can discuss with each other or ask questions to the lecturer in the comment section (Figure 4). The theory delivered given to the students in *WhatsApp* or *Google Classroom* to help them when doing online assignments. Online assignments are assignments in which the collection process and the assessment process was done using the Internet. Basically, giving assignments is a learning process in which the lecturers assign tasks to students both individually and in groups with the aim of stimulating students to be active in learning (Suparti, 2014). The following 2-3 meetings, an online assignment was given via *WhatsApp* and *Google Classroom*.



an Aljabar Linear

Forum Tugas Kelas Anggota Nilai

Miftah Sigit Rahmawati  
4 Nov 2020

Assalamualaikum warrahmatullahi wabarakatuh.  
Semoga kita tetap semangat belajar dan selalu dalam lindungan Allah SWT (aamiin)  
Pada perkuliahan yang ke 6 matriks ini silakan simak video berikut tentang persamaan linear. Selanjutnya, persiapkan diri untuk MID Term minggu depan. Silakan untuk mereview dan mengingat kembali tugas-tugas yang telah diberikan.  
Selamat Belajar dan berjuang ^\_\_^  
Wassalamualaikum warrahmatullahi wabarakatuh

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Miftah Sigit Rahmawati memposting tugas baru: Mencari Matriks Invers  
21 Okt 2020

Miftah Sigit Rahmawati  
21 Okt 2020

Assalamualaikum wr.wb.  
Terimakasih telah menyimak materi hari ini via Zoom, semoga menjadi ilmu yang bermanfaat.  
Berikut saya sampaikan materi hari ini.  
Wassalamualaikum wr.wb.

Presentasi 5 (Invers & Ele...

**Figure 4.** E-Learning process (Google Classroom)

Table 4 and Table 5 below provide data of the results of e-learning learning and online assignments based on social media during the Covid-19 pandemic, focusing on the aspect of process.

**Table 4.** Process (lecturers)

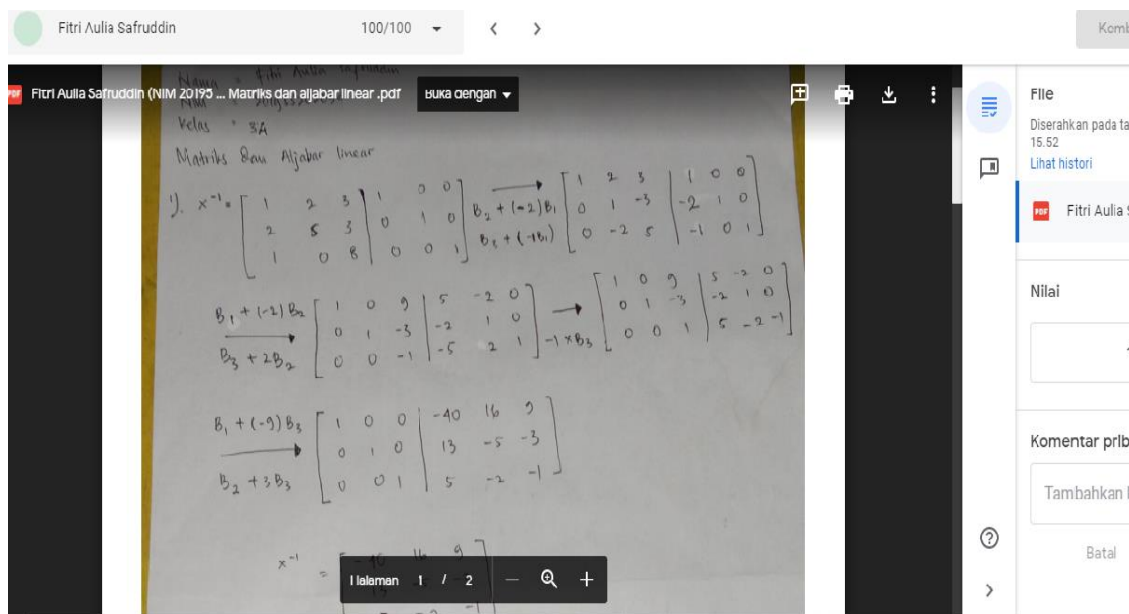
Aspect	Indicator	Percentage
Lecturers	Mastery of material	100%
	Media use	86%
	Method Application	80%
	Ability to make a post on <i>Google Classroom</i>	86%
	Assignment assessment	80%

In e-learning and online assignments based on social media, lecturers used social media to support online learning for Algebra courses, mostly in the form of mathematical problems, so that the lecturers used a pen tablet to describe the math calculations. The lecturers also used *Google Classroom* to distribute materials so that they could be neatly arranged, and students could download or review the materials anytime. *Google Classroom* as social media serves as a platform that provides information during lectures, including the materials, assignment instructions, questions regarding online assignment, and assignment assessments.

**Table 5.** Process (students)

Aspect	Indicators	Percentage
Students	Downloading lecture materials	84.28%
	Watching lecture videos	67.85%
	Using Google Classroom	65.95%
	Submitting assignment	71.43%
	Discussion	61.8%
	Ability to understand	80.3%
	Learning motivation	86.8%

From the data obtained from questionnaire, most of the students worked collaboratively and discussed with their peers during the process of doing online assignments. This reinforces the theory from (Vallejo & Cunha, 2015). However, there were also students who worked independently so that measuring their understanding of each student according to the results of the assignment cannot be done. In e-learning process, feedback from the lecturer for the students are required (Gielen et al., 2010; Goetz, Nett, Martinya, Hall, & Pekrun, 2012). Following online assignments, students can easily see the results of online assignment assessments as a form of appreciation as well as evaluation of e-learning. Some of results of students' online assignment in Matrix Algebra are shown in Figure 5.



**Figure 5.** Online assignments

The assignments are written manually and then photographed. Some students have same answer so that lecture the lecturer cannot judge whether the results are in accordance with the ability and understanding, but this can be assessed through discussion sessions during virtual meetings.

### **Products/Results**

From observations during the learning process and questionnaires on google form after virtual learning was held through a zoom meeting, 80.3% of students understood the materials. While the results of the online assignment assessment can be seen in table 6 below.

**Table 6.** Online assignment results

Indicators	Submitted Assignment	Mean
Matrix Operation	63.45%	43.6
Elementary Row Operations (OBE)	66.89%	77.6
Determinant	51.72%	94.1
Midterm exam	62.07%	45.2
Permutation	61.38%	95.3
Inverse	68.28%	96.9
Video presentation	68.30%	81.1
Final exam	84.14%	77.4

From the product aspect, students obtained an overall average score (mean) of 76.4 from a maximum score of 100, and obtained a percentage of assignment submission of 65.78%. Hereby, the outcome was categorized *adequate* in terms students' mastery of the material, and was categorized *moderate* in terms of motivation in online assignments. There were several reasons causing the low

percentage of assignment submissions. In the assignments regarding Determinant materials, it was found that students were not aware of the due date given on google classroom, resulting late submissions on Google Classroom by the students. However, willingness to study was *relatively good* as it can be seen from the results of the Final Semester Exams. This is related to the previous aspects, namely context, input and process. In order to improve outcomes related to mastery of the material and willingness to learn, aspects of context, input, and process must be improved beforehand to assure that the results of social media-based e-learning and online assignments are better.

The percentage of online assignment submissions depends on the type of online assignments, in accordance with the contract between lecturers and students at the beginning of the term. The highest percentage is the submission of online Final Exam which holds the highest score in the lecture contract. Meanwhile, on the second rank w the percentage of online assignments in form of making video presentations of the materials. This assignment made the students interested due to their major which is related to application designing and video editing. Learning evaluation must be done to assess the level of students' mastery on the materials as well as the level of students' learning motivation. Consequently, it takes quite a while for lecturers to assess each student's assignment and return it as a feedback for the students, in hopes that it will boost their motivation.

Online assignments were carried out in several ways, such case studies, case-based instructions, drills, and video presentations. The benefit of using WhatsApp as social media is to share information about lectures so that it was convenient for lecturers to communicate with each student without having to meet face to face. Social media such Google Classroom serves as a classroom management software when the students are not in a real class during e-learning. It enables easier process in checking, returning, and releasing scores of the assignments. Not to mention it also saves paper so as to reduce paper waste. But it should be noted that the authenticity of submitted online assignments cannot be guaranteed. Thus, an evaluation of each student's mastery is necessary. However, it is hoped that online assignments will make the students accustomed to learn independently as an active learning process and as an evaluation of e-learning process. In virtual learning, it is expected that the students can understand the materials before doing the online assignments. Lecturers should not only give assignments to students, but also facilitate them with materials or theories, question-answer session, and discussions.

This study has temporary findings including advantages and obstacles of e-learning and online assignments through social media. The advantages of e-learning and online assignments through social media: (1) Online assignments using google forms enables easier assessment/evaluation process because each number can be corrected, so it is possible to see the students with the same answers; (2). Assignments can be returned immediately after being assessed; and (3) Assignments can be graded and directly stored in excel form so it is time-efficient. The obstacles of e-learning with online assignments through social media: (1) Identical answers are frequently found hence it cannot be used as a reference for evaluating each student's understanding of the materials; (2) Some students

experienced difficulties in uploading responses when using google form due to Internet connection; and (3) There are responses with the same name because they have two different email addresses.

Online assignments can also be done through a discussion between students. This meets the definition of active learning, in which the students are actively engaged in e-learning by doing online assignments. Observers of educational innovation, such as lecturers, play a great role in education. This includes improving behavior, motivation, self-confidence, and comfort in learning for the sake of quality education. One way to improve the quality of education is by improving the quality of learning through developing a learning method (Rahmawati & Amri, 2020). Online learning system or e-learning grants great opportunities for students to access learning materials by themselves. Learning can still be done through material delivery from the lecturers, discussions, and online assignments even though they do not meet face-to-face. Previous studies by (Sutarna, 2016) and (Dewi & Rainarli, 2014) suggested that giving assignments stimulates better results. Due to this, it is expected that e-learning and online assignments in matrix courses can become an effective learning method during the Covid-19 pandemic.

## CONCLUSION

Online assignments can be expected to be a solution or an alternative when the internet network is unstable and or to minimize the consumption of internet quota. Information obtained from the evaluation using CIPP model can be taken as feedback on the process of teaching and learning outcomes during social media-based e-learning and online assignments. The outcome is categorized *adequate* in terms students' mastery of the material, and is categorized *moderate* in terms of motivation in online assignments, depending on the type of assignment. This means that the evaluation using CIPP model in social media-based e-learning and online assignments on algebraic materials comes with good results in terms of infrastructure, management, and use. This feedback will also be a comparison to improve and refine future teaching and learning process both during the Covid-19 pandemic and following the Covid-19 pandemic. Furthermore, online assignments need to be improved, modified, or developed in various ways. It should be noted that this study took place in Sorong, West Papua, an area where the Internet network is constrained. In a learning process that takes place at home that requires the lecturers and students to prepare everything in regards the network, this is a key factor that needs to be considered in online learning during the

pandemic, as well as the internet quota which have the smallest percentage among other aspects, because the students need relatively large quotas in this type of learning process.

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