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Evaluation of Online Learning Implementation with a System Thinking Approach

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Abstract: Evaluation of Online Learning Implementation with a System Thinking Approach. One of the successes of the learning process can be seen from the student's grades, but the overall evaluation process based on feedback from students can be done using systems thinking approach. **Objective:** The systems thinking approach in research aims to find out the obstacles to the online learning process and determine problem-solving strategies to improve the quality of online learning. **Methods:** The research method used is the descriptive qualitative method and Focus Group Discussion (FGD). **Findings:** Based on the results of the study, there are 20 variables of obstacles in the implementation of learning that are interrelated and influence the implementation of learning. **Conclusion:** The results of the study, it shows that the objective variables in learning are the learning process, student understanding of learning material, and value of learning outcomes, the supporting variables to answer the learning objectives are lecturer creativity and student motivation.

Keywords: evaluation, online learning, systems thinking approach.

Abstrak: Evaluasi Penerapan Pembelajaran Daring dengan Pendekatan System Thinking. Keberhasilan proses pembelajaran salah satunya dapat dilihat dari nilai mahasiswa, akan tetapi proses evaluasi secara menyeluruh berdasarkan timbal balik dari mahasiswa dapat dilakukan dengan pendekatan systems thinking. Tujuan: Pendekatan systems thinking dalam penelitian bertujuan untuk mengetahui kendala-kendala proses pembelajaran secara daring (online) dan menentukan strategi pemecahan masalah untuk meningkatkan kualitas pembelajaran secara daring. Metode: penelitian ini menggunakan metode deskriptif kualitatif dan Focus Group Discussion (FGD). Temuan: Berdasarkan hasil penelitian terdapat 20 variabel kendala dalam pelaksanaan pembelajaran yang saling terkait dan saling mempengaruhi yaitu proses pembelajaran. Kesimpulan: Hasil penelitian menunjukkan bahwa variabel tujuan dalam pembelajaran adalah proses pembelajaran, pemahaman mahasiswa dan nilai mahasiswa, variabel penunjang untuk menjawab tujuan pembelajaran adalah kreativitas dosen dan motivasi mahasiswa.

Kata kunci: evaluasi, pembelajaran daring, pendekatan systems thinking.

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■ INTRODUCTION

Learning is a process or effort made by each individual to get changes in behavior, knowledge, skills, attitudes, and positive values as an experience from what has been learned (Casnan et al., 2022; Gray & DiLoreto, 2016; Revilla et al., 2022). Learning is also interpreted as a psychological activity carried out by each individual with different behavioral results before and after learning. The difference is due to the addition of new experiences. That way, learning is a process of changing one's personality where changes are in the form of human qualities, namely increasing knowledge, skills, thoughts, understanding, attitudes, and various other abilities (Heong et al., 2020; Lestari, 2021; Shahid et al., 2015).

In learning activities, there is the term learning. Learning is defined as a system that is planned or designed, implemented, then evaluated systematically to achieve learning objectives effectively and efficiently (Casnan et al., 2018; Panergayo et al., 2022; Parwati & Suharta, 2020). Some concepts cannot be separated in learning activities, namely learning and teaching. Learning refers to what students do, and teaching on the contrary is based on the teachers (Casnan et al., 2022). Teachers have a role in learning in line with Kokom's opinion that learning activities are divided into three parts, namely: preparation, consisting of planning teaching programs, and teaching preparation with learning support tools. The second is the implementation of activities based on pre-designed learning preparations. The third is the follow-up to the learning that he has managed (Panergayo et al., 2022; Putri et al., 2021).

The learning carried out by the teacher has a role as an evaluator to be able to assess students objectively and comprehensively. Evaluation activities in learning are very important because they can measure the success of achieving learning objectives. Likewise, according to Nofiyanti (Widiyanto, 2018:18), evaluation is carried out to find out the extent to which an educational program has been successfully implemented, provide guidelines and find solutions for students who experience obstacles, and provide an overview of the teaching programs that have been achieved. Evaluation is an assessment process by comparing the expected goals with the actual progress achieved (Latar et al., 2020; Pujawan et al., 2022; Triyanto & Handayani, 2016). Evaluation is a systematic and continuous process to determine the quality (value and meaning) of something, based on considerations to make a decision (Parwati & Suharta, 2020; Widiastuti et al., 2022).

Based on the evaluation, educational actors must prioritize evaluation to realize an educational structure that leads to student success in the future. Especially now in special conditions, namely due to the Covid-19 pandemic. The Indonesian government through the Ministry of Education and Culture and the Indonesian Ministry of Religion has implemented a policy of studying and working at home (working from home) starting in March 2020 as an effort to break the chain of the spread of Covid-19 (Marquez et al., 2020; Nurhasanah & Sulistyo, 2022). Learning at home that is done is usually based on online learning, or learning that is carried out remotely through internet media as well as other supports such as cellphones and computers. However, the implementation of online learning during a pandemic has encountered various obstacles. Some of the obstacles that often occur are related to inadequate internet signals, causing learning not to be maximized: it is difficult to join Zoom, Google Meet, and other platforms, and video lags (Abdullahi et al., 2014). Not only that, the difficulty in understanding subject matter when online is due to the lack of opportunities to discuss directly and freely with the lecturer (Hussin et al., 2018).

The solution to overcoming obstacles to online learning is necessary to evaluate as a review of the success of learning. Not only that, an evaluation was carried out to be able to see related barriers to online learning and an overview of overcoming them. Evaluation is carried out based on an approach. One approach that can be used in evaluating online learning is systems thinking. Systems thinking is an overall perspective on studying and understanding each related part in a system (Casnan et al., 2022; Heong et al., 2020). the systems thinking approach also has a view as part of the interconnectedness of the world or seeing one part that causes another part. So, it is very important to evaluate online learning with a systems thinking approach to find out the various barriers that are interrelated between learning variables (Widiastuti et al., 2022).

■ **METHODS**

This study used a qualitative descriptive method and Focus Group Discussion (FGD). Qualitative descriptive method, which can briefly be explained that the research method is centered on a simple qualitative approach with an inductive flow (Casnan et al., 2022). Qualitative research is research based on the condition of natural objects, researchers are positioned as instruments, data collection is purposive sampling, collection techniques are triangulation (combined), with inductive/qualitative data analysis.

Focus Group Discussion (FGD) is a data collection method used in social qualitative research in group discussions that focus on certain studies (Heong et al., 2020). The research sample is the 6th semester mathematics education study program, totaling 18 people divided into 3 FGD groups. The FGD participants discussed the obstacles in the online learning process and linked their relationship with the systems thinking approach. The steps of data collection include restrictions on what will be researched, collecting information, documentation, visual materials, and the design of recorded and recorded data (Casnan et al., 2022). The research data obtained are based on descriptive qualitative research, not numbers, meaning that the data generated is in the form of events, events that are analyzed in the form of categories through systems thinking with discussion through Focus Group Discussions (FGD). The stages of the research process are shown in Figure 1. Evaluation of students' online learning processes with a systems thinking approach can analyze key constraints in the online learning process.
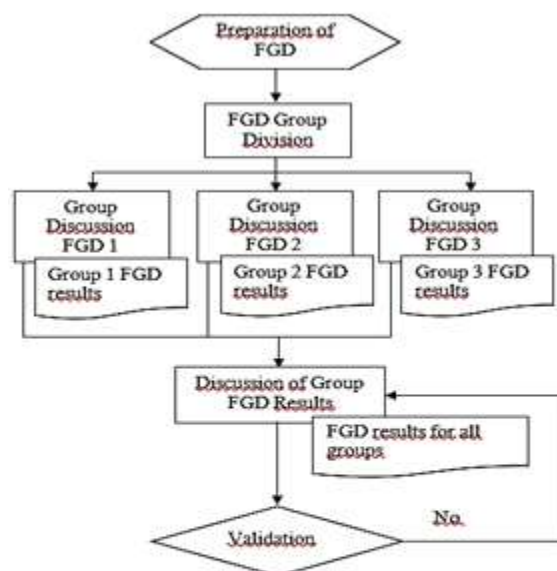
RESULTS AND DISCUSSION

The results of the study obtained data on the relationship between the relationship of each variable, which was described through a causal loop. Data obtained from 3 groups of students were analyzed through systems thinking. With qualitative data then discussed in FGD with the results of the causal loop of each group.

Figure 1 shows systems thinking constraints and factors that affect online learning in group A. Students' ability to understand material related to counting, verbal, perceptual speed, productive understanding, deductive reasoning, spatial visualization, and memory (Casnan et al., 2022; Heong et al., 2020; Hussin et al., 2018).
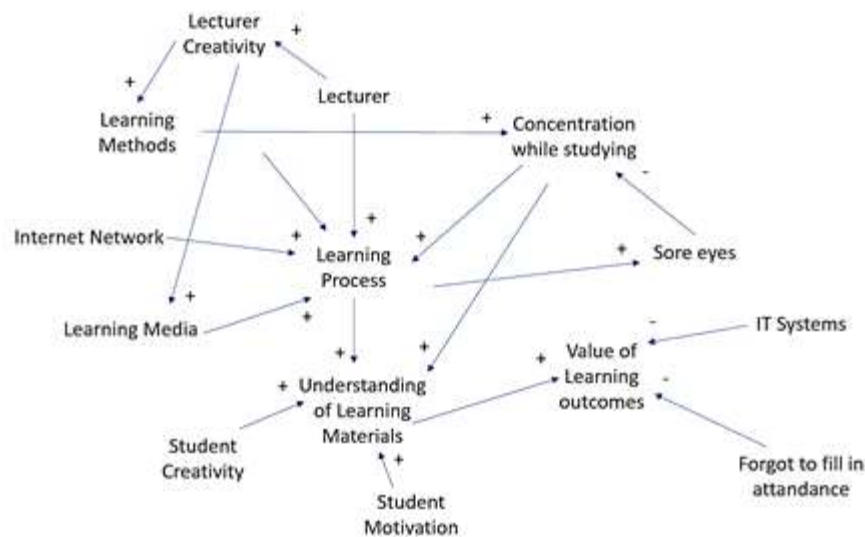

Figure 2. Systems thinking in online learning of students in group A

Understanding the material possessed by students will have an impact on the level of learning achievement. Based on figure 2, the direction of the inward arrow indicates what is to be achieved. That way, if the learning that is built by a lecturer is fun (methods, media) as well as the facilities are met (health, use of IT, networks) then it can motivate learning for students. Low motivation to learn will affect the results of the learning process, therefore things that become factors or

influences motivation need attention. So a lecturer has an important position in realizing effective learning in producing a good learning process. Professional lecturers are needed in order to be able to do this, so there will be feedback from lecturers and students as an aspect in increasing learning motivation (Lestari, 2021; Revilla et al., 2022; Shahid et al., 2015). Not only that, the method also determines the success of the teaching and learning process, a good method is

the way or presentation of learning materials used by teaching staff when presenting teaching materials (Panergayo et al., 2022; Roza et al., 2022; Triyanto & Handayani, 2016). Learning that changes the offline method to online is one of the difficulties in the learning process where the use of IT instruments such as the Zoom Meetings application, Google Meet, Youtube and so on. Based on research results (Marquez et al., 2020; Nurhasanah & Sulistyo, 2022), not all students or teaching staff can take advantage of these IT programs properly. So it is necessary to pay attention to what is the basic cause of student misunderstanding when lectures online.

Group B students experience problems in understanding of learning material, which is in themselves or outside themselves. An example that can be seen in Figure 3 shows the personal self-factor, which is health where the eye condition hurts due to too long monitoring learning with gadgets or other things, anxiety, forgetting to take attendance, and learning material being studied is not in accordance with the exam. Meanwhile, external factors, namely the condition of the learning environment, the use of methods by lecturers, supporting materials or books as learning media, and the discipline of the lecturers.
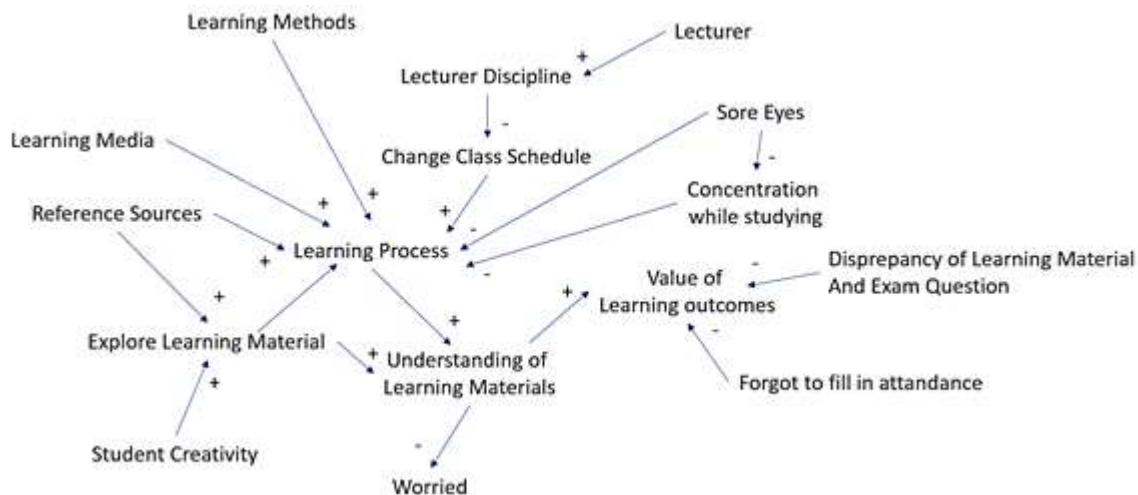

Figure 3. Systems thinking in online learning of students in group B

Figure 3 is FGD result in online learning accordance which divides three factors that hinder students in the learning process, namely internal factors, external factors, and learning approach factors. Internal factors consist of physiological aspects including nutrition, health, and breakfast habits. Psychological aspects related to attitudes, talents, interests, and motivation. External factors consist of the social environment (father's education, mother's education, the economic situation of parents, teachers, friends, and the community) as well as the non-social environment, namely the school

environment and living environment. The learning approach factor is the method used in carrying out learning activities (reviewing material) (Hussin et al., 2018; Parwati & Suharta, 2020; Triyanto & Handayani, 2016).

Group B students felt that the learning process was not optimal because the material and exam questions did not match. This can reduce the interest of students even though at first they are very enthusiastic about a course. Learning materials are in the form of text, audio, video, animation, which can be used for learning (Casnan et al., 2018). Test questions are tools or

procedures used for measurement and assessment. Of course there must be a match. Seeing the results of student understanding in Figure 3 which causes anxiety for students if they really do not master the material.

Figure 4 in group C of students, in systems thinking it can be seen that the relationship between the learning process, understanding of learning material, as well as values   is used as a benchmark in achieving results. However, apart from the similarity of factors with students in group B, there are additional factors, namely outside disturbances as well as network. Network conditions in online learning are strongly influenced by gadget (Hussin et al., 2018; Nurhasanah & Sulistyo, 2022; Roza et al., 2022). With the difficulty of the network being an obstacle to learning media, this is a factor that affects the way of learning so that it causes students who are smart but are constrained by the network while students who usually have a good network or learning support (Casnan et al., 2022).
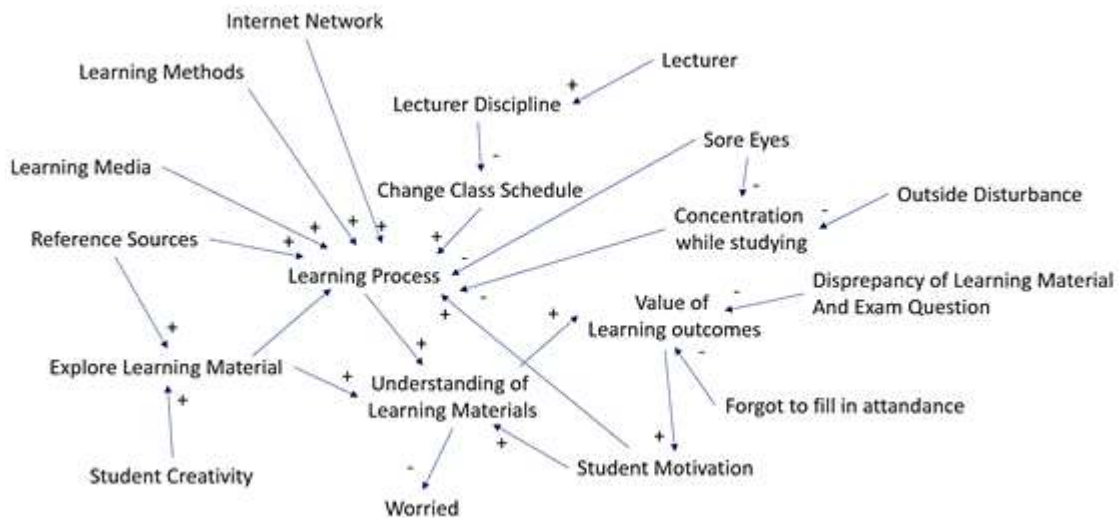

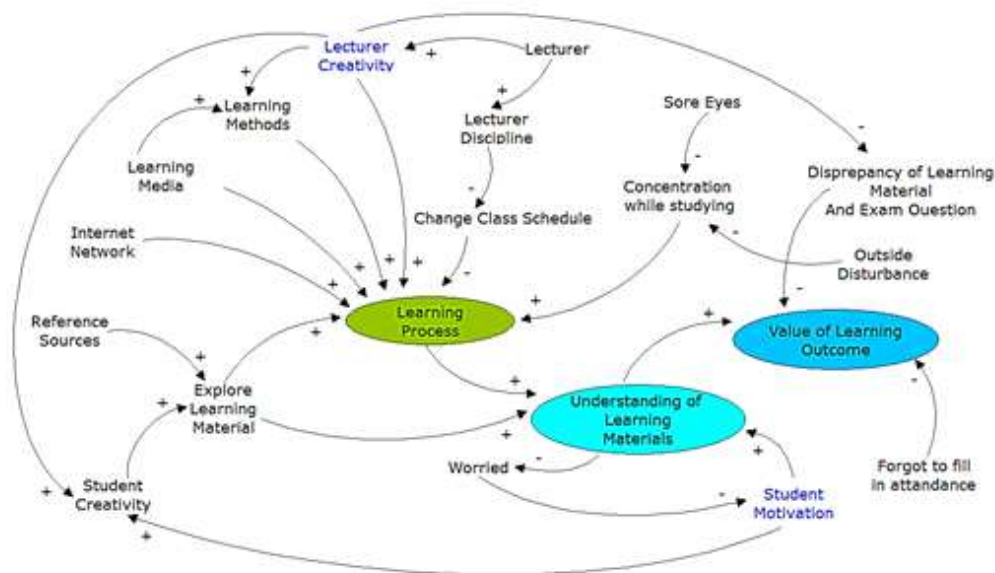**Figure 4.** Systems thinking in online learning of students in group C

Figure 5. Systems thinking in student online learning results of FGD

The results of the FGD related to systems thinking in student learning gave rise to arrows that had two arrows that went outward and inward. Each arrow has a meaning. Arrows that have arrows pointing outward, it is a factor or obstacle for students during online learning. And for arrows that point inward as one of the things to be achieved or a goal. Figure 5 which has a lot of incoming arrows is a learning process, in which the process is expected to run smoothly based on the existing constraints (outbound arrows). If the student learning process can be carried out well, then student understanding will increase seen from the results of learning scores as evaluation material for further online learning (Batubara et al., 2022; Casnan et al., 2018, 2022; Hussin et al., 2018).

Problem-solving strategy from the results of the FGD, 1) Internet Network constraint can be solved Look for the nearest area with an internet signal and Offline Lecture; 2) Reference sources contraint can be solved Subscribe to an e-book or e-journal and Seek access to free reference sources; 3) Learning Media constraint can be solved Provide softcopy of learning resources such as ebooks, looking for other reference sources and Create interactive learning videos; 4) Lecturer Creativity constraint can be solved Lecturer Public Speaking Training, Training on making learning media and Video editing training for the development of learning media; 5) Student Creativity constraint can be solved provide motivation, train independence, discipline and responsibility in the lecture process, Giving lecture assignments to be included in the competition; 6) Lecturer Discipline constraint can be solved monitoring and evaluating the lecturer's learning process and Provide sanctions for undisciplined lecturers; 7) Sore eyes constraint can be solved wear anti-radiation glasses, Prepare eye drops and arrange online and online lectures;

8) Outside disturbance constraint can be solved conditioning the learning environment before lectures and install the caption "Don't be noisy while there is a lecture"; 9) Forgot to fill in attandance constraint can be solved extend attendance charging time, remind each other and activate the alarm; 10) Student motivation constraint hang out with highly motivated friends, many job and business opportunities after graduating from college and the lecturer gives motivation before starting the lesson.

Problem-solving strategy, showing that from the results of the FGD, online learning evaluations taken based on 3 groups of students could find solutions. First, regarding the network, it is certain that each student must be in an area with good internet coverage when starting lectures, even now offline learning has been re-enacted (Casnan et al., 2022; Heong et al., 2020; Latar et al., 2020). Other obstacles can be overcome as the first step to achieve a satisfactory learning process. Through FGDs, each influencing constraint can be analyzed and solutions can be found as strategies or ways to solve problems. Based on the results of the FGD, the main obstacles to improving student understanding of learning material during the learning process are Student Motivation and Lecturer Creativity.

■ **CONCLUSIONS**

The systems thinking approach in research aims to find out the obstacles to the online learning process and determine problem solving strategies to improve the quality of online learning. Based on the results of the study, it was shown that the objective variables in learning were the learning process, student understanding of learning material and value of learning outcomes, the supporting variables to answer the learning objectives were lecturer creativity and student motivation. The systems thinking approach can

be found solutions or strategies for each obstacle that is often experienced by students during the learning process.

This research can be used to evaluate the learning process with a systems thinking approach that links the interrelationships between variables. This research still needs to be developed by inviting FGD participants from experts in the field of education.

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