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The Development of Blended Learning Model Using Game and Tournament

Journal of Electrical Systems

Abstract: - The educational sector has faced serious problems related to how the learning process is carried out due to the impact of the corona virus. Educators are trying to find ways to keep the learning process going, one of which is with the Blended Learning system that utilizes technology. There is a concern on how the quality of the Blended learning system is implemented, there is no way to control students in doing tasks directly, there is no game tournament model in blended learning, not optimal communication carried out in the blended learning process until now so that it influences student motivation and learning outcomes. The validator's assessment regarding the product practicality namely the content feasibility of the practicality instrument reaches 86.6% in the very practical, language feasibility aspect reaches 92% in the very practical category, and the graphic aspect of the product reaches 80% in the very practical.

Keywords: Blended Learning Development, Game, Tournament.

I. INTRODUCTION

In the current era of digitalization of technology, the implementation of education in Indonesia is insepara-ble from the development of science and technology. This condition shows that ICT is always developing and being adopted in education. This can be seen from the results of a survey by the central statistics agency, where all levels of education prefer accessing the Internet of various types, such as fixed broadband connec-tions (62.41%), fixed narrowband (9.90%), mobile broadband (34.85%) and VSAT (satellite) (4.01%). The number of students who access the Internet at school (ED.6), for all levels of education is 33.67%. The propor-tion of teachers who have qualifications in the field of ICT (ED.8), at all levels of education is 10.10%. Fur-thermore, based on the level of education, at the level of high school and equivalent education it was greater, namely 14.43%, followed by junior high school and equivalent at 11.33%, then elementary school and equiva-lent at 6.90%. Statistics center agency survei , including universities [1] in implementing blended learning [2].

Even though many universities have carried out online learning and the ability of lecturers is also very ade-quate in creating blended learning content and learning, using Google Classroom [3] [4] blended learning with the sevima edlink application [5] [6] [7], problem-based blended learning [8] [9] and the use of the Edmodo platform [10] [11] [12][13] there are still problems found regarding online learning [14], for example, students get bored easily in learning [15][16] uninteresting and monotonous delivery of material [17] difficulties in understanding the material [18] [19] [20] the provision of support has not been fulfilled in learning so that it is not conducive [21] . Lack of interactivity, and monitoring and evaluation techniques in distance learning that have not been developed [22]. Based on these problems, the researchers developed a blended learning model assisted by a game tournament which is expected to be a solution to the above problems based on the Plomp development model.

1.1 Data sources for MBL-GT development

Based on the results of observations, interviews and documentation conducted at the Faculty of Teacher Training and Education UMRI from 20 September 2020 to 31 August 2021 during the Covid period, problems were found in the learning process. Students rarely gave arguments and answers to questions given by lecturers, even if someone spoke, students who are classified as highly capable and are asked repeatedly, rarely do students take the initiative to immediately respond. Apart from that, it was found that the percentage of student attendance was at 37.5%.

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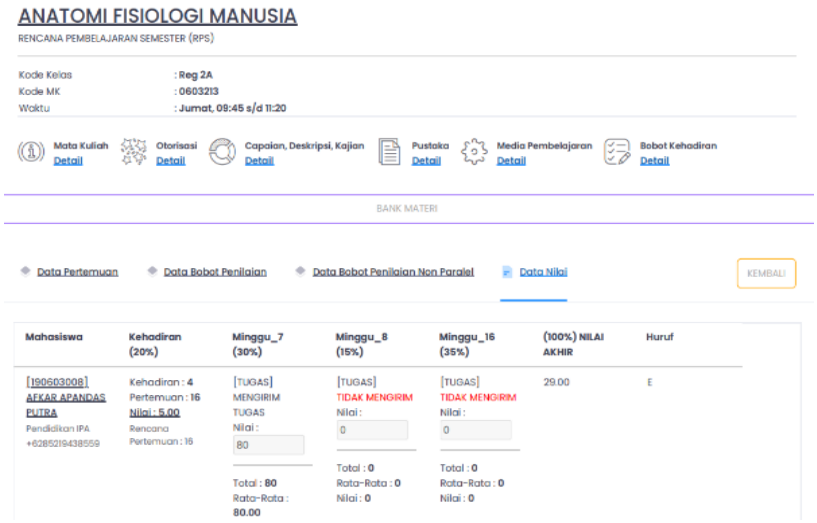

Figure 1. Students' Attendance below average

Based on the results of an analysis of online learning media, especially during the Covid period, the lecturers did not use innovative and creative strategies to make the learning process run enjoyably. The online learning process which was mostly carried out seems rigid, where learning began with delivering material, followed by a question and answer session, and ended with giving assignments or quizzes via the Google form. Learning was carried out only in one direction, which showed a lack of provision of learning support [23]. The results of research related to aspects of interactivity in utilizing online communication between students or between students and lecturers obtained almost homogeneous where the students answered never 18%, rarely 39%, often 27%, and always as much as 16%. This data shows that most students (39%) say they rarely use interactive online media to communicate [24].

Likewise with the results of interviews with students of the Science Study Program which were conducted online, it was revealed that the learning process carried out online was not maximal which made the students sometimes not fully understand the material presented. They also became less motivated due to the lack of variety in the learning process.

1.2 Details of the MBL-GT Model

The research method used is Research and Development (R&D) which is based on the Plomp development model. This research adopts Plomp's phases in its process which consists of 3 phases [25]. The MBL-gt model consists of a game where the game developed contains multiple choice questions that can be input by the teachers according to the learning material. The game is played at the end of the lesson by each student. Then, the tournament containing multiple choice questions is played in the form of a contest where each student who knows the answer will raise his or her hand to answer the question.

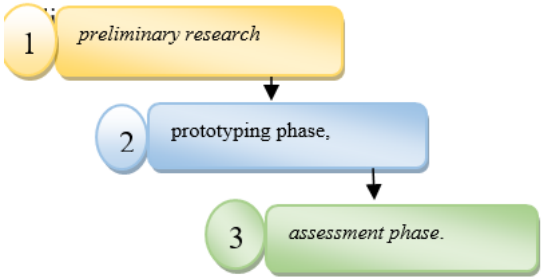

Figure 2. Development Flow

II. METHODS

2.1 Research Procedures

This research is development research based on the results of observations, interviews and documentation conducted at the Faculty of Teacher Training and Education UMRI from 20 September 2020 to 31 August 2021.

The instruments used were validated by experts in media, materials and language. This research focused on Science Education students.

2.2 Data Collection

The research method used is Research and Development (R&D) which is based on the Plomp development model. The data collection phases are as follows: *Preliminary Research*, A brief activity in this stage can be a review of current or past literature, with greater emphasis on content validity. This phase is also to carry out curriculum analysis, analysis of student characteristics and analysis of the learning process. *Prototyping Phase*, The design of this model development looks at the similarity of material with the curriculum, which is coherent with student characteristics (including form, language, and delivery) and at this stage also drafts the necessary instruments. The instruments compiled include: (1) validation sheets (student books, lecturer books, and lesson plans validation), (2) learning model implementation sheets, (3) student response questionnaires to the implementation of learning models, (4) lecturer response questionnaires to learning model implementation, (5) student motivation questionnaire, and (6) test on student learning outcomes.

III. RESULT

3.1 Development Stages Carried Out

Table 1: MBL-GT Product Development Phases

Phase	**Criteria**	**Activity Description**
Preliminary research	Emphasis of content validity	Analyze the problem and study the literature. The results of this phase are in the form of an initial prototype design
Stages Development stage (Prototyping phase)	Focused on consistency and practicality. Next, prioritize practicality and move towards effectiveness gradually	The prototype developed will be tested gradually and revised using the formative evaluation stage

Tabel 2: Meeting Plan for the Implementation of the Blended Learning Game Tournament Model

Meeting	**Blended Learning Model Activities**	**GT assisted Activities**
1	Presentation/delivery of material (directly by the lecturer) Community	Presentation of online material: with vicon (zoom), PPT, Video in the menu Because it needs an explanation in advance about the learning model developed Discussion via Google Doc regarding the first biology material in the group (online)
2	Communication	Follow-up discussion between groups via vicon and for those whose names are mentioned (online)
3	Evaluation (questions) Rewards	There are two parts: Mandatory game for every student in the group (online) Tournament Students compete to answer questions at the tournament stage which is called scramble questions Equipped with time settings for answering questions By calculating the community score, the value will automatically be accumulated in GT
4	Delivery of the material, and then group assignment	Using vicon and google doc space for discussion

Tabel 3: Series of Lecturer and Student Activities in Blended Learning Game Tournament Model

Phase	**Lecturer Activities**	**Student Activities**
Motivating students	Starting the learning process with greetings Explaining the indicators and learning objectives	Answering the greetings Paying attention to indicators and learning objectives

Phase	Lecturer Activities	Student Activities
	Exploring student knowledge by asking questions related to previous material	Answering / responding via the available vicon
Presenting Information	Presenting offline or online material through online platform via the Vicon menu Exploring information from students by asking further questions regarding their understanding of the material that has been determined	Paying attention to the lecturer's explanation and be asked to turn on the camera Answering questions spontaneously or by appointment and provide responses via Vicon or Google Doc
Organizing students in learning communities	Organizing students into groups in the GT group menu The lecturer has divided students heterogeneously and included them in the group menu	Students are assigned to their respective group rooms
Guiding the work and learning community	Facilitator	Carrying out a task Discussing in groups with the vicon menu as well as working in Google. Doc available
Communicating	Extensive discussion activities between communities are added characterized by those whose names are mentioned Asking community representatives to present the results of their group work with those whose names are mentioned Concluding the lesson together	Presenting the results of group work for those whose names are mentioned Summarizing the lesson
Evaluation (in the form of game and tournament questions)	Carrying out games and tournaments where lecturers have created and imported questions in the question bank menu for games and questions for tournaments	Participating in games and tournaments according to the name determined by the lecturer Students answer mandatory questions in the game Students answer competition questions in the tournament session
Giving rewards	Giving rewards to the best communities/individuals	Receiving rewards

Tabel 4: Meeting Plan for the Implementation of the Blended Learning Game Tournament Learning Model Document content

Meeting	Blended Learning model activities	GT assisted activities
1	Presentation/delivery of material (directly by the lecturer) Community	Presentation of online material: with vicon (zoom), PPT, Video in the menu Because it requires an explanation first regarding the learning model being developed Discussion via Google Doc regarding the first biology material in the group
2	Communication	Follow-up discussion between groups through vicon and for those whose names are mentioned
3	Evaluation (in the form questions) Facilitator Adding extensive discussion activities between communities	There are two parts: This game is mandatory for every student in the group Tournament Students compete to answer questions at the tournament stage which is called contested questions

Meeting	Blended Learning model activities	GT assisted activities
	characterized by those whose names are mentioned Asking community representatives to present the results of their group work with those whose names are mentioned Concluding the lesson together	Equipped with time settings for answering questions Completing a task Discussing in groups with the vicon menu As well as working in Google. Doc available Presenting the results of group work with those whose names are mentioned Summarizing the material Participating in games and tournaments according to the name determined by the lecturer Students answer mandatory questions in games which are equipped with time settings for answering questions Rewards Presenting the material and assignment by the student group Using vicon and google doc for discussion

3.2 MBL-Gt Development Application

The MBL-gt application developed can be seen in the following image:

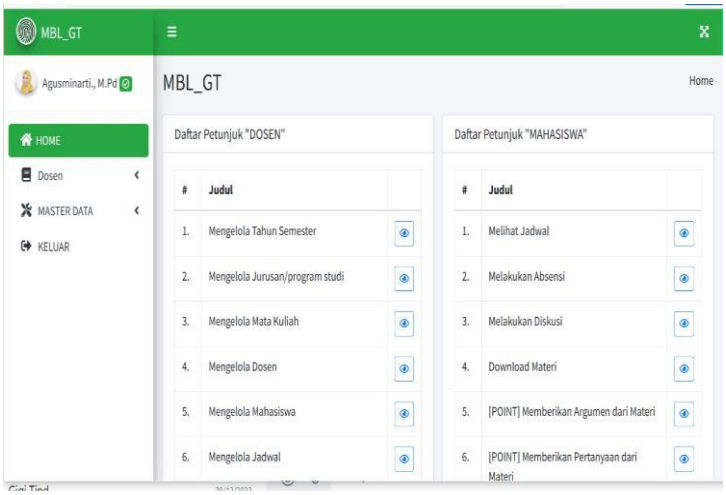

Figure 3. How to use Menu

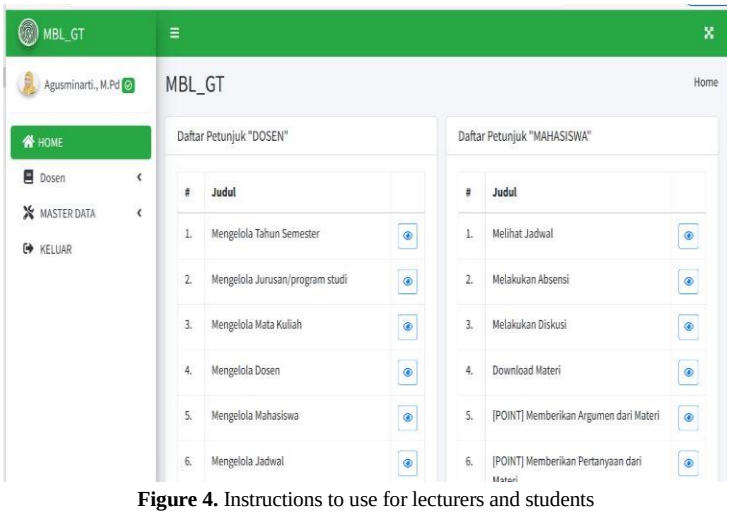

Figure 4. Instructions to use for lecturers and students

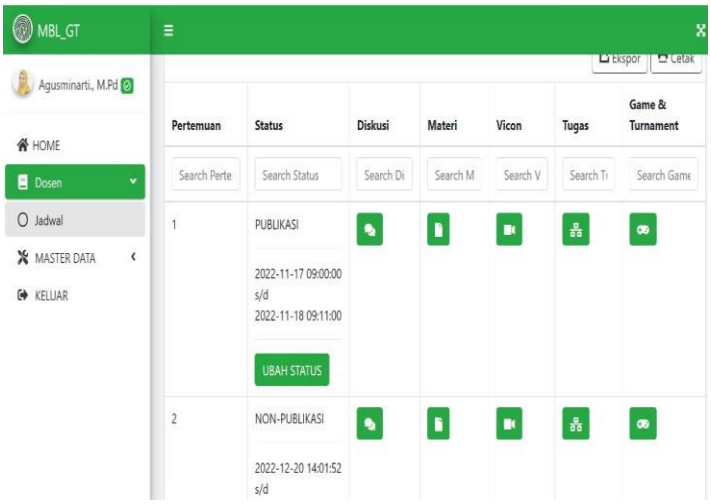

Figure 5. MBL-gt Syntax Menu

The menu consists of material presentation, community/group sections, communicating using the Vicon menu, evaluation in the form of game and tournament menus and rewards menu.

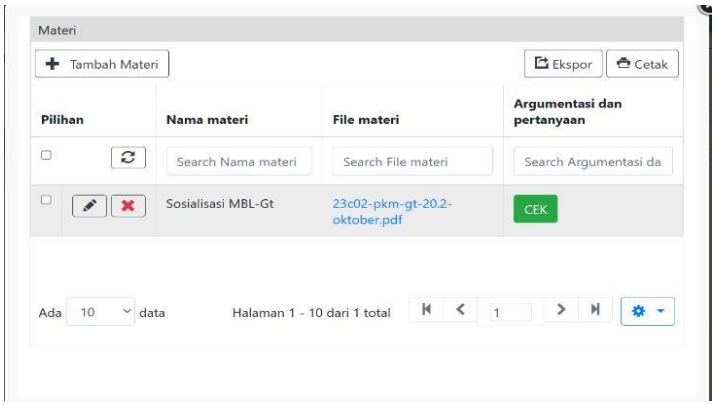

Figure 6. Material Presentation Room

The material presentation menu on MBL-gt can be used by the lecturer adding material to be studied at each meeting, where students can download the material to be presented. This menu also provides space for asking questions and discussing regarding material studied online, so that data can be recorded and lecturers can monitor activities online.

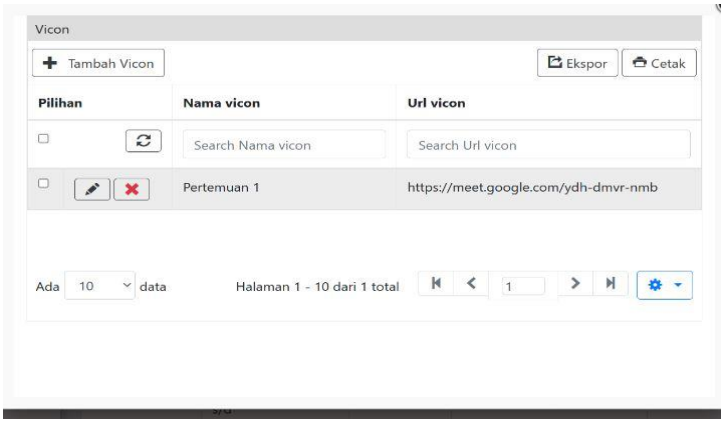

Figure 7. Vidio Confrence Menu

The benefit of the vicon menu like the picture above is that it is used when delivering information or material offline, which can be added as needed for the learning process. The next menu is the task menu used during online activities. Lecturers can add assignments to be given and provide assessments of the assignments given. The menu can be seen in the image below.

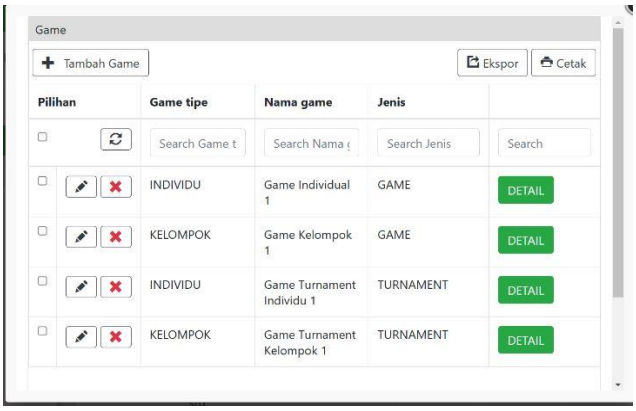

Figure 8. Game & Tournament Menu

The benefit of the game and tournament menu is for evaluation activities, where games and tournaments provide questions that have been input by lecturers according to the material being studied, and likewise with tournaments. The difference between games and tournaments lies in terms of implementation. Games are played by individuals in each group who answer mandatory questions, while participant tournaments come from representatives of each group to compete to answer contested questions.

3.3 Instrument practicality results from development experts

The results of the assessments from experts regarding the practicality of the MBL-gt model development instrument are as follows, with the equation formula Arikunto in [26].

$$\text{Persentase} = \frac{\text{Score obtained}}{\text{Highest score assessment}} \times 100\ \%$$

Tabel 5: Results of Practical Validation of the MBL-GT Instrument

No	Aspect	Validator			Assessment Criteria
		I	II	III	
1	Feasibility of the contents of the practicality instrument	80 %	80%	100%	Very practical
2	Aspects of language appropriateness	88%	88%	100%	Very practical
3	Graphic aspect	80%	80%	80%	Very practical

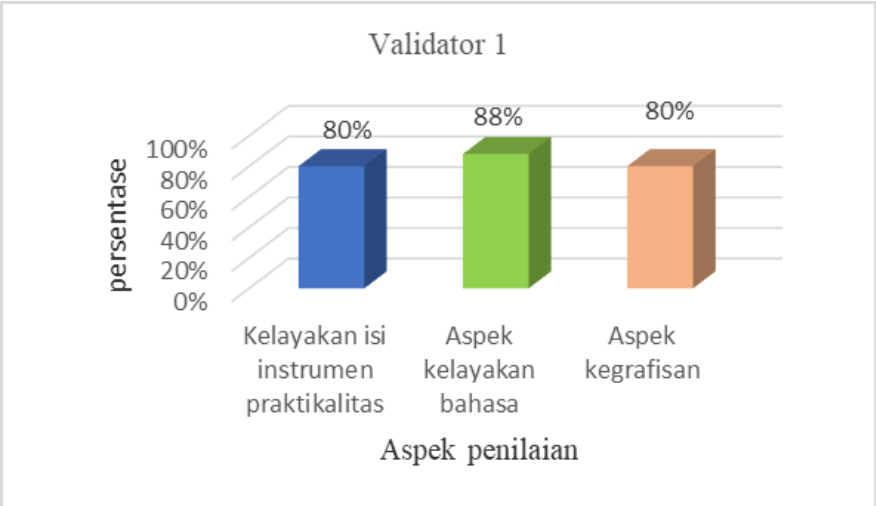

Figure 9. Chart of validator practicality assessment results 1

Figure 9 shows the first validator's assessment of the practicality of developing a blended learning model instrument assisted by game tournaments. The highest assessment was in the language appropriateness aspect reaching 88%, while the content and graphic appropriateness aspect reached 80%.

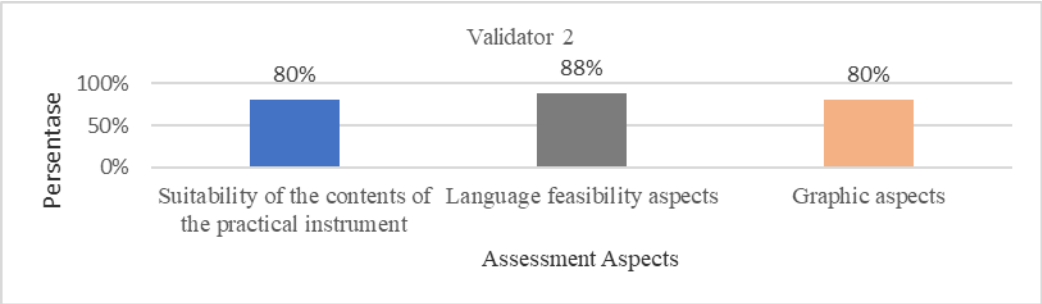

Figure 10. Chart of validator instrument practicality assessment results 2

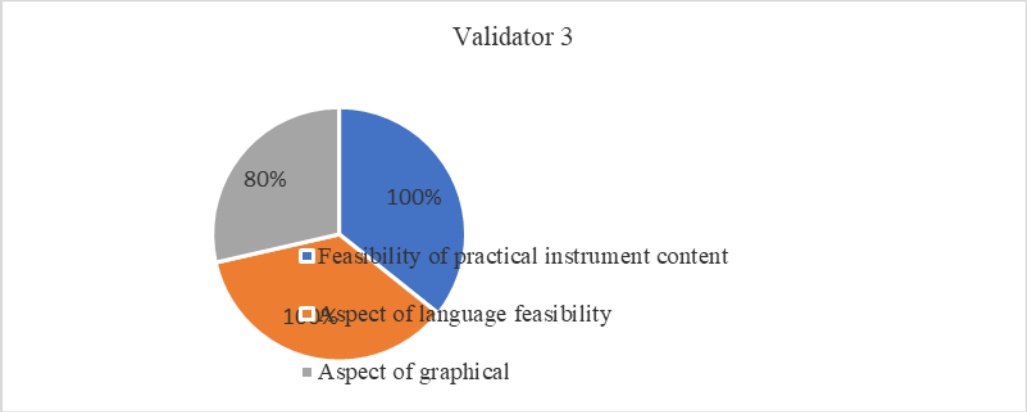

Figure 11. Chart of validator practicality assessment results 3

Figure 11 shows the results of the assessment from the third validator regarding the practicality of the blended learning game tournament model instrument, namely the appropriateness aspect of the instrument content received a score of 100%, the language appropriateness aspect gained 100% and the graphic aspect obtained 80%.

IV. DISCUSSION

The results of the present research revealed that it is very necessary in the learning process to design variations that utilize digital technology not only at the lower level but also at the university level. This is in accordance with developments in the digital era of technology. This is proven by the number of students who access the internet at school (ED.6), for all levels of education at 33.67%. The proportion of teachers who have qualifications in the field of ICT (ED.8), at all levels of education is 10.10%. Furthermore, based on educational level, the education level of senior high school and equivalent is greater at 14.43%, followed by junior high school and equivalent at 11.33%, then elementary school and equivalent at 6.90%.

Likewise, universities as providers of higher education cannot be separated from the use of developments in information technology in the education sector. Based on research results, there are various forms of implementing online learning currently in higher education, such as elearning platforms, zoom [27], Google Classroom, WhatsApp group, Google Meet [28], Skype, Webex, email, Edmodo and Camstudio and integration of ICT is a product of elearning and blended learning [29].

However, no one has yet developed a blended learning system with additional games and tournaments. The game developed in this system is in the form of a question collection menu where the teacher can create a question bank according to the material to be discussed, and students are required to answer all the game questions provided, while the tournament menu in this study contains contested questions that must be answered by each representative from each study group. For students who have answered the questions first and correctly, the other tournament participants cannot answer again. In other words, the answers are already locked. Another reason why the researchers developed a blended learning system assisted by games and tournaments was that students considered the material and media presented to be less interesting and monotonous.

V. CONCLUSION

The conclusion from research and development of this blended learning game tournament model is that there is a need to use varied and latest strategies in the learning process so that it is hoped that it will have a positive impact on students' abilities, not only cognitive but also affective and psychomotor. Hence, interac-tive learning can be created through updates in the form of games and tournaments.

This is based on the discovery that during online learning teachers have not been entirely able to adapt and create a conducive situation for students during the transition to online learning and it was discovered from the results of research related to the interactivity aspect in utilizing online communica-tion between students or between students and lecturers to be almost homogeneous: 18% of students answered never, 39% rarely, 27% often, and 16% always. This data shows that the majority of students (39%) said they rarely use interactive online media either between students or between students and lecturers to communicate, The development of MBL-GT answers the problems above, namely the existence of a discussion room menu and Google Doc to monitor student communications and activities.

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