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# Qualitative Research in Geometry: ExamView as an Application in Facilitating Question Input in Moodle

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**ABSTRAK**

Salah satu perkembangan teknologi untuk memudahkan pembelajaran adalah Moodle. Namun, kesulitan mengelola moodle sering dirasakan. Pada mata kuliah geometri misalnya, dosen merasa waktu yang digunakan untuk menginput soal yang berisi rumus matematika dan gambar cukup lama dan kurang efektif. ExamView merupakan aplikasi yang diprediksi dapat menjadi solusi permasalahan tersebut. Subyek penelitian deskripsi kualitatif ini yaitu dosen yang menggunakan aplikasi ExamView. Hasil penelitian menunjukkan aplikasi ExamView dapat membantu dosen dalam menginput soal khususnya soal pilihan ganda yang karakternya berupa soal dengan banyak rumus dan soal bergambar. Penggunaan ExamView cocok untuk kelas paralel yang didukung oleh beberapa dosen. Dosen hanya perlu mengimpor soal dalam format ZIP dari ExamView dan tidak perlu melakukan input manual untuk setiap kelas. ExamView dapat dijadikan alternatif bagi dosen dalam menyusun soal-soal ujian di kelas paralel karena dosen tinggal mengunggah dan mengaturnya di Moodle.

**Kata Kunci**: Aplikasi; ExamView; Geometri; Penelitian kualitatif.

**ABSTRACT**

One technological development to facilitate learning is Moodle. However, difficulties in managing Moodle are often felt. In geometry courses, for example, lecturers feel that the time spent inputting questions containing mathematical formulas and pictures is quite long and less effective. ExamView is an application that is predicted to be a solution to this problem. The subjects of this qualitative descriptive research are lecturers who use the ExamView application. The research results show that the ExamView application can help lecturers in inputting questions, especially multiple-choice questions which are characterized by questions with lots of formulas and pictorial questions. The use of ExamView is suitable for parallel classes supported by several lecturers. Lecturers only need to import questions in ZIP format from ExamView and do not need to do manual input for each class. ExamView can be used as an alternative for lecturers in compiling exam questions in parallel classes because lecturers just need to upload and organize them in Moodle.

**Keywords**: Application; ExamView; Geometry; Qualitative Research.

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## 1. INTRODUCTION

In this 4.0 era, technology is developing rapidly in the world of Education. Technology also provides many conveniences, as well as a new way of carrying out human activities, and makes it easier to obtain fixed and accurate information, both directly and indirectly. The use of technology is indispensable to facilitate the learning process (Safitri et al., 2022). Technology is very helpful for the needs of educators and learners, especially after the Pandemic due to Covid-19. Covid-19 is one of the reasons for educators to make maximum use of technology, one of which is online learning or blended learning. Various learning platforms are used by universities and other institutions to streamline the learning process. A platform that can be used to support the learning and teaching process is Moodle (Gamage et al., 2022). Moodle is a good solution to facilitate communication between lecturers and students. Moodle is also one way to improve the effectiveness of learning (Sari et al., 2017). Through Moodle, the learning process becomes more flexible and can be done anywhere. Moodle provides many benefits and advantages for users.

Moodle has many features, including being able to upload learning materials, insert learning video links, and discussions and even conduct exams online. Moodle is designed to support student learning during online learning (Simanullang & Rajagukguk, 2020). Through Moodle, lecturers can compile questions of various types such as multiple-choice and open-ended questions (Conejo et al., 2016). But often, teachers have difficulty managing Moodle in their classrooms. This problem occurred at one of the private campuses in Indonesia when teaching Geometry courses at the Faculty of Education. Geometry is a compulsory subject taken by students of the Faculty of Education, especially for the Mathematics Education Study Program. All students from the Mathematics Education Study Program need to obtain this course to help students, especially as prospective teachers. Geometry is one of the branches of mathematics (Listiani et al., 2019; Listiani & Saragih, 2022). Geometry contains mathematical material that is identical to mathematical formulas (Sholihah & Afriansyah, 2017; Septia & Wahyu, 2023). The obstacle for lecturers in this course is inputting questions that contain mathematical formulas and pictures of building space (Hidayat & Lestari, 2022; Ali, Lestari, & Rahayu, 2023). Lecturers need to input manually through equations in Moodle. Of course, in inputting questions, lecturers need a long time. This results in the time needed to input questions are quite long. In the Geometry course, the questions given contain around 25-30 multiple-choice questions for the Exam. Indeed, during online learning or blended learning, lecturers need extra time to use Moodle. However, it would be better if there is an application that can facilitate the work of lecturers in inputting Geometry problems.

One solution that can be used to facilitate the work of lecturers in inputting Geometry problems is ExamView (Mintii et al., 2019). ExamView is one application that can help to reduce the time in inputting questions in Moodle. ExamView can be used to perform an electronic test

commonly known as a Computer Based Test (CBT (Ariaji et al., 2020). CBT can be used offline as well as online. Such innovations should be able to change the teacher behavior of the learning pattern and assessment traditionally moved/migrated towards communicative system by utilizing information and communication technology Computer Based Test (CBT) One solution to the assessment problem is in Exam View Test Generator software (Santyadiputra et al., 2019).

ExamView is an application that can be used to develop question banks, Questions made by teachers using this application, questions can be directly printed/printed so that they can be used for paper-based exams (PBT) and also be used for computer-based tests (CBT) by uploaded into an NGO (Learning Management System) (Hapsan et al., 2014; Kuswandi et al., 2022). According to research conducted by (Indra et al., 2022) which states that ExamView is suitable for inputting problems in the field of mathematics. ExamView can help teachers to create questions more easily and quickly with the desired format or form. Lecturers do not need to input per question item. Through this application, lecturers can automatically use 30 questions in one learning activity. ExamView has advantages, including being faster and can be directly synchronized with the Learning Management System owned by the campus. ExamView is suitable for use in parallel classes. Lecturers can collaborate to compile different questions and easily import questions through the ExamView application.

The purpose of writing this article is to describe the use of ExamView in the Geometry course to facilitate the task of lecturers in inputting questions in Moodle. The implication of writing this article is that it can be used as an alternative for mathematics teachers or others so that work in assessment can be more efficient. Assessment is a very important part of the learning process because in there are a series of processes to collect information about students' appearance/abilities related to success in participating in learning activities (Prasetya, 2012).

## 2. METHOD

The research used is descriptive qualitative research based on the experience of teachers teaching Geometry courses at one of the private campuses in Indonesia. Qualitative research is one of the research procedures that produces descriptive data in the form of speech or writing and the behavior of the people observed. The qualitative approach is expected to be able to produce an in-depth description of the speech, writing, and/or observable behavior of an individual, group, community, and/or specific organization (Bogdan & Biklen, 1992). Qualitative research is also referred to as naturalistic research by not using getting along tools but depending on the field situation as it is without being manipulated or regulated by experiments (Rahmat, 2009). In this study, it was described about the use of the ExamView application in inputting questions in Moodle. In addition to being supported by a literature review of the use of the

ExamView application, there is an explanation of the appearance of the application and how to use the application.

## 3. RESULT AND DISCUSSION

### a. Result

One of the things that makes lecturers quite struggling is making Geometry problems with equations. Lecturers need to enter one-by-one equation symbols because Geometry as a branch of mathematics is synonymous with the use of formulas. Lecturers are constrained because they must do several clicks to find the appropriate symbols and formulas. The following is one example of a problem taught in the geometry course.

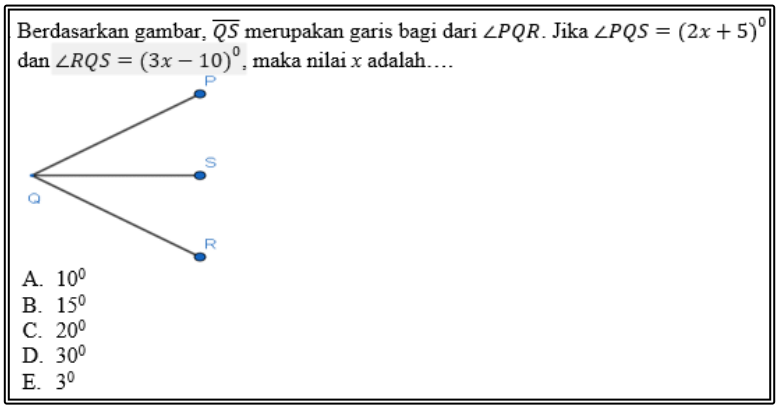


Figure 1. Example of the Question in Geometry

In Figure. 1. lecturers need to select several symbols in one question, namely capital letter symbols, angle symbols, and symbols for degrees. Even lecturers also need to draw to provide visualization of the problem. The preparation of such questions is common, but lecturers are also pursued with various administrative tasks and teaching preparations, so efficient activities are needed to assist lecturers in inputting questions. The time needed by lecturers to input questions is not short, let alone the need to write questions using equations.

Problems regarding the input process of this question need to be considered. Sometimes lecturers compile quite a lot of question banks as assignments, quizzes, and even exams. In addition, if there are parallel classes, it is quite confusing for lecturers to upload questions repeatedly. Lecturers need to develop strategies to facilitate their work in inputting questions. One application that can be used is the ExamView application. ExamView is an application that can be installed to make it easier for users to compile questions before being distributed to students.

The technique of developing question banks will certainly be difficult if done manually considering the limitations it has. This requires a technology that can manage assessment instruments well to provide convenience in the management of assessment instruments. One of

them is to use a technology-based question bank. The activities carried out in this technology-based training have succeeded in increasing the competence possessed by teachers, especially in terms of the use of appropriate technology. In addition, activities in the form of training can improve skills in mastering application-assisted item analysis. The application used is ExamView. The features offered by the technology are Question Bank Editor (import utility) and Test Generator. The Question Bank Editor feature can facilitate the creation of various types of questions and save them into the question bank. These questions will later be used as needed during the test/exam. The Question Bank Editor feature is a facility to produce several types of tests with the required characteristics. Both features are stored in digital media which means it can facilitate the process of distribution and editing of instruments. Other apps like Moodle can also be used. However, Moodle has shortcomings in terms of the actuality of the test results which have an impact on the difficulty of teachers in determining the quality of the question items. The hope of using this technology is that teachers can quickly, easily, and effectively manage questions according to subject evaluation objectives and produce characteristics of quality assessment instruments (Kuswandi et al., 2022). Here's how you can input questions using ExamView (see Figure 2).

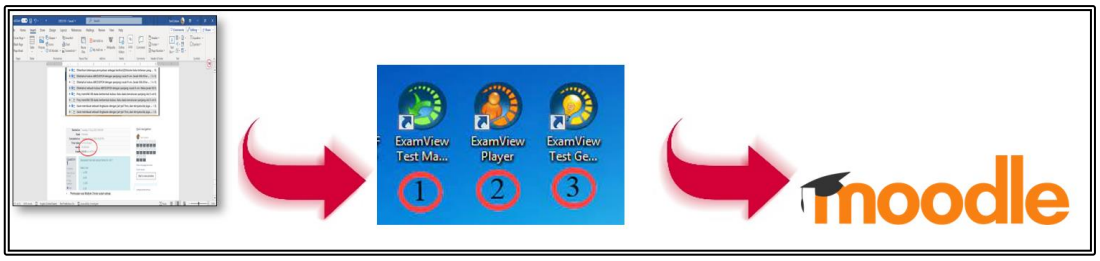


Figure 2. Import Process from MS Word to Moodle

Things that need to be considered are as follows, Lecturers need to install the ExamView application first. The ExamView application can be downloaded for free on the following page: https://examview-assessment-suite.software.informer.com/6.1/. After that, prepare your Ms. Word file containing the questions, with a note that the distance between the questions is only 1 space. After the problem is ready then the Ms. Word (docx) file is converted into *.rtf (Rich Text Format) format. Next, files with *.rtf format are converted to bnk format (using ExamView Import Utility). And .bnk files are converted into ZIP format using ExamView Test Generator). It can simply be summed up in Figure 3. the following.

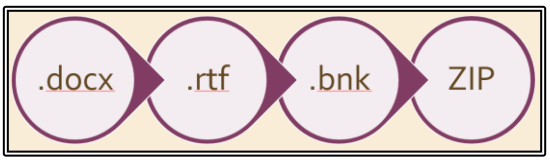


Figure 3. Question Format Change Chart

The first way is that lecturers need to make questions through Microsoft Word first with rules, namely the arrangement of questions must be neat. Then in making the question needs to be included with the answer key. In this study, the questions chosen were multiple-choice questions. The reason for choosing multiple-choice questions is so that students get research results after finishing doing the questions online. Multiple choice questions can be used to measure almost any level of cognitive thinking skills at all levels of school/class and can be highly objectively assessed, easily, quickly, and can be made with many variations of shapes with a fairly wide scope of materials (Nitko, 1983). Through multiple-choice questions, lecturers can encourage students to study hard because it is difficult to guess which part of the whole lesson should be studied (Suhandi & Maemonah, 2022). Furthermore, in multiple-choice questions prepared by lecturers, lecturers can give marks with the word ANS as the right answer. The writing format is required to be neat, because if there is one part that is not neat then the application cannot read, or an error will occur.

After all the questions have been compiled, the lecturer can change the question which was a .doc format, and then change to .rtf format through save as in Microsoft Office Word. This step is not the last because the lecturer needs to change the format again, namely using the ExamView Application. Then the file can be edited again using the ExamView application. In this section, only an explanation of the import of multiple-choice questions is given. In multiple-choice questions, it is necessary to give information to the questions by writing "Multiple Choice" as the caption in the picture Figure 4.

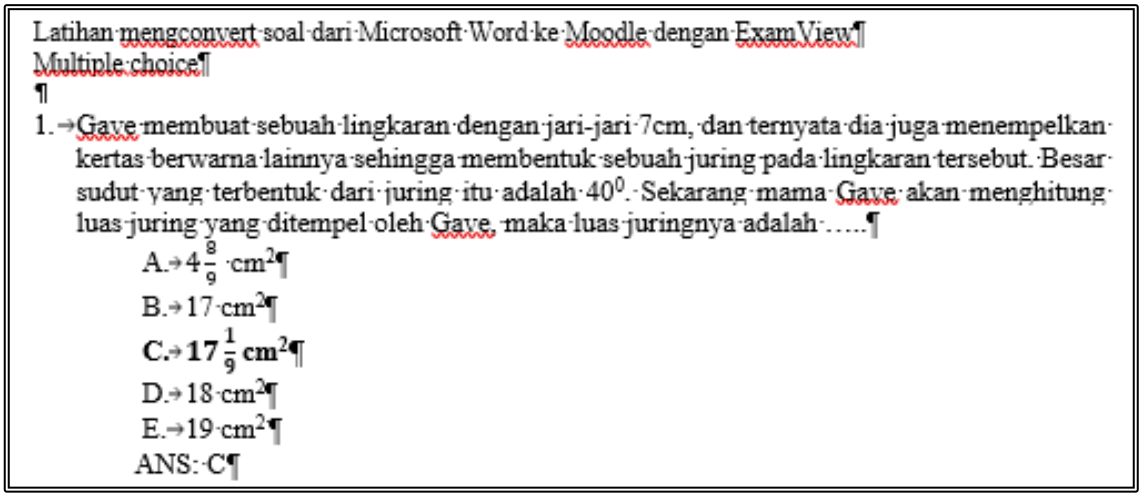
Latihan mengconvert soal dari Microsoft Word ke Moodle dengan ExamView¶
Multiple choice¶
¶
1.→Gaye membuat sebuah lingkaran dengan jari-jari 7cm, dan ternyata dia juga menempelkan kertas berwarna lainnya sehingga membentuk sebuah juring pada lingkaran tersebut. Besar sudut yang terbentuk dari juring itu adalah $40^0$. Sekarang mama Gaye akan menghitung luas juring yang ditempel oleh Gaye, maka luas juringnya adalah …..¶
A.→$4\frac{8}{9}$ $cm^2$¶
B.→17 $cm^2$¶
**C.→$17\frac{1}{9}$ $cm^2$**¶
D.→18 $cm^2$¶
E.→19 $cm^2$¶
ANS: C¶

Figure 4. Editing Question in MS Word

After the arrangement of questions is neat, the questions that originally used the .doc format will be converted to .rtf format. The step to change the .doc format to .rtf format is on the MS Word file, select the Save As menu, then select the file with the Rich Text Format (*.rtf) format.

The following is what the ExamView application looks like when it has done the installation process.


Figure 5. ExamView Picture

After doing the installation process, 4 icons will automatically appear, namely ExamView Test Generator, ExamView Import Utility, ExamView Player, and ExamView Test Manager. However, in its use in this study, it only requires 2 types, namely ExamView Import Utility and ExamView Test Generator.

When the problem is completed and according to the format, it is necessary to change the .doc format (MS Word) to *.rtf (Rich Text Format) format. After the problem changes format to a *.rtf file open the ExamView Import Utility application then a display will appear as in Fig. 6 below. Select the file with the *.rtf format earlier then continue by pressing the next button. In Figure 6. The *.rtf file moves down when clicked Select.

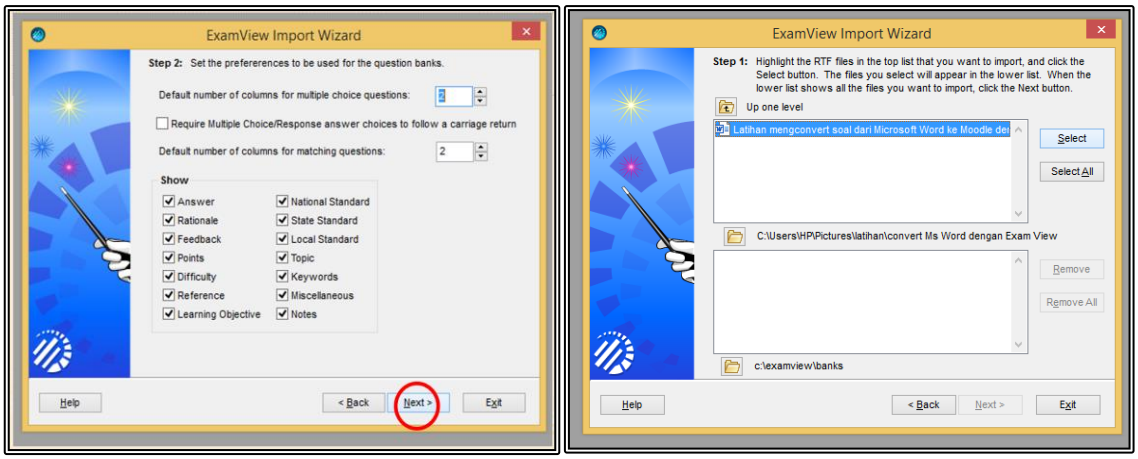


Figure 6. ExamView view

After pressing the Next button> you will see the appearance as in Fig 6. In this section are the setting options that will appear in the question such as the number of columns that come out on the multiple-choice question. If the settings are complete, then you can click the Next button until the last display, namely Finish. After clicking the Finish button, the *.rtf format has changed to *bnk format. Once the file format changes to .bnk format then proceed to convert the format to ZIP format by using the ExamView Test Generator. If clicked on a file with bnk format, the display that appears is as follows.

**MULTIPLE CHOICE**

1. Gave membuat sebuah lingkaran dengan jari-jari 7cm, dan ternyata dia juga menempelkan kertas berwarna lainnya sehingga membentuk sebuah juring pada lingkaran tersebut. Besar sudut yang terbentuk dari juring itu adalah $40^0$. Sekarang mama Gave akan menghitung luas juring yang ditempel oleh Gave, maka luas juringnya adalah .....

   a. $4\frac{8}{9}$ $cm^2$

   b. 17 $cm^2$

   c. **$17\frac{1}{9}$ $cm^2$**

   d. 18 $cm^2$

   e. 19 $cm^2$

   ANS: C PTS: 1

2. Perhatikan gambar berikut ini!

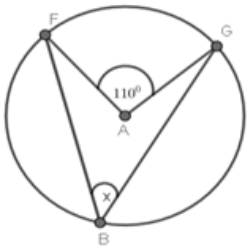


Figure 7. Question display with bnk format

In Figure 7. It looks like there is something different in appearance, namely, there is PTS writing which means the score value for each question. Then on the display with this bnk format, it can be re-edited for problems that are not so clear. Even in this section, you can add questions, copy questions, or delete parts that are not appropriate.

The next step that needs to be done is to convert the file from bnk format to ZIP format. The way to do this is to click the bnk file then on the file menu select Export then select Blackboard 6.0 – 7.0 and rename the file with the desired one. Once OK then the ZIP file will be formed.

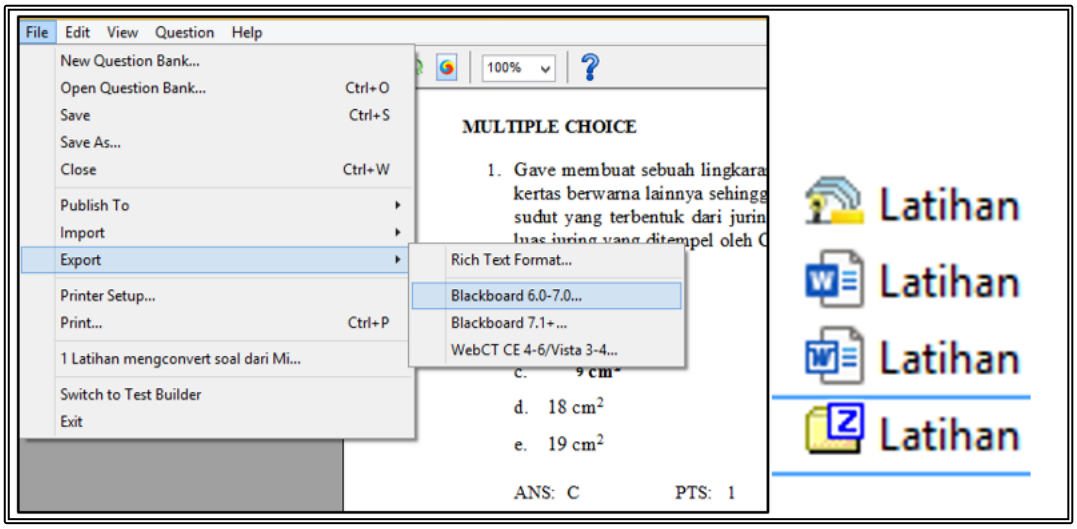


Figure 8. Export the bnk file to ZIP

When the ZIP format has been formed, then Import the problem into Moodle. The steps taken are in the Question Bank section, select Import questions from the file. In this section, all you need to do is select Blackboard.

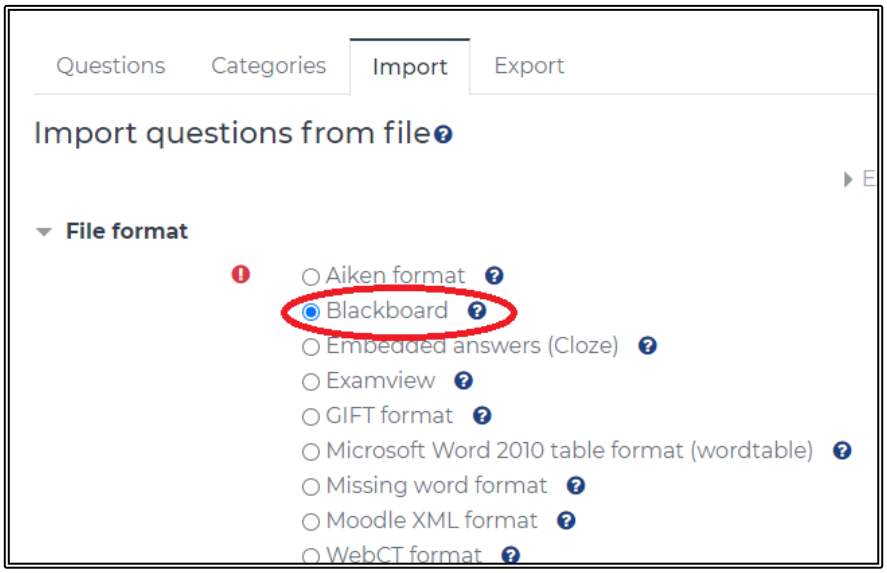


Figure 9. Import Problems into Moodle View

When clicked Next, the question will automatically enter the Question Bank in Moodle. At this stage, the lecturer makes settings to set the time for the test and others. The following is what the lecturer looks like when he finishes importing questions in Moodle.

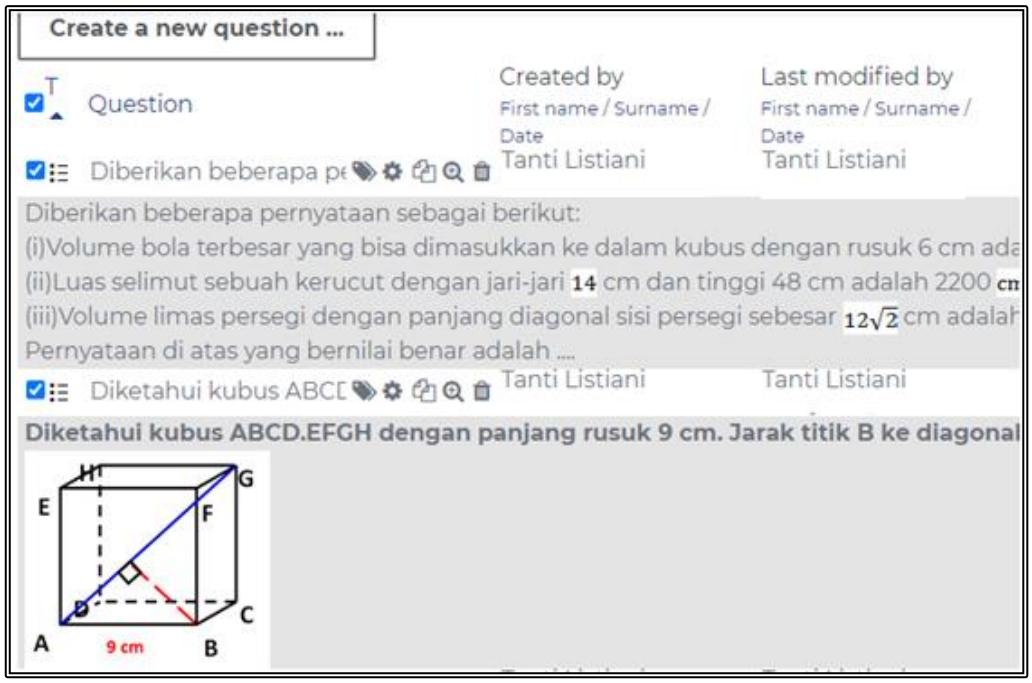


Figure 10. Question Display After Importing Questions

In this section, questions with Multiple Choice have been completed. The lecturer continues to check the answer key and double-check the suitability of the question before being tested. Lecturers can also try to do the questions first to avoid any wrong keys. It can be seen that the pictures and questions have been inputted in Moodle. The step that needs to be done is for the lecturer to make settings in Moodle and adjust to the time of the exam.

## b. Discussion

ExamView is an application that makes it easy for lecturers to input questions in Moodle. Although the steps described above look complicated, in terms of saving time, ExamView is more effectively applied to help lecturers. There are many choices of question types offered by ExamView, but from the experience of lecturers, questions with multiple-choice types are much more effectively applied. Questions with multiple choice types provide advantages, including lecturers can easily do grading and students can be helped to see the results of working on questions automatically. The steps taken by the lecturer are to prepare questions that will be entered into Moodle in doc format convert in rtf format then input the questions in ExamView and convert them in ZIP format to be imported into Moodle. This stage is much more efficient than the lecturer entering multiple-choice questions one by one in Moodle. The advantage of using this application is that besides being more effective in use, it is also suitable for parallel classes that are supported by several lecturers. Lecturers do not need to input questions individually but just upload questions in ZIP format on the course they teach.

Through ExamView, lecturers also could provide questions of different types. The thing that often happens when exams are conducted online is the possibility of students cheating with

their friends. Cheating is a behavior that must be eradicated (Anitasari et al., 2021). For this reason, the way that can be done is to arrange different problems to reduce cheating. The method that is done is with 3-4 different types of questions for each class. Seating arrangements during exams also need to be made so that students do not share answers because the questions are different.

With varied questions, the presence of ExamView as an application to import questions into Moodle is very useful for lecturers. This is in line with research conducted by [11], that the management of ExamView-based question banks for teachers is carried out effectively. But of course, this application also has disadvantages. In this study, the shortcomings experienced were that lecturers needed to carefully edit the questions on the doc file (MS Word). The file will not be read if the lecturer forgets to enter spaces between questions. Beginners may feel that using ExamView becomes less effective because they have to check question by question to make sure there are double spaces on each question. Then if the writing of the word ANS as an answer is inconsistent using capital letters, the process of exporting questions will also not run smoothly.

Every application must have weaknesses and advantages. The update process is always attempted by the creator. However, what is a challenge for users is the willingness to learn the steps of using the application. The ExamView app isn't the only app that can be used to import questions into Moodle. Lecturers as teachers also need to learn other applications to facilitate their work.

## 4. CONCLUSION

ExamView application is an application that can help lecturers input questions into Moodle. ExamView helps lecturers to reduce time because in its use it is very practical. However, for users who are still beginners, some things need to be considered such as lecturers must be patient in editing files in MS Word. Incorrectly entering spaces or distances in the problem will result in errors and failure in the import process into Moodle. This makes users take a long time to work and less effective in using ExamView. The advice that can be given to users of this application is that it is necessary to practice understanding the Steps in implementing the application. In addition, it is necessary to learn other types of questions besides multiple choice so that the variety of questions presented to students is better.

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