International Journal of Business, Law, and Education
Volume 4, Number 2, 2023

Combination of Ispring Suite and Chamilo in Creating Online Math Assessments

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Abstract
Technology in learning is developing very rapidly regarding material delivery and assessment or evaluation. An educator needs to possess the ability to compose good assessments to measure the success of students' understanding of the material. With the development of technology, educators should be able to transform conventional assessments into digital assessments to support the digitalization process in education. The main objective of this research is to create an assessment tool for mathematics courses using the Ispring Quiz Maker and then integrate it into Chamilo. The combination of quiz maker software and LMS will add insight to readers, especially teachers and lecturers, in making online mathematics assessments. A modified development method from ADDIE, 4D, and Plomp was used to achieve this goal. The several stages passed resulted in an assessment prototype for the Differential Calculus course. The resulting assessment instrument has gone through the item and material validation processes to obtain a good instrument that is suitable for use. This instrument can later be used for the Final Semester and Midterm examinations for Differential Calculus courses.

Keywords:
Ispring; Chamilo; Quiz Maker;

INTRODUCTION

MBKM is one of the Ministry of Education and Culture's policies to improve the quality of graduates in tertiary institutions. Because this is a direct policy from the ministry, universities are obliged to respond to that policy. There are universities whose responses are fast, but there are also those that are slow. The University of Sembilanbelas November Kolaka is one of the universities that is relatively slow in preparing to implement MBKM. USN Kolaka has just carried out an MBKM workshop for all study programs at the end of 2022, while many universities have already implemented this policy. Even so, USN Kolaka is still trying to make MBKM possible.

One of the interesting things about this MBKM is that it provides opportunities for students to study at other universities. Feeling the education atmosphere at another university whose facilities and infrastructure are much better than the original campus is a valuable experience for students. In the odd semester of 2022, one of the USN Kolaka students in the mathematics education study program had the opportunity to study at IKIP Budiutomo Malang. The problem is that not all courses in the current semester at the original campus can be programmed at the destination university. If the course that is not taken is compulsory for the study program, the student must wait for the next odd semester to program it. This condition will certainly be detrimental to students. Meanwhile, based on Permendikbud Number 3 of 2020, universities are

obliged to facilitate students in fulfilling their right to take SKS at other universities. Therefore, problems like this must be solved.

One solution that can be used to solve this problem is to provide online learning facilities. While this problem can be solved, a new issue arises. How do you measure the ability of students who are not available? Again, the solution is to go online and provide online assessment facilities.

Many software programs can be used to create online assessments or evaluation tools. Software based on desktop applications that can be used offline includes Ispring Quiz Maker (Wardhono et al., 2019) and Wondershare Quiz Creator (WQC) (M. et al., 2019). Website-based software must be used online, such as Google Forms (Parinata & Puspaningtyas, 2021), Microsoft Form (Nasrum & Subawo, 2021), quizzes (Amany, 2020), exam view, Kahoot (Hidayah & Oktoviana, 2022), and jeruq.com (Nasrum, 2022). In addition, there are also evaluation tools contained in Learning Management Systems such as Schoology (Mashuri & Nasrum, 2020), Chamilo (Permana et al., 2018), and Edmodo (Sari et al., 2020). In some studies, some develop or build web-based online assessment systems using CodeIgniter, which requires programming skills (Kelen, 2018). For a beginner or someone with no knowledge of programming, direct-use software is a solution for creating online assessments.

All the above software can be used to create assessments in any subject. However, of all the software, only WQC (Nasrum, 2020) and Ispring Quiz Maker provide complete mathematical symbol writing facilities (Nasrum & Subawo, 2022). Math assessments can be made using Google Forms (Marjoni et al., 2022). Google Forms has no math writing facility, but you can use the image upload facility. The same can be done on the jeruq.com website or several other applications (Nasrum, 2022) . However, writing math in the application is much better than using the image version.

Since WQCS has not released any new updates, the software that will be used is Ispring. This application was chosen because it has many advantages compared to all the others mentioned (Nasrum & Subawo, 2022). The output of this application is an HTML5 file that is easy to make online. This application is paid, but many full crack applications can still be used. Unfortunately, in the cracked version, the process for recapitulating the examinees' scores is still manual. The results of the exam report and the scores go to the question maker's email, and the scores must be written again if you want to make a score report. There is no facility to download scores from emails. However, this can be worked around. Ispring can export questions in the form of a Scorm file. This file can be integrated into an LMS such as Chamilo so that the grade report can be exported into an Excel file, making it easier for lecturers to process grades.

The results of network visualization using the VoS Viewer application show no direct connection between Ispring and Chamilo. This thing can be seen in Figure 1 in the center (Chamilo) and the lower right corner (Ispring Suite).

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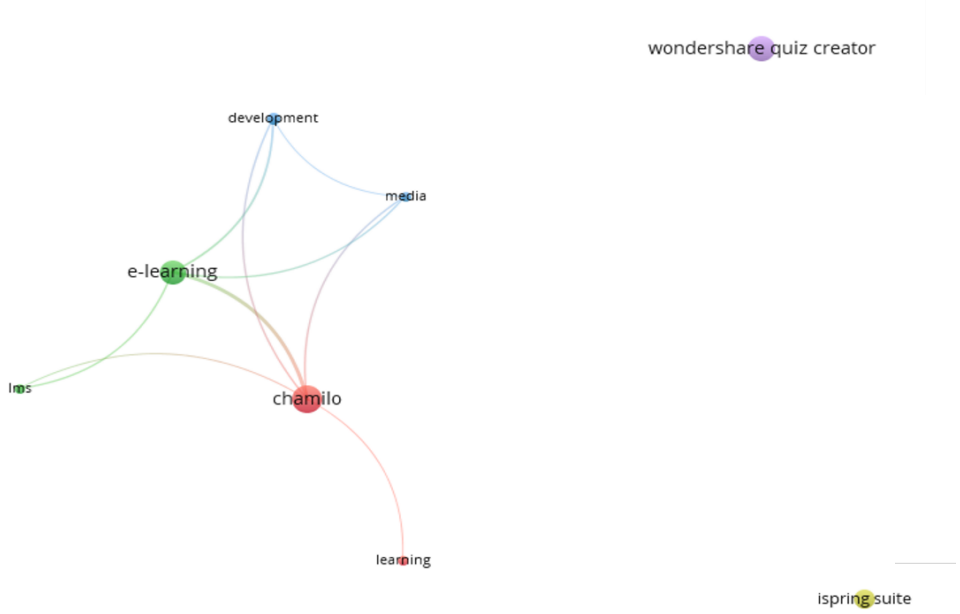


FIGURE 1. Network Visualization of Keywords in Articles

These two study areas can be related by integrating Ispring into Chamilo. One of the gaps in online assessment research is this one, which is a novelty.

The network visualization above was obtained from a collection of articles taken from the dimensions database and google scholar database with the keywords "online exam," "online assessment," or "online assessment." In addition, other articles were also searched using the keywords "Ispring" or "Wondershare Quiz" in the same database.

Ispring has been used in several previous studies to create online questions because of its excellent mathematical writing skills (Nasrum & Subawo, 2022; Subawo & Nasrum, 2021). However, the score recap is still manual if using the cracked version of Ispring. Researchers have yet to find a solution. This problem is an opportunity to produce new research. Ispring will be combined with Chamilo so that the process of recapitulating the scores generated from Ispring questions can be done automatically.

So, the specific objective of this research is to create a math course assessment using Ispring Quiz Maker and then integrate it into Chamilo. Why not use the existing quiz facility in Chamilo? As explained earlier, it is very rare for quiz maker software to provide complete math symbol writing, including Chamilo. This experiment is certainly very important because, from the much literature read, there have yet to be found making online quizzes that combine Ispring with Chamilo. This research hopes to increase readers' knowledge, especially lecturers and teachers, in making online math assessments.

METHOD

This research is development research. The product to be produced is an assessment instrument in the Differential Calculus course. For this reason, one class of students in semester VI of the 2022/2023 academic year in the Department of Mathematics Education study program at Universitas Sembilanbelas November

Kolaka was taken as a subject to implement the resulting product. The development model modifies ADDIE, 4D, and Plomp and consists of eight stages, as seen in Figure 2.

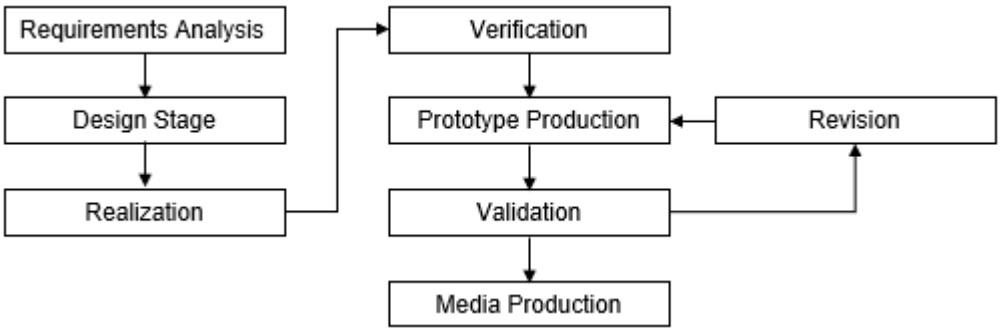


FIGURE 2. Flowchart of Modified Models of ADDIE, 4D and Plomp

Needs analysis examines the curriculum used and the readiness of facilities such as laboratories and networks. The design stage is the stage of designing questions, determining the type of question, question display, timing, and test results output. After that, the design that has been made is realized in the realization stage. After the design is realized, it is verified in the next stage to ensure no errors in inputting questions. After verification, it continued with the production of the question practice application. The finished problem in the form of an application is then validated. This process allows for invalid questions that require revision and production until, finally, getting questions declared valid in terms of material and media. The last process in this model is the production of applications that are ready for use. However, this study implemented the finished product in a small class of 20 people.

In the implementation of the research, several instruments were used. The first is an instrument to create a question exercise application using Ispring Suite 9 software. The second is an instrument for analyzing question items to produce a valid question exercise application. The tools used are item validation sheets and media validation sheets. The material validation questionnaire measures three aspects, namely material aspects, construction aspects, and language aspects. At the same time, the media validation questionnaire measures four aspects: general aspects, presentation, display design, and accessibility. In addition, the prototype generated from the Ispring Suite is also an instrument for determining the difficulty level and distinguishing the power of each item.

The technique used in analyzing the question's difficulty level uses the classic method. That is, see how much chance the item can be answered. A good question is one with a difficulty level between 0.25 and 0.75. If the difficulty level is less than 0.25, the question does not stimulate students to increase their efforts to answer it. In contrast, a difficulty level of more than 0.75 will make students lazy to answer because the question is beyond their ability (Elviana, 2020).

The Discrimination Index is used to measure each item's discriminating power. The Discrimination index value lies between -1 and 1. If the discriminatory index of the article is negative, then the item should be removed or replaced with a new object with a better index. The positive discrimination index category is divided into four parts.

However, the question can be used if the discrimination index is more than 0.2. Otherwise, the question should be deleted (Fatimah & Alfath, 2019).

Furthermore, to test the instrument's reliability using the parallel test technique (Widyoko, 2012). The test was conducted twice in a short time. This test is easy to implement because the question application created is a question bank. The chance of getting the same question when repeating is minimal, but the difficulty level of each item displayed is the same. The two test results were then correlated, and the correlation coefficient results were consulted with the appropriate correlation coefficient table to conclude.

RESULTS AND DISCUSSION

The results of this study will be presented in the order of the model used, as follows.

Needs Analysis

One of the essential reasons for developing this product is to facilitate students who need more time to take offline exams. Includes students who participate in the teaching campus program in even semesters. The teaching campus program causes students not to have time to take classes on campus because they are at the teaching location for one semester. The activity can convert the value of courses left in the current semester, but not all courses can be converted by these activities. Therefore, so that students can claim the value of the course, some lecturers provide a policy to take online tests/exams that are provided expressly.

Design

Questions are made based on the material in the syllabus. The materials include the Limit function, Continuous function, and function derivative. The desired form of questions is mixed. There are multiple choices and also true and false. These 15 selected questions have gone through the content validation process. The validation results can be seen in Table 1.

TABLE 1. Material Validation Results

No.	Aspects	Validator Team	
		V1	V2
1	Material	4,25	4
2	Construction	4,13	4,38
3	Language	4,25	4
Average		**4,21**	**4,13**

Table 1 shows the average validation results from two validators, when averaged, are 4.17. This figure shows that the items made are suitable for measuring learning outcomes in the Differential Calculus course. On the other hand, navigation determination is also arranged at this stage. Fifteen questions that will be tested on students are displayed randomly. Students may answer any question first that is considered easy. However, the test can only end if all questions are answered.

Realization, verification, prototype production and validation.

The validated questions were inputted into the Ispring Suite software through the quiz maker menu. All settings were adjusted based on the previous design. The

process is done repeatedly to ensure that the design is appropriate. After this process is complete, the verification stage is continued. Verification is needed to ensure no writing errors and no answer fundamental errors. The answer key in the text may be correct, but there is an error in assigning the answer key during the input process. Therefore, this process must be passed so that students are not disadvantaged.

After this process was completed, a prototype was made for media validation. The validation results can be seen in Table 2.

TABLE 2: Media Validation Results

No.	Aspects	Validator Team	
		V1	V2
1	General	3,75	4
2	Presentation	4	3,75
3	View	3,5	3,5
4	Accessibility	4,25	4
Average		**3,94**	**3,81**

Two media validators gave scores with an average above 3.5. A scale rating of 5 shows that the assessment media is already in the excellent category. Therefore, this product is suitable for use. However, before being used, the output of *Ispring* will be integrated into the Chamilo LMS. The Chamilo LMS link used can be accessed at this address: https://matematika.duniapelajar.online/

For *Ispring* output to be integrated into Chamilo, the output must be published in the form of a Scorm file. This file will be inserted into Chamilo through the *SCORM Package* facility in Chamilo. One form of question display on the student layer can be seen in Figure 3.

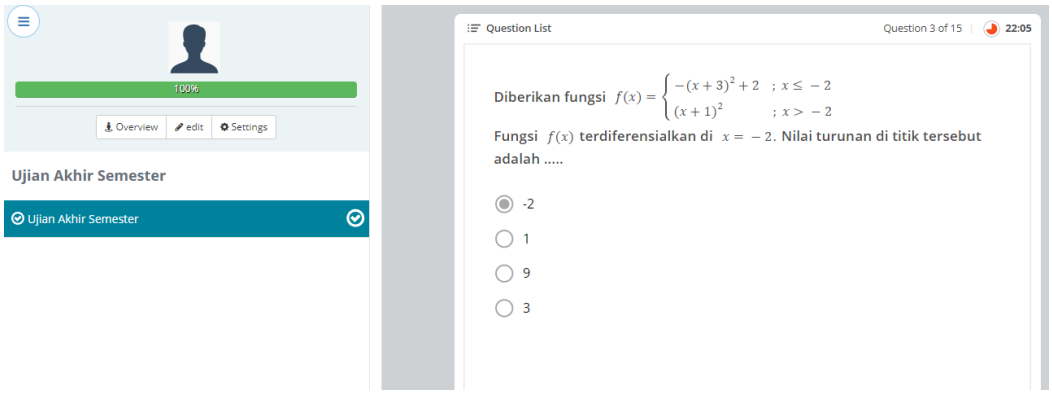
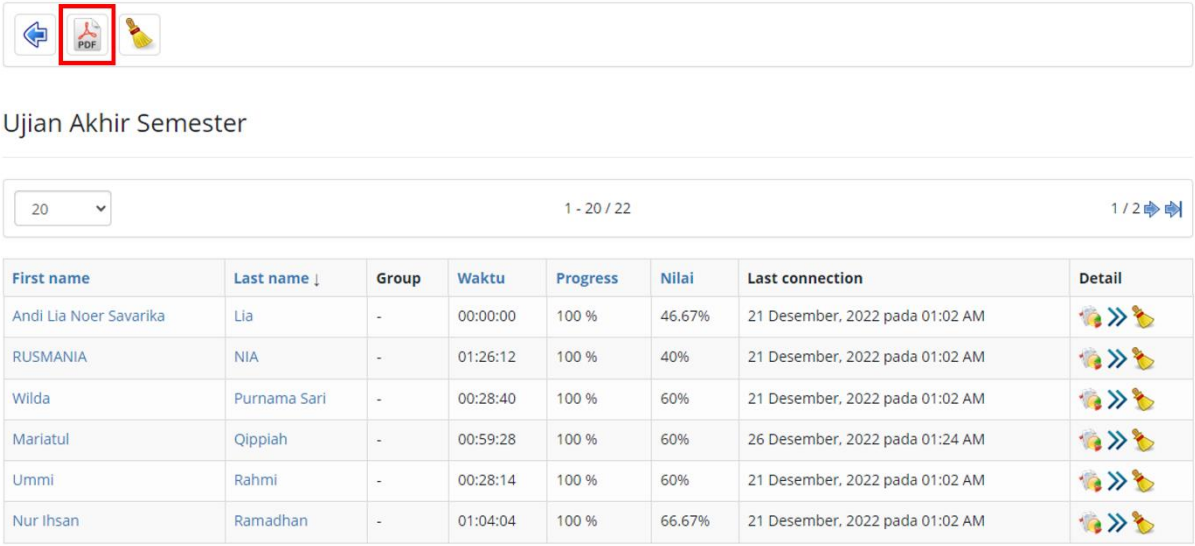


FIGURE 2. Display of Ispring Problem in Chamilo

Implementation

Before implementation, all student names must be entered into the system. The lecturer organizes the registration process to make it easier, including using user names and passwords. After all, are registered in the Chamilo class, the assessment implementation is ready. This assessment is used for the Final Semester Examination in Differential Calculus. It can be seen in the figure that the student work report can be downloaded in the form of a pdf file on the top left menu marked with a red box in Figure 4.



Ujian Akhir Semester

20 | 1 - 20 / 22 | 1 / 2

First name	Last name	Group	Waktu	Progress	Nilai	Last connection	Detail
Andi Lia Noer Savarika	Lia	-	00:00:00	100 %	46.67%	21 Desember, 2022 pada 01:02 AM	
RUSMANIA	NIA	-	01:26:12	100 %	40%	21 Desember, 2022 pada 01:02 AM	
Wilda	Purnama Sari	-	00:28:40	100 %	60%	21 Desember, 2022 pada 01:02 AM	
Mariatul	Qippiah	-	00:59:28	100 %	60%	26 Desember, 2022 pada 01:24 AM	
Ummi	Rahmi	-	00:28:14	100 %	60%	21 Desember, 2022 pada 01:02 AM	
Nur Ihsan	Ramadhan	-	01:04:04	100 %	66.67%	21 Desember, 2022 pada 01:02 AM	

FIGURE 3. Export exam results to pdf file

After the assessment implementation process is complete, give a questionnaire to students to see their responses to using online assessments in the exam. In addition, this questionnaire also serves to gauge user interest in using online exam assessments using Ispring in Chamilo. The results of student responses can be seen in Table 3.

TABLE 3. Student Response Questionnaire Results

No.	Aspects	Value
1	Test Preparation	4,5
2	Ease	4,4
3	Interests	4,4
4	Access	4,4
5	Description.	4,8
	Result	
Average		**4,43**

All aspects assessed in the table meet excellent criteria. It means that the student response to this online assessment is good. However, there were still some system constraints when this assessment was implemented, including network factors and the speed of access to the hardware used. 86.67% of students commented on network constraints during the evaluation.

From the results of the implementation, there was nothing significant to evaluate. It is because the implementation process went according to plan. Therefore, the resulting online assessment can be used to assess the Differential Calculus course exams in the following semester.

By integrating Ispring into Chamilo, several research findings were obtained. First, the exam results obtained can be exported directly into pdf files and later converted to Excel files, making it easier for lecturers to process grades. In previous research, student exam scores were taken from an email to process student data and

manually entered into an Excel file. (Nasrum & Subawo, 2022). Second, Chamilo cannot be used to write quizzes/assessments that use complete math writing unless using a particular plugin. By integrating Ispring, creating math quizzes becomes easier. It is the latest finding of this research.

The problem is Chamilo LMS's availability in an educational institution. Chamilo has long been known in the world of education and even the business world. However, many educational institutions still need to learn what the Chamilo model and form are like. Even though the availability of LMS in an institution greatly supports digitization in education. Teachers or lecturers who want to create a complete math quiz can use Ispring. As the article explains, Ispring can be downloaded for free and integrated into Chamilo.

CONCLUSION

After going through several stages in the ADDIE, 4D and Plomp modification models, an online assessment instrument for Differential Calculus courses integrated with the Chamilo LMS was finally obtained. This assessment has undergone a material and media validation process, so this assessment is suitable for use as an assessment instrument now and later as long as the RPS (Semester Learning Plan) used does not change. In the following research, we will look for plugins that can be used for writing math in Chamilo LMS. With the right plugin, Chamilo LMS can be an excellent choice for online math learning platforms.

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