

## **Learning Management System Using Scorm and iSpring Free on Physics Learning**

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**Abstract:** This study aims to use a learning management system (LMS) as learning media by using SCORM and iSpring free. This research used the ADDIE Model, which consists of 5 stages: Analysis, Design, Develop, Implement, and Evaluate. The ADDIE method facilitates the process of making learning media. The online learning process using LMS helps students to make good use of technology. Using SCORM and iSpring free in LMS helps students easily access material and do quizzes without time and location limits. Learning materials and quizzes using SCORM and iSpring 9 free are successfully created.

**Keywords:** iSpring free, LMS, Material, Quiz, SCORM

### **INTRODUCTION**

E-learning is a digital or online learning concept that provides opportunities for teachers and students to carry out a learning process that is not limited by space and time, where learning material is delivered and displayed via the internet. It plays a significant role in the success of the e-learning program (Mualimah et al., 2021; Rizal & Walidain, 2019). The application of e-Learning systems can improve students' critical thinking skills, including critical thinking, interpretation, analysis, evaluation, and inference (Warsono, 2021). E-learning using iSpring helps students to use technology intelligently. Learning materials have been created using presentation files (Jannah et al., 2020). One of the media used in this learning model is a computer network, which can be developed on a web-based basis and further developed through internet access, also called Internet Enabled Learning.

Information resources on the internet as teaching materials make teachers in big cities emphasize students to take the initiative in learning by giving assignments and asking them to use the internet as a source of information (Jati, 2013). One form of using the internet in education is the development of a Learning Management System (LMS) to manage online classes (Listiawan, 2016; Wiragunawan, 2022). LMS is not just a means for teachers to give assignments to students and a means for students to collect assignments given by the teacher, but as a means to provide opportunities for students to develop abilities, access the lecture material provided, conduct discussion boards with teachers through

discussion forums, conduct chat, and access assignments given by the teacher (Rafi et al. 2020; Fitriani, 2020). The use of the LMS has more influence on learning activities than other applications, facilitates students' learning activities, and increases teacher activities in accompanying learning (Widiyono, 2021; Purbohadi, 2022).

iSpring Presenter is a tool that converts presentation files into flash and SCORM/AICC forms, which are commonly used in e-learning management systems. The iSpring software is available in free and paid versions as well as iSpring Media has features that can apply the ability of the senses of sight and hearing because it can contain video presenters, animations, and various evaluation features that can be combined with PowerPoint, making it easier for participants students in understanding the material presented (Dalimunthe & Roza, 2021; Rosanti et al., 2020). Android Application-Based Learning Media Using PowerPoint iSpring Suite 9 with the POE2WE Model on certain materials can make learning more enjoyable (Ramadanni & Unsil, 2020). The use of iSpring in making learning media helps make learning media more interesting because there are visual, video, and audio elements that can be added to the designed learning media so that it can increase student motivation in the learning process, as well as improve student learning outcomes (Firdha & Zulyusri, 2022). Interactive multimedia development products using the iSpring Suite 9 application on specific subjects are effective (Sari & Ridwan, 2020).

Shareable Content Object Reference Model (SCORM) is a standardized distribution of e-Learning content issued by Advanced Distributed Learning (ADL). The SCORM modeling uses the waterfall method in building a good system, where educators can provide learning to students on knowledge transfer activities, especially by presenting videos in the form of material plus discussion methods along with emotions so that students understand better and become enthusiastic in the learning process (Pratama & Saputra, 2021). The SCORM package is a popular learning media and is used as a training center that uses on-course or virtual training as well as lecture materials packaged in a standard SCORM format that provides an attractive and interactive display (Ibnas et al., 2022; Gat, 2019). Teachers can use SCORM to create learning packages that include web pages, graphics, presentation slides, flash, video, sound, and any content that can be accessed using a web browser. Using this standard, learning materials can be used anywhere in other e-learning applications that support SCORM (Bariah & Sidik, 2019). Learning materials contain several assets, including text media, images, sounds, web pages, assignments, quizzes, or any data displayed via a browser. An asset has a description of itself using Asset Metadata.

*Content object* defined by SCORM will be sharable and easy to add to each course component that requires it so that the LMS can be tailored to the needs. Modules like SCORM are more convenient if accessed using an application rather than directly through a web page (Purbohadi, 2022). SCORM allows students to learn repeatedly under the time conditions set in the e-learning system (Ibnas et al., 2022). Quality LMS and Authoring tools support SCORM, which has built a large ecosystem of interoperability and reliability. SCORM also supports higher-quality content. SCORM tracks the performance of students in e-Learning. A more

interactive display for participants, the SCORM e-learning model, and the involvement of students can improve students' learning outcomes in certain subjects (Marcia, 2020).

IPB University has a Moodle-based e-Learning learning media that has been used. Several IPB University vocational school lecturers have used e-Learning as learning media. Vocational Schools have made e-Learning which is used for the needs of the Mid-Semester Examination and the Final Semester Examination. The development of Moodle-based e-Learning in Vocational Schools is expected to be more effective in its use for the learning process. The research conducted is the development of e-Learning by utilizing the SCORM feature in the Moodle application. Based on the analysis of the references obtained, the renewal of the research carried out is to add quizzes or practice questions to each material subsection using the free iSpring application.

## **METHOD**

The research was conducted at the Vocational School of IPB University. The scope of the research is learning materials and quizzes made online at LMS using the free SCORM and iSpring applications, which will be given to 71 students at the IPB Vocational School. Instrument requirements in the research carried out include software and hardware requirements. Software requirements include a Moodle-based LMS application in which there is SCORM and a free iSpring application installed in the PowerPoint application. Hardware requirements include a personal computer (PC) or laptop with specifications such as 4G RAM and an i3 processor. The research used the ADDIE model (Rakhmawati, 2022).

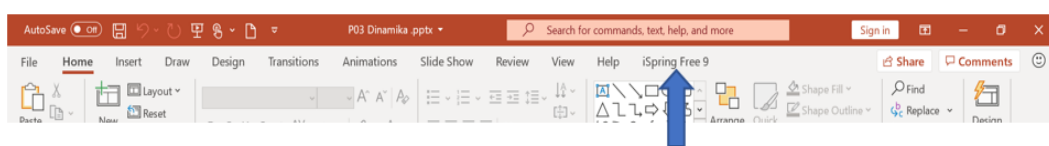
The ADDIE model consists of 5 stages: Analysis, Design, Develop, Implement, and Evaluate. The analysis is done by preparing the requirements for making materials and quizzes on the LMS using SCORM and iSpring free. The required requirements consist of software and hardware requirements. Design is done by designing materials and quizzes in PPT files that will be published using the free iSpring application. The PPT consists of sub-chapter material accompanied by questions from the sub-chapter. The "develop" stage is done to develop the quiz material that will be made. Quiz facilities provided by iSpring Free consist of 3 types: multiple choice, multiple answer, and short answer. Multiple-choice questions provide one correct answer, multiple-answer questions provide more than one correct answer, while short-answer questions have short answers in the form of one or two words. The "implement" stage is done when the material and quiz files are ready in the LMS. Participants access materials and quizzes in the LMS. Participants who access will be recorded, and their scores will be recorded in the LMS. The "evaluate" stage is done by giving questionnaires to participants. The questionnaire is in the form of questions about how effective the use of LMS by using SCORM and iSpring free is as learning media.

## **RESULTS AND DISCUSSION**

Creating materials and quizzes on the LMS is required for online learning. The material created in SCORM makes it easier for teachers to create materials and

questions related to the teaching material (Ibnas et al., 2022). The material presented can motivate students always to read the material and work on questions related to the learning material, and students can immediately find out how much value they get from working on the questions (Washington, 2019). Policies in presenting material and questions on SCORM can be made several times. Depending on the policies to access the SCORM file, participants who still do not get the maximum score can try several times.

The following are the steps in preparing the PPT file to be uploaded to SCORM, starting with Preparing the iSpring Free 9 Software, which can be downloaded for free at the link [bit.ly/materiallms](https://bit.ly/materiallms) (Arief et al., 2021). When iSpring Free 9 is installed, it looks like Figure 1 in the PPT file (Setiawan, 2020). Teaching materials in PPT files are prepared as materials and practice questions. Evaluations or questions can be made in each sub-chapter to determine whether students have understood the material. The sub-chapter evaluation questions can be made by clicking the iSpring Free 9 menu in the PPT. There are three available question types in iSpring Free 9: Multiple Choice, Multiple Response, and Short Answer (Jannah et al., 2020). Other forms of questions can be accessed on the paid or premium version.



iSpring sudah terinstal

Figure 1. PPT File with iSpring Free 9.

Multiple-choice questions only have one correct answer. Several menus for multiple-choice questions include "correct," which provides information when participants answer correctly, and "incorrect," which provides information when participants answer incorrectly (Jannah et al., 2020). Scores can be given for each question. Attempts can be set on how many times participants can answer questions. The time limit to answer the question can be set for the processing time of the question. Shuffle answer is to randomize the answer choices in multiple choice questions. Multiple-response questions can be set to have more than one correct answer. The setting menu for the multiple-response types is almost the same as the multiple-choice. The difference is that there is a menu to accept partially correct answers, which is to accept partially correct answers (if there are two choices and we answer one correctly, then the correct one will be counted), and the limit number of responses means to limit the number of answers (if there are two answers, only two answers can be selected) (Firdha & Zulyusri, 2022; Jannah et al., 2022). The setting menu is almost the same as the previous question type, but special menus that can be set include "Acceptable Answer," which is a short answer (the answer can be more than one example. For example, if the answer is 6.21, participants can also write 6.21 (using a comma or a period is considered correct). The answers are case-sensitive. If checked, they must be the same as the key. Answers that use

capital or lowercase letters for certain words will be considered correct if the answer is written following the letters set in the answer key.

The finished questions for one sub-chapter can be notified, as shown in Figure 2. If the participants still do not pass the minimum score, then the participants are allowed to work on the questions again (Setiawan, 2020). Menus for settings include "Passed," a display appearing if the participants have passed the standard value set. "Failed" displays participants who have not passed according to the standard value set. If checked, "Show Correct Answer" will display the correct answers (Arief et al., 2021). "Allow user to retry quiz," tells participants how many opportunities they have to do the quiz/question per subchapter. If the settings are done, participants must save them.

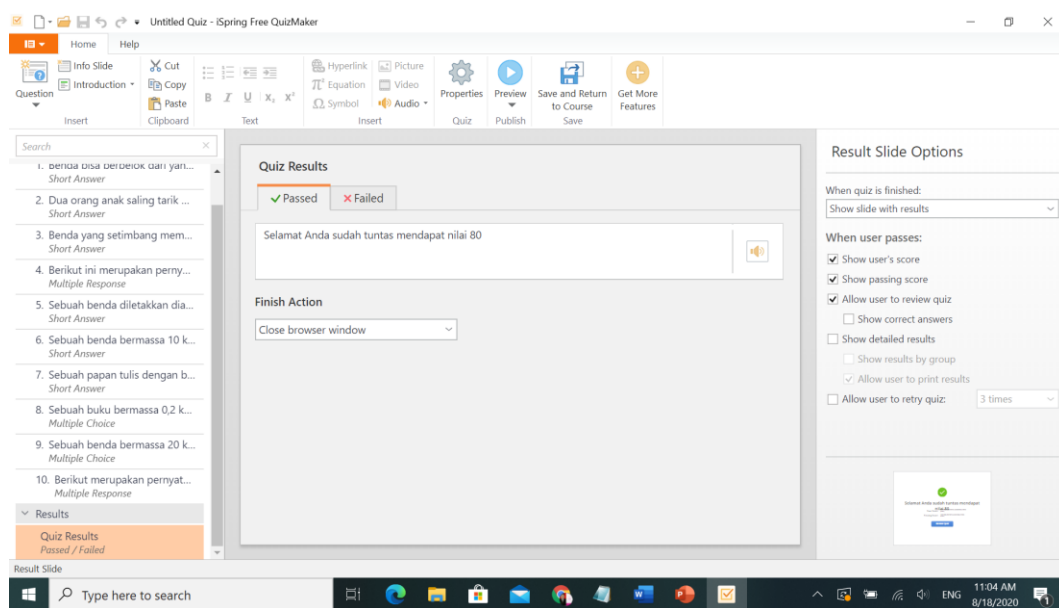


Figure 2. Display settings for questions for each subchapter.

The last setting for the question is in the properties menu. There are four settings: Main Properties, Quiz Scoring, Question Properties, and Reporting (Setiawan, 2020). The Main Properties display is usually made default or can be changed according to certain specifications. The Quiz Scoring menu displays the score and the minimum score that participants must obtain. In the Question properties menu, there are three submenus to set the scores for the correct answer and reduce the score for the wrong answers. The Restriction submenu can be set, including the number of times participants can take quizzes, the time required to answer per question, randomizing the answers for multiple-choice and multiple-response questions, and feedback to display correct and incorrect answers. The Reporting menu provides information about quiz results, which can be sent via email to educators or participants. The final step is publishing so that the teaching materials and quizzes can be run on the LMS (Indrawatiningsih, 2021). The selected menu is Learning Management System (LMS), then give it a name for convenience. The LMS profile is SCORM 1.2, specify a storage location, then click publish to make it a ZIP file.

The PPT in the ZIP file is uploaded to the SCORM in the LMS. The settings in the SCORM menu are the SCORM name and include the finished ZIP file in the package file, as shown in Figure 3. Other settings are optional, depending on needs.

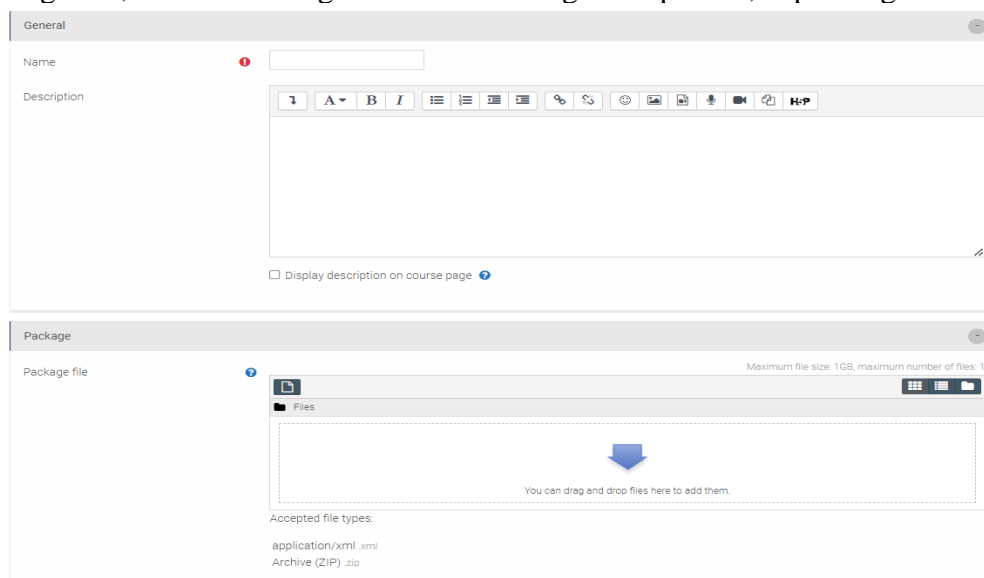


Figure 3. Display of SCORM Settings

The last step in the research process is to evaluate the material and quizzes for students. Based on references to several journals, students' responses to learning using LMS vary, including learning using the Moodle-based Learning Management System is effective as a means of discussion to improve argumentation skills (Indrawatiningsih, 2021). Using iSpring as an interactive learning media helps students learn effectively because it is supported by image, video, animation, and quiz-based materials (Yuniasih, 2018). The unfavorable response to learning using LMS is that its applications often experience errors when accessed simultaneously by many people, based on research results from Saputra and Susiana (2021). The media in learning must be appropriate to use in the learning process: the display must be attractive, precise in terms of material, easy to understand in interactive presentations, meaning that it allows participation from students, is interactive, independent, and adapted to the students' characteristics so that they easily accept and digest it (Ariyanti, et al. 2020)

The evaluation carried out in the research of making materials and quizzes using SCORM and iSpring is by giving questionnaires to students who access the LMS. The questionnaire contains the questions in Table 1. 71 participants filled out the questionnaire. Based on the questionnaire data given to participants, 58 people (81.70%) stated that the material was effectively shared in LMS before the teacher explained the material. The material shared in LMS makes it easier for students to ask questions. From the data, 60 people (84.5%) stated that it was easy to ask questions to the teacher during the learning process. Participants find it easier to do quiz questions given online. Fifty-nine people (83.1%) stated that they are effective in doing online quizzes. Research on online learning media for physics courses shows that students are delighted to learn physics using interactive multimedia

based on iSpring Suite 9 (Anistalidia et al., 2021). Another study by Sulistyorini and Listiadi (2022) stated that the response was very good and answered the students' needs when the online learning process was carried out using the iSpring Suite on the learning management system.

Table 1. Students' Response to Questionnaire About LMS

No	Question	Response (%)	
1	In your opinion, is the material that will be delivered by the lecturers effective in Share Online in the LMS (Learning Management System) before being explained by the lecturer?	81.7	18.3
		Effective (58 people)	Less effective (13 people)
2	Do you think that reading the material that the lecturer will deliver makes it easy for you to ask questions?	84.5 Yes (60 people)	15.5 No (11 people)
		83.1	16.9 Less
3	Are the online quizzes effective in filling and processing?	Effective (59 people)	Effective (12 people)
		93 Yes (66 people)	7 No (5 people)
4	Do IPB Vocational Schools need to apply online learning for certain subjects so students can easily access the material and work on the questions?	93 Yes (66 people)	7 No (5 people)

Not all course materials can use LMS for learning media at the IPB University Vocational School (Setiawan, 2020). The material in each lecture is theoretical and practical. The composition of theory and practice in each course is different. Generally, the theory is 30-40%, while practice is 60-70%. Materials that can be delivered using LMS are generally theoretical. Practical material can be delivered using videos stored in the LMS, but students practice using devices or directly in the field. Blended learning is the solution for implementing learning using LMS and face-to-face for specific subjects (Vallée et al., 2020). The blended learning process is for face-to-face practical material, while LMS is for theoretical material (Smith & Hill, 2019).

The target of the IPB Vocational School is that 20% of courses in vocational schools can be taught online. Facilities and infrastructure are prepared to support online learning, such as providing servers and training for lecturers so that they can prepare materials made online. SCORM content on a Moodle-based LMS is one of the features that can make it easier for teachers to apply online learning (Distante et al., 2020; Prasetya & Nugraha, 2020). Materials that can be displayed using SCORM are videos and powerpoints. iSpring Free software can make PPT material content more interesting because, in addition to the material, quizzes or exercises can be made related to the material presented (Maghfiroh et al., 2020; Azhar, 2021). At the IPB vocational school, lecturer training was held on using SCORM and iSpring free for learning media in LMS.

Students can access the material in the learning management system before the teacher explains the learning material in class face-to-face (Washington, 2019). The learning process will be effective because students already know what material the lecturer will deliver, so the teaching and learning process becomes more interactive (Graham, 2019). The theoretical material can be read through the PPT file in SCORM, and practical material can be seen from the video (Sopandi et al., 2022). Learning materials created using SCORM and iSpring Free on LMS can be used for all courses. The most effective courses using these learning materials are general subjects, such as physics. The learning carried out in physics courses has theory and practicum. Materials and quizzes for learning physics can be accessed at LMS to provide opportunities for students to deepen their understanding of theoretical physics. Physics practicum material can be accessed in the LMS and presented at SCORM via video. Students can see the physics practicum steps that will be carried out before the practicum begins.

Table 2. Sample Recap from SCORM

First Name	NIM	Study program	Email address	SCORM Value
Novita Sari	J0413221070	LNK	no902209@gmail.com	86.75
Fathina Shah Bani	J0413221091	LNK	fathinasyahbani@gmail.com	86.75
Ica Alissa Damayanti	J0413221014	LNK	ichaalissaaa@gmail.com	87.50

From Table 2, SCORM results can be directly downloaded in excel format, making it easier when taking scores (Iqbal & Fradito, 2020). Data can be taken at once and made in the form of columns in the excel file. If seven materials are prepared, all will be displayed in seven columns. The final grade can be obtained by averaging the grades obtained from each material.

## CONCLUSION

The materials and quizzes as learning media have been successfully created using SCORM and iSpring Free 9 and applied to a moodle-based online learning management system. Making learning materials online makes it easier for teachers to deliver materials and for students to access materials online anytime and anywhere with internet access. Based on the evaluation of 71 students, the making of learning materials is effectively applied in the online learning management system. Using the premium iSpring for full version menus for making quizzes is recommended.



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