

Research article

Design and Development of the Interactive Courseware Called Various of Organizing Student Activities (VOSA), Based on SCORM

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Abstract.

This research analyzed the flaws in today's educational media system by examining the development of interactive courseware for distance learning called Various of Organizing Student Activities (VOSA), based on SCORM. The development, system structure, elements and advantages of the VOSA interactive courseware were investigated and described. VOSA is reusable, portable, renewable, and simple to use. It could be used to develop an online distance learning system. Furthermore, it has the potential to improve the efficiency and quality of learning media in learning practices, independent learning, examinations, and evaluations.

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1. Introduction

In conventional learning, the ability to utilize learning media is less than optimal due to the long duration of learning and low learning efficiency [1]. On the other hand, instructional media are characterized by the practicality of content, lifelong learning, and different needs and abilities of students, which demand varied learning materials, thus enabling learning materials to be shared and can be reused in learning at different levels. Characteristics of learning media that can improve the efficiency and quality of learning, namely reuse and informatization, thus providing impetus for modernization.

The distance learning system is the main direction of education during the current pandemic. The main benefit is that it can reduce learning costs effectively, as well as improve the quality of learning.. VOSA based on SCORM is, emphasizing learning by doing, where the inculcation of college student abilities is based on practice priorities and a combination of theory and practice. The design and development of VOSA based on SCORM has some advantages such as easy management, reusability, ease of updating and interoperability.

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This paper develops VOSA based on SCORM. VOSA based on SCORM is a learning media system platform that is prepared for the management of learning resources to combine learning theory and learning practice. Management of learning activities in one space and time can help realize the modernization of learning.

2. Conditions For The Development of Interactive Course "Vosa" Based On Score

VOSA is learning exciting for college students with interactive activities. VOSA is also using online learning platforms such as google meet or ZOOM meet to reach out the college students. In order to learn looking fun and can engaging activities to do with the college students during class meetings, this is for some creative ways to engage the college students during these times: games, conversation activities, movement activities, fun Fridays. SCORM is a learning material with the characteristics of accessibility, reusability, durability, and interoperability of learning materials to promote the modernization of education and the following objectives: [2]:

(1) To provide a learning with high quality education anytime and anywhere, which suits the needs of different college students, knowledge backgrounds, cognitive and interests levels.

(2) Improve the accessibility of learning materials and streamline the costs and time used in developing learning materials.

2.1. Interactive Courseware "Various Of Organizing Student Activities (VOSA)" Can Be Developed in Accordance With The Learning Curriculum

Different levels of college student ability require different learning materials and evaluation systems according to college student abilities, this situation requires interactive learning tools "VOSA" based on SCORM, because VOSA based on SCORM has flexible learning abilities and according to the level of college student knowledge

2.2. The Interactive Courseware "VOSA" based on SCORM Can Accommodate the Different Needs of Learning

Distance learning requires a strong signal network, so "VOSA" interactive courseware is needed which has strong flexibility and easy accessibility.

2.3. "VOSA" Based on SCORM Can Be Reorganized And Also Updated

The "VOSA" based on SCORM consists mainly of power point presentations, videos, learning materials, and other learning resources. Learning materials can be adapted to the curriculum, abilities and needs of students, so that the distance learning system becomes effective.

3. Interactive Courseware "Various of Organizing Student Activities (Vosa)" Based on Scorm

The interactive courseware "VOSA" based on SCORM is an appropriate learning material used in distance learning developed by the American learning management system since 1997. Thus, SCORM has become an international distance learning standard. Interactive courseware "VOSA" based on SCORM standard provides a learning model that provides e-learning standards. Learning content objects that are integrated into SCORM has a high degree of reusability accessibility, persistence, affordability, adaptability, interoperability [3]. Core of the "VOSA" interactive courseware based on SCORM consists of three parts: the runtime environment (RTE), the material aggregation model (CAM), sequence and navigation (SN). The content package consists of physical resources and manifest files as shown in Figure 1.

In Figure 1, meta-data is data that describes the content package to be able to meet data access and requests, and generate data reuse data indexing [4].

4. Design and development of "various of organizing student activities (vosa)"

"VOSA" based on SCORM is a very useful learning resource for anyone involved in online learning, because the learning material can be created once and used over and over.

4.1. The working principle of the "VARIOUS OF ORGANIZING STUDENT ACTIVITIES (VOSA)" based on SCORM

The presentation of learning materials requires a design according to the learning needs as well as the diverse abilities and characteristics of college students.

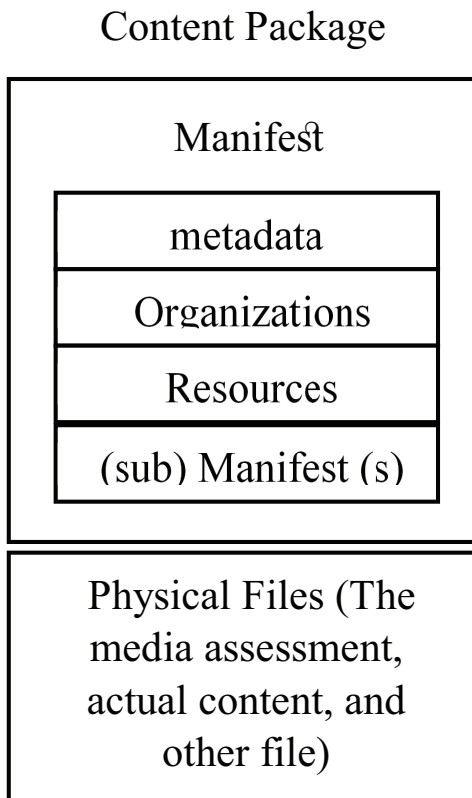


Figure 1: Conceptual of Content Package.

4.2. The development of "VARIOUS OF ORGANIZING STUDENT ACTIVITIES (VOSA)" based on SCORM

The steps for making the course are choosing micro units, Sharable content objects (SCO), and combining SCO according to curriculum objectives, learning needs, then packaging and publishing them on the LMS to carry out the learning activities [5][6].

4.2.1. Elements of "VOSA" based on SCORM

The "VOSA" based on SCORM consists of four elements: micro units, shared content objects, material, metadata. SCO is not only a software unit for courseware editing, but SCO is also a platform for organizing the smallest unit, and each SCO must have a complete metadata description. The metadata information module can be further subdivided into categories, and each category can be further subdivided into several other items. The most effective and efficient tool for generating metadata is the Reload Editor.

Learning using VOSA based on SCORM aims to realize informatization, interoperability, convenience, and optimization in the learning planning process, implementation

as well as assessment and learning improvement. Informatization lead to the whole process, management and application in learning practices. Convenience means a fast response in service in the aspect of learning planning, preparing textbooks, or even preparing learning programs and organizing learning materials. Interaction means that there is a reciprocal (two-way) relationship between the object and the shared platform in the learning planning process and platform in the learning practice process. Optimization is the ability to evaluate learning in real-time so that learning can achieve the best efficiency and quality. All learning resources, such as: lesson plans, learning curricula, textbooks, courseware, are made into content based on SCORM.

Users of learning media platforms who are involved in all learning activities include teaching administrators, teachers, students, resource developers and system maintenance personnel, who use this platform to perform the tasks, as described below.

a) Teaching administrators play a role in managing learning activities and are responsible for preparing learning programs and learning plans, learning implementing, learning schedules, and learning evaluating, managing student colleges and teacher colleges, and optimizing learning procedures and plans.

(1) management: management of learning programs, textbooks, lesson planning, evaluation, arrangement of learning materials and lesson plans;

(2) Inquiry: checking information about student colleges, learning conditions, learning progress, results and so on.

(3) Optimization: revise and optimize lesson plans and implementation of learning to improve efficiency of learning.

b) Teachers are implementers and organizers of learning activities to: 1) manage, compile, and make learning plans using e-learning and e-textbooks; 2) applying learning practices using learning methods that are in accordance with the curriculum; 3) assigning tasks, such as: giving homework, giving assignments in electronic textbooks, etc.; 4) arrange online exams on theoretical content and online assessments on practical content. Formulate questions, save exam sheets, formulate exam rules and assessment guidelines, and so on; 5) providing results and evaluation: collecting and reporting test scores, assessing and analyzing course learning, proposals for learning improvement.

c) Students are the main object in learning. Students carry out activities such as: learning in the classroom, learning outside the classroom, doing assignments, taking exams, obtaining assessments and learning feedback, obtaining progress reports and learning outcomes.

d) Resource developers are responsible for the service and management of learning materials and databases. Learning materials include shared virtual object simulation packages, courseware and SCO packages, SCO virtual simulation packages, semi-physical simulation training system database images including learning resource databases, learning management databases, analysis and tracking databases, exam databases, score records database for the management of learning materials, user management databases, learning practices and personnel.

e) The routine maintenance manager is responsible for the safe and normal operation of the system.

f) User and resource management: all users must have ID and after login must get access to learning [7].

4.2.2. *Interactive courseware package "Various of Organizing Student Activities (VOSA)" based on SCORM*

VOSA based on SCORM known as a package of learning materials to make it easier for students to learn. The learning package based on SCORM consists of two main parts, namely: hard file and material list.

The complete list of learning materials contains the organization of one or more learning resources. The complete list of learning materials includes the following sections: 1) description of the overall contents of the metadata package; 2) organizational structure material: the structure includes one or more learning units.

5. Conclusion

In the education system in universities, distance education is the main direction of development, and the development of interactive courseware "VOSA" based on SCORM is an important direction for the development of distance education. Interactive courseware "VOSA" based on SCORM is more flexible in increasing courseware portability than traditional courseware. The main benefit of VOSA based on SCORM is interoperability between e-learning software products, because SCORM allows uploading learning content into LMS.

References

- [1] Housan G. Research on international standardized profile for e-learning technology standard architecture. Wuhan: Huazhong University of Science and Technology; 2007.

- [2] Team SCORM, The sharable content object reference model (SCORM) advanced distributed learning (ADL). Available from: <https://adlnet.gov/projects/scorm/>, Washington, USA, 2019
- [3] J. Yu and H. Guo, "Design and development of the interactive courseware based on SCORM standard.," In: *Proceedings of the 2017 World Conference on Management Science and Human Social Development*. pp. 260–263. Atlantis Press, Paris, France (2017).
- [4] Paul Jesukiewicz, Advanced distributed learning initiative. SCORM 2004 4th edition content aggregation model (CAM) version. Available from: <http://www.adlnet.org/> , Washington, USA, 2009.
- [5] Xinhua Z, Hui L. Design of open material object and its operating environment based on SCORM [J]. *Computer Engineering and Design*. 2005;(11):2949-2951.
- [6] Li J-W. Learning management system design based on SCORM standards. *Modern Educational Technology*. 2013;23(5):98-102.
- [7] Y.U. Hui and S. Wenzhu, "Design of Equipment Teaching and Training Platform Based on SCORM.," In: *Proceedings of the 2nd International Forum on Management, Education and Information Technology Application* . pp. 301–306. Atlantis Press, Paris, France (2018).