

## DEVELOPING OPEN COURSE WARE AT UNIVERSITY

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**Abstract:** *The context of the knowledge economy, globalization, international integration, especially the scientific and technological revolution 4.0 with many achievements has been affecting all fields, including higher education and increase the demand for digital resources. This is a good condition for the development of open educational resources in general and open course ware in particular. In fact, open course ware in the higher education system in Vietnam is still pretty faint, mainly built and used in each higher education institution independently, lacking coordination and sharing, leading to the quantity and quality of learning resources are not high and effective. Besides many advantages, universities are also facing many difficulties and challenges in building and developing open course ware. With a core and pioneering role, the higher educational system needs to deploy appropriate and effective solutions to pioneer the development open course ware in particular and open educational resources in general, meeting the policy of building the learning society and lifelong learning, implementing a shared education. The more shared knowledge, the more developed and sustainable the educational resources.*

**Keywords:** *university, solution, development, open course ware*

### **I. Introduction**

The context of the knowledge economy, globalization, international integration, especially the scientific and technological revolution 4.0 with many achievements has been affecting all fields, including higher education. Universities in Vietnam need to actively innovate in terms of curriculum, training content, teaching methods and focus on allowing learners to acquire knowledge by themselves as well as equip themselves with the necessary competencies and skills. In particular,

digital transformation in education has increased the use of digital resources. Teachers and learners really need a large and quality learning material source to meet the higher and more diverse needs of teaching, learning, and research in universities. This can be considered as a good condition for the development of open educational resources in general and open course ware in particular. Open course ware will contribute to improve the quality of training and research of higher education institutions; create learning opportunities

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for everyone; provide quality learning resources; reduce the cost of developing and publishing learning materials; promote academic transparency; solve copyright issues in the process of using and sharing learning materials; create a foundation for universities to develop sustainably, improve the quality of human resource training as well as the autonomy of the university.

fact, open course ware in the higher education system in Vietnam is still pretty faint, mainly built and used in each higher education institution independently, lacking coordination and sharing of guidelines. quantity and quality of learning resources are not high and effective. The construction, exploitation, use and development of open course ware in higher education institutions should be studied both scientifically and practically. Within the framework of a scientific article, this study addresses the common problems of open course ware and proposes some solutions to develop open course ware in the universities.

## II. Overview of open course ware

### 2.1. Concepts

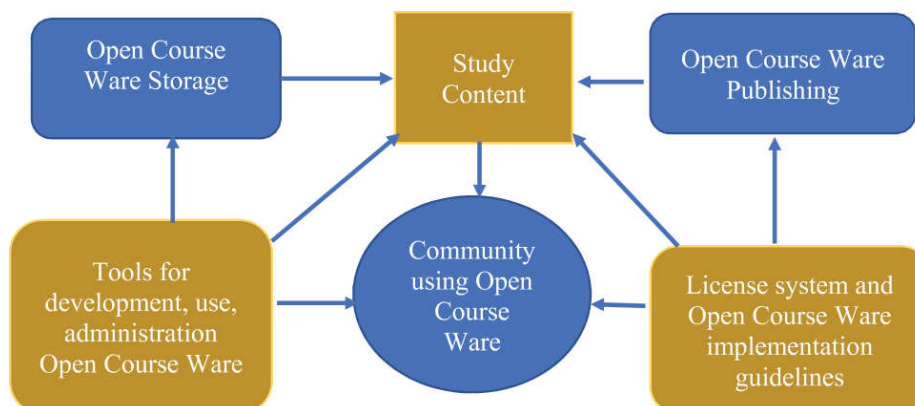
Open Course Ware (OCW) are quality, digitized and open-licensed learning materials that are accessible

in free courses for use by instructors, students, and self-learners in teaching, learning and researching. This initiative enables universities around the world to participate in providing and expanding access to learning materials; They can be modified and reused without violating copyright laws.

To build the high quality of open course ware with long-term value, it is necessary to have a foundation consisting of three basic components:

- Open source software, for use, reuse, distribution of learning content, search and organization of content, learning management systems, content development tools, learning communities online;
- Published documents, books and journals for study and reference;
- Implementation resources include intellectual property rights licenses to promote open document publishing, principles for content implementation and localization, and standards to ensure compatibility between different open course ware systems [7].

The components of the open course ware have a close relationship and can be specified as follows:



Building and exploiting open course ware in some countries around the world shows that this job requires a lot of professional skills. With high-quality open course wares already available around the world, mostly in English, localization is the best and fastest way for developing countries to get their desired learning materials.

### **2.2. Characteristics of open course ware**

Open course ware plays a core role in the modern open education system and is developed with a number of preeminent features:

- Open course ware content is standard in science and meets the diverse and rich learning needs in many socio-economic fields and lifelong learning needs.

- Various forms of open course ware: books, newspapers, hard documents, soft documents, audio, video, recorded on CDs, VCDs, in the form of files, compact size, easy to use; convenience of access.

- Open course ware interactivity is high, with integrated user support. In which, developing in the direction of strong application of information technology, the document reaches the readers the fastest. Overcome the gap in time and space and improve learning efficiency.

- The important difference between open course ware and other learning materials is that the license of the document allows anyone to access and use it.

Therefore, when developing OCW, it is necessary to pay attention to both content and publishing license development.

### **2.3. Classification, requirements and evaluation criteria open course ware**

*\* Based on the criteria, open course wares can be classified into the following basic categories:*

- By nature of content: basic open course ware and supplementary open course ware.

- According to the nature of production technology, packaging of learning materials: open course ware formats text, video, audio, multimedia, simulation (simulation), ebook, multimedia book, gamification application learning materials, interactive learning materials...

- According to interoperability: static open course ware and dynamic open course ware [2].

*\* Either way, an open course ware should clearly state the requirements:*

- Learning goals.
- Prerequisites for taking the course.
- Brief description of the content of a study material.
- Clear and logical structure.
- Have the correct content.
- Guide learners to use and exploit learning materials easily and effectively in specific conditions with specific activities.
- Ensure the interaction between content knowledge and students.
- There are reference materials, knowledge consolidation exercises and skill improvement exercises for each knowledge content.

- Diversified, rich and reasonable learning resources [2].

\* *Open course ware evaluation criteria include:*

- Open course ware content is assessed for quality, ensuring academicity, updating and meeting diverse learning needs.

- The interface of the learning materials is friendly, easy to use, easy to browse the learning content.

- Show the learning relationship between open course ware and other traditional forms of learning.

- Improve teaching methods by integrating many active and modern teaching methods.

- Students can self-assess their progress in the learning process.

- Help students complete practical exercises and advanced exercises [5].

- Accessibility and interactivity.

- Adaptability and Reusability.

- Meet packaging standards, information exchange standards, metadata standards, quality standards, training media standards and other organizations' media standards.

## **2.4. Designing open course ware**

### *2.4.1. Designing Content*

Some principles apply in content design such as multimedia principles, principles of integrating graphic text results, combining principles, etc. As can be seen, almost all learning design models All learning materials have one thing in common: Needs analysis, learning

objectives, task analysis, input skills, pedagogical strategies, delivery media, assessment and adjustment.

Each model, each learning material design activity establishes principles and criteria to ensure the accuracy, correctness, reasonableness, attractiveness, attraction, stimulation for learners and adaptation for learners. with the learning environment. The application of learning material design models helps professionals to have an effective teaching strategy.

### *2.4.2. Designing interaction*

Thurmond (2003) defines interaction as: "Students' engagement with the learning content, with other students, with instructors, and with the technological media used in the course..." [8]. The interactivity in open course ware is to help activate long-term memory and enhance attention span; These are two essential capabilities in any learning mechanism. There are other important benefits to keep in mind as well: React; Encourage; Increase student participation; Promote knowledge retention; Boost motivation.

There are four types of interactions:

- Student-Teacher interaction
- Student - Student interaction
- Student Interaction - Content
- Student-System interaction

According to Karla Gutierrez (2012) [5], there are 4 different levels of interaction:

- Level 1. Passive - non-interactive
- Level 2. Limited interaction
- Level 3. Moderate interaction

- Level 4. Active - high level

#### 2.4.3. Design evaluation activity

The types of assessment include: Process Assessment and Comprehensive Assessment. Type of test questions designed: True/false questions; One-choice question; The question has multiple answer options; Filling in the blank; Concatenated list; Sequence type question; Composition question; Implementation question.

#### 2.5. Publishing Guidelines for open course ware

According to David Willey (2014), the publication of OPEN COURSE WARE must follow 5 basic principles (rights) (also known as 5Rs). That is:

1. Reuse - Reuse: People are allowed to reuse part or all of the work, for their own purposes (eg: downloading videos for learning materials to watch)

2. Redistribution – Redistribution: People can share materials with others (eg forwarding an electronic article to others)

3. Revise – Redo: Anyone can modify or translate the work (eg translating documents into Vietnamese)

4. Remix – Mix: People can combine two or more different materials to create a new resource/generated work (for example, take the voice material of this work combined with the slide of the desk). another to form a new document)

5. Retain – Retain: Since there is no Digital Rights Management (DRM) law, people can keep material content for as long as they like.

The provider/author can allow all

5 permissions or less. Also according to Willey (2014), the number of licensed rights is a reflection of the ‘openness’ more or less of a certain source [9].

### III. The role of universities in building and developing open course ware

Universities play the role of training places, providing society with high-quality human resources, and conducting scientific research to meet the socio-economic development of the country. Therefore, universities take a pioneering position in creating lifelong learning opportunities for everyone, especially identifying the pivotal role in building, managing, developing, and sharing resources. open education in general and open course ware in particular for the community.

Universities have a team of lecturers who are performing the task of training to meet the labor needs of all socio-economic branches. Many people in leading roles in socio-economic sectors in Vietnam are trained at universities. As a result, universities have the capacity to fulfill the core role of providing open course ware content that meets the lifelong learning needs of adults. In fact, in recent times, universities have made certain contributions to adult life-long learning through training systems at higher levels (masters, doctoral), training to raise standards, building and organizing the implementation of knowledge-training topics to meet social needs. However, these activities only meet part of the adult learning needs in terms of quantity and quality.

Along with training activities, universities have been carrying out

many scientific research tasks to meet the development needs of the country, and are the places to directly organize scientific research and technology transfer activities. In fact, in recent times, there are many studies carried out at universities that have been applied to socio-economic development. Therefore, schools have enough conditions to create learning materials and open course ware not only meets the learning needs of the present but also meets the needs of the future.

The facilities of the schools meet the requirements of communication, information dissemination and distribution: there is an electronic portal to carry out the task of communicating and promoting information; have a center for producing electronic learning materials, have a traditional and electronic library to manage learning materials and open educational resources; have software to manage learning materials and training in the form of online and remote; have magazines or cooperate with journals to write research articles, communication,.... In fact, universities have participated in the production and release of many learning materials for training and scientific research both hard and electronic learning materials, sharing learning materials with domestic and foreign universities; Organized many online courses via network, distance,,....

When participating in the ecosystem of open educational resources, universities have a lot of information in developing and improving education policies and strategies better: universities will grasp comprehensively the needs of learners

and the feedback of stakeholders for the learning materials provided by them, thereby setting out a plan to improve the quality of learning materials in particular and the quality of training in general. Teachers and students have more access to diverse, rich and quality learning resources, which helps teachers and learners have a broad understanding and have more opportunities to participate in the educational process more effectively.

In addition, with the development of open course ware, universities are allowed to use a large, complete and secure system of learning materials for training activities, scientific research, accreditation, etc. of the schools.

From the above analysis, universities have enough conditions and resources to fulfill the core and pioneering role in the development of open course ware in particular and open educational resources in general, meeting the needs of learners. lifelong practice

#### **IV. Advantages and disadvantages of developing open course ware at universities**

##### **4.1. Advantages**

- Universities are aware and appreciate the importance of open course ware for the development, innovation and quality improvement of higher education today.

- Information and library activities of higher education institutions have applied scientific and technological advances such as software, network systems, computer systems, modern equipment and machinery, etc. This is the basic means

for the school to accelerate the process of building and developing open course ware to meet the requirements of lifelong learning in the community.

- Resources of traditional documents and documents in digital form (theses, theses, lecture outlines, textbooks, references, scientific research results, ...) are very rich, this is the foundation. the basis for building and developing open course ware to meet practical requirements.

- The staff and lecturers involved in the development of open course ware have solid professional competence, are dedicated to the profession, eager to learn and actively absorb advanced scientific and technological achievements.

#### **4.2. Difficulties**

- The open course ware development strategy and plan for each specific period and stage in the higher education system has not yet been developed.

- The open course ware quality assurance conditions have not been specified specifically to ensure the criteria of the learning materials. there are no comprehensive standards for evaluating open course ware quality.

- The investment of resources, implementation organization and conditions to build and develop open course ware for the learning community is still modest. while in fact, to develop open course ware requires financial investment to invest in technology infrastructure, digitize documents, upgrade software, purchase modern equipment and content development costs.

- Equipment used for automating information-library activities, the connection of shared libraries for universities has not been synchronized and effective.

- One of the biggest difficulties in the production of open course ware is the legal issue of intellectual property rights. This problem in the world has many solutions, but for our country it is still a big challenge and becomes a barrier in the development of open course ware production. Although there are many conferences and seminars on this issue, there are no legal documents as a basis for open course ware development in higher education institutions.

### **V. Some solutions to develop open course ware in higher education**

#### **5.1. Implement an open education system and mechanisms and policies to develop open course ware in accordance with the context of Vietnam**

The strategic solution to get the university system to participate in building open educational resources in general and open course ware in particular is to implement an open education based on the important factors that are the system of educational institutions. open education, open educational resources, online courses, and open education and training policies.

State management agencies need to have appropriate legal provisions related to publishing licenses (Creative Commons) to have an official regulatory document, creating a unified legal foundation and corridor for construction. and develop open course ware in a sustainable way.

After having mechanisms and policies from the macro level, universities need to develop their own specific policies and concretize this policy in the development strategy of the university and functional units. , and at the same time develop short-term, medium-term and long-term action plans.

### ***5.2. Strengthening coordination among universities in developing open course ware***

Universities need to build a mechanism for coordination and association to jointly build, share and exchange open course ware resources with libraries of universities with the same training majors. Building a network of digital libraries of universities, establishing relationships to exchange and share open course ware resources on the basis of mutual benefits, contributing to enriching the common resource repository, meeting training requirements. socio-economic creation and development.

In order to get the university community to participate in an open network of educational resources in general and open course ware in particular, first of all, there must be the policy of the Ministry of Education and Training and the coordination and support. of relevant Ministries and Agencies.

### ***5.3. Increase investment in resources to develop open course ware***

With the important and meaningful role of open course ware in the training and research activities of a university, universities need to have the right investment in finance, technology and human resources to carry out the work.

build, develop, organize, manage and serve open course ware resources.

In terms of finance, it is necessary to arrange a stable funding source to implement the digitization of documents, purchase the necessary means and equipment to produce documents and to connect with the resources of other training institutions. There is also funding to support and encourage content creation and resource sharing. Regarding human resources, it is necessary to train and arrange qualified and experienced human resources to meet the requirements of open course ware construction and development. Create favorable conditions for staff to participate in refresher courses, improve professional qualifications, especially participate in training courses on knowledge and skills to build and develop open course ware. Lecturers, researchers, students and librarians will be the ones who directly create and share open course ware. Therefore, this team needs to be trained and fostered the necessary skills in technology, techniques and methods to build and develop open course ware.

### ***5.4. Promote the role of lecturers in the production and development of OPEN COURSE WARE***

The school's teaching staff is the force directly building and using open course ware resources. Therefore, teachers and students need to master the principles of building, sharing, and complying with copyright and use license issues of this resource. From there, know how to build and develop open course ware for teaching, learning and research activities



according to the nature and requirements of this resource.

In addition to creating and sharing documents, the lecturer is also the onewho selects, guides, and gives students regulations on reading documents/textbooks, and suggests references. Therefore, the quality of open course ware largely depends on which resources the trainers choose to use to suit the particular context and how they integrate them into teaching, training and learning activities.

The school also needs to create an academic freedom environment, encourage investment in the compilation of curricula, lectures and other learning materials, thereby creating motivation for lecturers, researchers and students to promote develop and share open course ware resources.

#### **5.5. Ensure open access for faculty and students**

This solution is intended to ensure that faculty and students have universal access to the information technology infrastructure, software, and connectivity needed to access the Internet and develop or adapt educational materials. education of different types. This includes software applications, such as Web content editing tools, content management systems, templates, and toolkits that facilitate the creation and use of educational resources. Tailor-made, adjustable design. It may also require developing an archive of faculty teaching work and student learning that can serve as a powerful learning and research resource.

## **VI. Conclusion**

Developing open course ware is an inevitable trend in the context of globalization and industrial revolution 4.0, towards building a modern electronic library, linking with libraries of other educational institutions, contributing to innovation. teaching and learning methods, improving training quality and renovating university administration. Promoting the strengths of each school and synchronously applying appropriate solutions to build and develop open course ware is a priority task of universities. The richer the open educational resources, the wider the knowledge sharing. The university that pioneered the construction of open course ware is a work to implement a shared education. The more shared knowledge, the more developed and sustainable the educational resources.

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