

# SOLUTIONS FOR DEVELOPING AND MANAGING DIGITAL LEARNING MATERIALS SERVING GENERAL EDUCATIONAL INNOVATION IN THE CURRENT PERIOD

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**Abstract:** “National Digital Transformation Program to 2025, orientation to 2030” approved in Decision No. 749/QĐ-TTg dated June 3, 2020 of the Prime Minister determines: Developing a support platform for distance teaching and learning, thoroughly applying digital technology in educational management; digitize documents; build a resource sharing platform for teaching and learning in both in-person and online forms; develop technology to serve education, towards individualized training; 100% of educational institutions deploy remote teaching and learning, including testing training programs that allow pupils to learn online at least 20% of the program content; and apply digital technology to assign homework and check pupils’ preparation before coming to class. To put it simply, digital transformation in education is the application of advanced technologies to help improve learners’ experience, improve teaching methods, and create the most convenient and friendly learning environment. In order for digital transformation in education to be practical, feasible, and flexible, it is necessary to coherently build and develop a system of appropriate and compatible teaching aids, including the core element, which is learning materials in general and digital learning materials in particular. In the general teaching process, digital learning materials play a particularly important role, directly affecting the learning outcomes of each learner, whether studying in class or studying on their own. In the context of the current digital revolution, along with online learning methods, digital learning materials gradually overwhelm traditional learning materials with many advantages, such as sounds, vivid visual images, ease of sharing, quick and instant storage, search and sorting, and many other advantages. In this article, the author mentions solutions for building, developing, and managing digital learning materials to meet the requirements of general educational innovation according to the 2018 general education program.

**Keywords:** Digital learning materials, digital transformation, 2018 general education program.

## I. Introduction

The goals of the 2018 general education program are specified in

Circular 32/2018/TT-BGDĐT (MOET, 2018) to help pupils continue to develop the qualities and abilities necessary for workers, civic awareness and personality;

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*ability to self-study and awareness of lifelong learning; the ability to choose a career that suits one's abilities and interests, conditions and circumstances to continue studying, vocational training or participating in working life; ability to adapt to changes in the context of globalization and the new industrial revolution.*

The program is built to develop skills, combining theory with practice and learning theory with practice. According to this orientation, it is necessary to equip diverse teaching equipment, diverse in types, knowledge content, science, and functions of the equipment: Pictures, photos, models, real samples, tools, materials, chemicals, audio-visual technical equipment, machinery, information technology infrastructure, digital learning materials, internet, etc.

Learning materials in general, and digital learning materials in particular, as a teaching medium with the support of modern technology, have contributed to strongly changing all aspects of the teaching process.

## **II. Theoretical background**

### ***2.1. Concept of digital learning materials***

According to the provisions of Circular 21/2017/TT-BGDĐT (MOET, 2017), *digital learning materials (or electronic learning materials)* are a collection of electronic means serving teaching and learning, including: Electronic textbooks, electronic reference materials, electronic assessment tests, slideshows, data tables, audio files, images, videos, electronic lectures, teaching software, simulation experiments and other digitized learning materials.

In the world and in Vietnam, there are many different concepts related to digital learning materials. However, a general

concept can be stated: Digital learning materials are documents in electronic form that are digitized according to a certain structure, format, and script and stored in a storage device to serve the needs for teaching and learning. Such digital formats can be documents, books, software, training programs, tutor systems, slides, data tables, sounds, images, videos, applications, and mixtures of other digital formats.

### ***2.2. The role of digital learning materials***

Digital learning materials supported by technology play a very important role because they are important “resources” to utilize and use in teaching. It should be seen that digital learning materials are an important component of the teaching equipment element, so the role of learning materials can be analyzed in the following aspects:

a) Impact on elements of the teaching and educational process

- Impact on teaching goals

The goal of teaching at high school levels is to develop the qualities and abilities of pupils as specified in the 2018 general education program (MOET, 2018). Using digital learning materials to implement learning activities not only helps pupils develop subject-specific and general capacity but also contributes to developing IT, technology, and information processing capacity. Therefore, pupils have more opportunities to adapt and integrate with Industry 4.0, contributing to narrowing the gap in the quality of education and training in our country compared to advanced countries in the world. When information technology and the internet are popular, learners have the opportunity to proactively come into contact with massive, multi-dimensional, and flexible resources of digital learning materials. This opportunity also allows

learners to choose and filter appropriate knowledge, data, and activities for their learning goals. That challenge also allows learners to form and develop positive and proactive qualities, responsibility, and skills. In addition, learning outside of school using digital learning materials gives pupils more opportunities to proactively develop many other competencies, such as autonomy and self-study, problem-solving, and creativity...

- Impact on teaching content

According to the 2018 general education program (MOET, 2018), textbooks and printed materials only serve as a reference information channel. Teachers can proactively design and build appropriate teaching content from many different learning resources: traditional learning materials from textbooks, other documents, or digital learning materials shared on the internet or from the community of peers. From there, teachers will proactively design and edit new digital learning materials that can be more diverse and vivid, suitable for each teaching, testing, and evaluation content according to the goals for individual classes and lectures.

For pupils' learning activities, digital learning materials help learners proactively access unlimited resources in the field they are studying and researching, thereby utilizing and promoting competence development in areas that learners are interested in, and as well as have the qualities and capabilities.

On that basis, pupils will actively seek and comprehend the teaching content to discover, master, and apply it effectively and flexibly.

- Impact on teaching methods and techniques

Digital learning materials create opportunities for teachers to proactively

choose teaching methods and ways to implement teaching activities in which pupils are the subjects of the activities. For example, with the combination of presentation equipment and digital learning materials in the form of virtual experiment videos and animations, teachers will have the advantage of using visual or discovery teaching methods in place of traditional lecture and presentation methods.

In teaching and developing pupils' capacity, they are the subject of the process of acquiring knowledge, skills, and experience and transforming it into their own competence. Therefore, from the perspective of teaching organization, to help pupils develop their abilities, teachers need to use active, proactive, and pupil-centered teaching methods such as visual teaching, discovery teaching, collaborative teaching, integration, problem-solving teaching...

- Impact on teaching media and teaching materials,

In essence, digital learning materials are also a means of teaching. Thus, digital learning materials play a role in diversifying and modernizing teaching media and materials, thereby helping teaching become more "intuitive, lively, diverse, and flexible", and more enjoyable and effective.

- Impact on the inspection and evaluation process

The organization of testing and assessment in teaching requires diversity in forms, methods, and assessment tools. Digital learning materials in the form of questions and exercises, tests, and assessments contribute to meeting the above requirements. In other words, the diversity of digital learning materials will adapt to the diversity of assessment forms, methods, tools, and organizational approaches. Two of the important

requirements of the testing and evaluation process are to ensure objectivity, transparency, honesty, and quick results. The reasonable combination of a number of digital learning materials along with simple support to guarantee appropriate conditions will also allow conducting testing, assessments, or organizing exams to meet the teaching plans of teachers. The organization of exams to assess pupil competence on computers and smart electronic devices recently in Vietnam, especially during the period of separation due to epidemics such as COVID-19, has proven the effectiveness of digital learning materials in testing and assessment.

- Impact on the interaction between teachers and learners

There are three main stages in teaching: Teaching, learning, and the interrelationship between teaching and learning. Digital learning materials that change the nature of Teaching and Learning also strongly impact the relationship between Teaching and Learning in all its aspects.

b) Create conditions and encourage teachers to flexibly implement diverse, effective, and time-saving teaching methods

Digital learning materials motivate and encourage teachers to utilize new teaching ideas and design modern teaching plans with a combination of information technology, digital learning materials, and other related requirements. With the support of digital learning technology, teachers are able to deploy pedagogical ideas to organize teaching, diversifying the form of online teaching and combined teaching (E-learning, B-learning). In practice, it shows that these forms of teaching have become a practical requirement to meet the diverse needs of learners, as well as being implemented in the context of social distancing due to natural disasters, epidemics, space obstacles, or other crises. Digital learning materials also create conditions for teachers to proactively choose

teaching methods, plans, teaching forms, and testing tools and evaluate learning and educational results to meet the requirements of teaching for the development of pupils' capacities and qualities.

c) Contribute to developing learners' interest in learning and skills

Digital learning materials also contribute to diversifying forms of interaction in pupils' learning activities, such as the interaction between pupil-pupil, pupil-teacher, pupil-parents or siblings, and social community. These interactions create opportunities to develop communication, cooperation, and coordination skills, in addition to the qualities and competencies outlined in the 2018 General Education Program.

d) Contribute to the development and improvement of teaching and learning management effectiveness

The strong impact of digital learning materials on the content, methods, and forms of teaching organization also positively and effectively impacts school management activities in general and teaching management in particular. Digital learning materials also help move towards simplicity, streamlining, and efficiency in the stages of educational management, including the management of teaching equipment systems to support teaching in schools. This includes planning, directing, formulating plans, decision-making, implementation, inspection, and evaluation.

### **III. Research results**

#### ***3.1. Limitations and difficulties in building and developing digital learning materials***

In practice, building, utilizing, and developing digital learning materials in our country faces the following main difficulties:

- Producing digital learning materials requires significant investment in training, updating technology, marketing, and searching for market expansion.

- The time to produce and complete digital learning materials is often longer than the production of traditional learning materials. It takes time to evaluate and censor both technical and content before being licensed and issued through the digital environment.

- Although there have been many regulations on intellectual property and copyright, implementation in practice and sanctions are still limited, and the rate of copyright infringement of digital learning materials is still high. There is a lack of regulations and instructions on design, layout, content, and specific duration for digital lectures and digital learning materials, so many learning materials lack science and pedagogy, making teaching effectiveness low. Lack of unified regulations and guidance on techniques, data formats, and connection-sharing standards leads to difficulties in sharing and common utilization of digital learning materials.

- There is no public and transparent system of criteria and standards for quality censorship of digital learning materials, leading to difficulties for learners in the process of searching, utilizing, using, and sharing information. Organizations and individuals producing learning materials have not been encouraged to proactively invest.

- The digital learning materials market is highly competitive in the online environment, where domestic institutions face direct competition from foreign institutions with more significant resources. Meanwhile, the majority of digital learning materials production

facilities in the country are small and medium-sized, even fragmented and spontaneous, and lack human resources knowledgeable in education, technology, and science.

- The analysis of curricula and textbooks to identify learning materials is mainly based on the subjective and emotional experience of the proposers, which lacks a common, unified approach regarding methods and criteria for selecting types of learning materials among experts.

- There is no objective support tool to help experts thoroughly consider the relationships between objectives, content, and methods in order to propose drafts of appropriate learning materials.

- The experimental results do not provide assessments and conclusions on whether the experimental learning materials are suitable, thus not forming a basis for supplementing the necessary materials. The list of sample learning materials for mass production is rebuilt from scratch.

- There is no clear prioritization of selecting learning materials that have high usage frequency in the teaching process of subjects.

- The relationship and benefits of the authors with the learning materials they create have not been clearly established; therefore, the authors do not follow nor match the role and vitality of the products they have designed.

- Currently, there are many new sets of textbooks on the market, resulting in the development of learning materials "lagging behind," of which the time allocated for developing learning materials is too short, affecting the subsequent stages and ultimately limiting the learning materials' quality.

### ***3.2. Solutions for building and developing digital learning materials to support teaching in general education institutions***

#### *3.2.1. Solution oriented*

- The Party and State have guidelines and policies to strengthen physical foundations and teaching facilities to improve the quality of education as expressed in the Vietnam Education Law, Party and National resolutions, and education association. These documents especially encourage the application of technology and information technology in the education and training process.

- The Ministry of Education and Training issued Circular 32/2018/TT-BGDĐT (MOET, 2018), which introduced a new general education program. This is a general education program with modern, coherent content and connection throughout the education system. The development of learning materials, including digital learning materials, is one of the conditions of special importance to ensure program implementation. Curriculum development and learning materials development are two relatively independent processes that are connected to each other. Learning materials represent detailed objectives and program content for teachers and pupils to use to organize effective teaching. Orientations and solutions for developing learning materials are also aimed at effectively implementing the promulgated educational program.

However, to achieve effective learning material development, solution orientations cannot be rushed; they must follow the achievements achieved during the recent innovation period, overcoming limitations and shortcomings in the process implementation organization. Promoting previous experience, developing and replicating good practices, and positive factors are to be encouraged.

Timely completion of the development of learning materials to suit socio-economic conditions and circumstances allows them to be more effective and impactful. This is a step-by-step process of raising awareness, fostering knowledge and capacity for the team, and investing in appropriate facilities for the development of learning materials in general and digital learning materials in particular.

#### *3.2.2. Basis for building solutions*

- Guidelines and policies of the Party and State and guiding documents of the Ministry of Education and Training.

- Theoretical and practical Basis for developing learning materials.

- There is a need to innovate goals, content, and teaching methods in general education.

- Experience in developing learning materials organized by the Ministry of Education and Training, experience from departments of education and training and educational institutions, as well as businesses producing learning materials.

#### *3.2.3. Solution*

To develop digital learning materials to serve general education in the coming time to be practical and effective, it is necessary to do well some of the following basic solutions:

##### a) Systemic and policy solutions

Research and issue documents to direct, review, and complete the legal framework to promote the development of digital learning materials, focusing on the following:

- Regulations and sanctions on copyright, sharing of digital learning materials (shared content, sharing objects, sharing levels), decentralization of digital learning materials, content verification, and accompanying applicable sanctions.

- Develop policies to support the development of digital learning materials, such as prioritizing the use of domestically produced digital learning materials. Implement regulations to ensure fair competition between domestically produced learning materials and foreign-sourced learning materials.

- Local education management agencies at all levels need to be autonomous, self-determining, and responsible for purchasing, ordering, or self-developing learning materials. Based on compliance with state regulations on building and developing learning materials, educational institutions will further enhance both the quality and quantity of management activities in the development, use, and utilization of digital learning materials.

- Develop policies to mobilize, encourage, and create conditions for organizations and individuals (including experts, teachers, educational administrators, and pupils) to participate in developing learning materials in general and digital learning materials in particular. In the context of digital transformation in our country, the demand for digital learning materials is increasing rapidly, while the majority of enterprises developing digital learning materials are small and medium-sized enterprises with low profits and vulnerabilities to integration. Therefore, the State needs to implement policies to support these enterprises with business registration procedures, tax exemptions, and reductions, support for research and development, and prioritize the use of domestically produced digital learning materials, creating favorable conditions for their participation in the development of digital learning materials.

- Promote the competitive development movement to create learning materials at various levels, from central

to local. Recognize and promptly reward organizations and individuals with outstanding achievements in building and developing digital learning materials.

- The Ministry of Education and Training presides with ministries, branches, localities, and businesses to organize annual digital teaching equipment and innovation competitions to strengthen the national digital learning materials repository.

- Implement policies to support disadvantaged and ethnic minority regions with physical infrastructure and learning resources to help teachers and pupils in these regions have conditions to access and utilize information from digital learning resources.

#### b) Technical solutions

- Regulations on classification and criteria for evaluating the quality of digital learning materials (especially criteria on the compatibility between the content of learning materials and the subject curriculum); promoting digital learning materials standards, online learning program standards, lesson plans, and digital lectures to improve quality and efficiency of use, thereby creating motivation for the development of digital learning materials.

- Technical regulations for digital learning materials, connecting and sharing between digital learning materials repositories, and mechanisms for common utilization and use.

#### c) Cognitive solutions

Strengthen public awareness through mass media about guidelines and policies for developing learning materials to ensure society properly understands the role and importance of building and developing learning materials. On that basis, we can attract social forces to

participate and contribute actively and effectively in developing digital learning materials.

d) Solutions for training and fostering

Foster the skills and capacity to design, utilize, and effectively use digital learning materials, with initial training focused on management staff, teachers, and pupils. Build a team of professional scientists capable of researching and developing learning materials for all levels, subjects, and majors. Training from simple to complex, from learning materials with simple content to in-depth learning materials with high scientific content.

e) Financial investment solutions

Increase investment and establish financial mechanisms to encourage the development of digital learning materials, including:

- State investment and support mechanisms. Mobilize contributions of learning materials from teachers, scientists, pupils, and educational institutions.

- Mechanisms to mobilize socialization resources from enterprises participating in developing digital learning materials, building and maintaining the operation of platforms and infrastructure for collecting, storing, and sharing digital learning materials.

f) Solutions for investment in facilities and information technology infrastructure

- Develop a national digital learning resource center with adequate facilities and conditions to serve various subjects, units, and agencies. The Ministry of Education and Training manages the national shared digital learning materials warehouse. In the initial stage, learning materials are selected from schools,

departments of education, departments of education, educational establishments, and products from exams; they are shared for all educational levels and majors to serve teaching, testing, evaluation, reference, and scientific research.

- Develop information technology infrastructure and digital platforms for all users nationwide, contributing to the promotion of digital technology and digital learning material. This includes infrastructure for transmission lines and terminal devices such as smartphones, smart TVs, network-connected computers, communication devices, etc... for teachers and pupils. For regions without the internet, it is necessary to focus on building a LAN system, using packaged learning resources (not dependent on the internet) that can be stored using conventional storage devices.

- Develop physical infrastructure, classrooms, libraries, and teaching equipment in a modern, sustainable manner, with strategic planning and vision to create conditions for creating, storing, and utilizing digital learning materials. This is a key factor, the foundation for implementing the development of digital learning materials, ensuring connection and continuity inside and outside the school in different areas. The ability to use, update, and share databases and digital data warehouses based on compliance with current regulations and principles in teaching.

g) Solutions for international cooperation

Promote international cooperation to develop digital learning materials, including importing digital learning materials directly or indirectly from abroad. Implement various forms of connection, sharing, access, and utilization of digital learning resources of organizations and foreign educational institutions.



#### IV. Conclusion

As discussed above, the article has provided an overview of digital learning materials from concepts and roles and evaluated the current status of digital learning materials development in our country from different perspectives; from there, we identify the difficulties and challenges that hinder the development of digital learning materials, and on that basis, propose some solutions to develop digital learning materials content in the future. In order for the solutions to promote the development of learning materials in general and digital learning materials, in particular, to be effective in our country, with quality and practicality, the above-proposed solutions need to be researched in-depth by the management offices and educational institutions and converts them into specific implementation plans to be able to deploy the 2018 general education program effectively with ensured quality.

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# GIẢI PHÁP PHÁT TRIỂN VÀ QUẢN LÝ HỌC LIỆU SỐ PHỤC VỤ ĐỔI MỚI GIÁO DỤC PHỔ THÔNG TRONG GIAI ĐOẠN HIỆN NAY

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