PRINT: ISSN 0975-1122 ONLINE: ISSN 2456-6322

Int J Edu Sci, 37(1-3): 1-17 (2022)
DOI: 10.31901/24566322.2022/37.1-3.1219

Digital Transformation Capacity of Teachers and Lecturers to Meet Online Course Building

Huynh Van Son, Le Ngoc Khang[1], Nguyen Thanh Huan and Le Duc Long

Ho Chi Minh City University of Education, Vietnam

KEYWORDS Building Online Courses. Effective Learning Materials.Innovation in Education. Online Education and Training. Online Pedagogical Scenarios.

ABSTRACT The development of online education brings many opportunities for people to learn for life, improve training, fostering especially the diversification of subjects, learning time as well as learning methods. The construction of online courses that meet the requirements of learners must meet the requirements of output standards as well. The capacity to build an online course is a complex capacity that includes the capacity for digital transformation to ensure effective learning materials, in line with pedagogical ideas and online pedagogical scenarios. Assessing the capacity of digital transformation to have improvement proposals is one of the requirements that contribute to improving the efficiency of building online courses of teachers and lecturers today. In this study, the questionnaire investigation method used was the main method and was formulated with criteria based on the content of the government's new circulars on innovation in education (digital transformation).

INTRODUCTION

Digital transformation can be understood as moving activities from the real world to the virtual world on the network. The deepening participation of technology in all aspects of life, economy and society is fundamentally and comprehensively changing the way humans live, work and relate to each other (Lan 2021). Studies have confirmed the power or role of digital transformation with work efficiency, especially in the digital age. The development of information technology affects almost all human life including culture and education. Digital transformation in education is an important trend that is inseparable from context.

To be able to ensure the requirements of digital transformation in education is a long journey because professional habits are very important requirements. The online teaching of teachers in the context of an unusual epidemic shows that the construction of online courses is essential because this is the basis for being able to organise and implement training effectively. The extent of the online course is a problem to be considered because a teacher or lecturer only applies information technology as a means of indirect contact and organises teaching activities directly or through the use of software to be able to combine the exploitation of digital learning with the teaching activities of the lecturer. Teachers are the level that shows that digital learning is very important. Moreover, many teachers and lecturers have invested in courses sold online in the model of reverse classrooms or similar forms and have achieved a respectable effect. The level of the course entirely online with digital learning is completely challenged by its specific nature as well as the difficulty of investing in digital learning (Tore and Jon 2018). It can be said that the digital transformation capacity of teachers and lecturers is the fundamental condition that determines the choice, investment or implementation of online courses in general, and especially full online courses. Therefore, learning about the ability of teachers to digitally transform is one of the urgent issues (Papadopoulou 2019).

[1]*Address for correspondence:*
Le Ngoc Khang,
Faculty of Psychology
Ho Chi Minh City University of Education,
Ho Chi Minh City, Vietnam
Telephone: +84968249118
E-mail: khangln.tali031@pg.hcmue.edu.vn

Objectives of the study

Learn some information about the digitization of materials in education when building online courses and some manifestations of the digital transformation capacity of teachers and

lecturers when building online courses. Self-assessment results of the digital transformation capacity of teachers and lecturers when building online courses. At the same time, assessing differences in teachers versus teacher's level of digital transformation capacity assessment. Some difficulties and challenges with document digitisation and digital transformation in education when building online courses.

METHODOLOGY

Research Design

The study uses mixed methods of study. Along with other methods such as the interview method, questionnaire investigation is the main method used in this study. This is a research method aimed at collecting data on a large-scale, multidimensional approach to research objects. The questionnaire investigation method is based on questionnaire patterns built according to the survey objectives. The questionnaire form consists of 7 design criteria for self-assessment of the digital transformation capacity of teachers and lecturers. The number of votes raised is expected to reach 127 votes. The method of investigation by questionnaire will be carried out carefully, and the questionnaire when collected will be checked, confirmed satisfactorily, backed up, and then the analysis is conducted.

Data Processing

Participants in the survey included two groups, that is, a group of high school teachers at the School of Pedagogical Practice (42 teachers) and a group of lecturers of Saigon University (85 lecturers), in Ho Chi Minh City, Vietnam.

The data obtained is processed using mathematical statistics. The topic uses SPSS 20.0 software to process the data obtained for the analysis of data in research through several basic algorithms.

RESULTS AND DISCUSSION

The Trend of Digital Transformation in Education

Elementary school charters (Ministry of Education and Training 2020b), middle school charters, high schools, and high schools with multiple levels of education (Ministry of Education and Training 2020c) allow the use of electronic records to replace paper records that ensure the requirements of the archives and are valid as paper records as an expression of digital transformation in education. E-libraries are encouraged to develop in places where conditions contribute to digital transformation. The application of information technology in evaluating learning outcomes and educating students is carried out according to the roadmap following the reality of the educational institution. In addition, middle and high school students can use their phones during school hours for study, take tests on paper or a computer, or perform practical exercises and learning projects (Ministry of Education and Training 2020a) that are also pieces of evidence of the problem of digital transformation in teaching and education.

The advent and growth in both markets and technologies for these platforms suggests that '*digital education*' has a reason to exist, and the potential may be the future of education (Lankshear and Knobel 2008). Digital transformation in education requires the digitisation of 'input' elements, which most importantly are learning and data about learners, teachers, and other relevant requirements to support online teaching. Next is the transformation of teaching methods, techniques, principles, and forms of teaching organisation, especially how to interact with learners in the digital space. In particular, the digital education environment should be properly ensured with the relevant requirements, from preparation to organisation and evaluation of learning outcomes as well as ensuring objectivity and effectiveness in education.

Digital transformation in education and training can be analysed to focus on two fundamental trends, that is, digital transformation in education management and digital transformation in teaching, learning, testing, evaluation and scientific research. In education, management includes the digitisation of management information, the creation of large interconnection database systems, the deployment of online public services, the application of Technologies 4.0 (AI, blockchain, data analytics) to manage, operate, forecast, support decision-making in the education and training industry quickly and ac-

curately. In teaching, it includes learning, testing, evaluation including digital materials (e-textbooks, e-lectures, e-learning lecture warehouses, multiple-choice question banks), digital libraries, virtual laboratories, implementing online training systems and building virtual universities (Lan 2021).

Digital Information Literacy (DIL)

The Library aims to ensure that all Ulster students, regardless of the mode of study, become digitally and information literate through the provision of effective digital and information literacy learning and teaching opportunities. The Library supports digital and information literacy through a range of activities including classes, face-to-face instruction, provision of a library DIL Edge activity, and information sources such as the online library guides (Ulster University 2021). In Ulster University, Digital Information Literacy Skills include:

1. Understanding and using key resources (library website and University portal, library catalogue, library e-resources, online module reading lists)
2. Searching effectively (understand and use a search strategy, know how to use keywords, and Boolean operators, select appropriate sources, evaluate information)
3. Finding information (books and e-books, journal papers, newspaper papers)
4. Organising, managing and sharing information ethically (keep up with developments in the subject area, learn how to reference and use Refworks to store references, avoid plagiarism, undertake a systematic review).

With digital transformation orientations in education, when developed on the basis, digital tools according to the principle of content-rich, multi-format, strong interaction, reuse, accessibility, lookup, sharing, and contribution, gradually becomes an effective target and means in education. If implemented decisively with scientific institutions, digital transformation in education will be remarkably effective as well as an important contribution to lifelong learning. The application of digital platforms in education creates opportunities to connect infrastructure in all areas, all stages of the education and training process, and increase interoperability and flexibility for learners in space and real-time through virtual, physical-cyber environment interaction based on the digital platform. These are the requirements to pay attention to at different levels and levels corresponding to the tasks and positions of each teacher.

In short, digital transformation in education is the process of total and comprehensive change by implementing the process of education in the digital environment with digital technologies, educational subjects exploiting the digital environment, digital technology to implement teaching and education to achieve the goal of teaching, education. Digital transformation in education is most evident in centralising information digitisation, creating large database systems to communicate and exploit and manage effectively, and implementing teaching, online education, application of new technologies such as artificial intelligence (AI), block chain engineering and big data analysis in teaching and education.

Digitise Materials in Education When Building Online Courses

Document digitisation is also understood as the process of converting paper text data training into digital documents (images, videos, games, slides) or digital data (in the form of letters, videos, sounds, images) that computers can recognise, read to convey and interact with to help the training achieve the expected results. To digitise materials or expand the data related to teaching activities, specifically, building online courses, it is necessary to pay attention to data sources, especially endogenous materials. Endogenous material capital is valuable, this type of material has outstanding characteristics.

Endogenous materials are the results that are formulated and created in the process of operation, scientific research, teaching and learning of a unit, organisation or training, or educational institution. Because of this characteristic, the endogenous materials are directly managed and operated by the school.

Endogenous resources are usually created according to a certain cycle depending on the operational characteristics of each school or educational institution. The content of docu-

ments is often diverse and in large quantities that require management, storage and preservation.

Most endogenous resources are used internally, with little public disclosure or little systematic evaluation. Although the document is not published, this type of material is still published under many special distribution channels and attracts the interest of the team.

Endogenous resources reflect the operational potential and development direction of the school, especially according to the development orientation of the educational institution. This is expressed in the quantity and quality of the document as well as the requirements related to the exploitation and use in practice.

At the same time, to have an online course that meets the requirements to meet the requirements and output standards, and especially to ensure efficiency, it is important to pay attention to the construction and production of materials, so it is important to determine data production according to the requirements of digitisation or possible digitisation of system compatibility. Specific analysis can be analysed as follows.

The construction and production of materials show that the format from the beginning, ensuring the exploitation and use options is very important because these are the main requirements to aim for efficiency, save time, ensure the goal, and it makes sense to use. When the materials are produced according to a specific requirement with a full range of features and specifications such as audio, video, compression, or decompression, capacity and time, it will ensure the convenient and effective exploitation according to pedagogical ideas or online pedagogical scenarios and all methods of transferring this material and learning material of teachers and lecturers.

The construction, development of materials, learning to ensure the requirements of digitisation or possible digitisation of system compatibility are some of the requirements to be able to work towards a process that ensures efficiency. Since there are materials that are not oriented to digitise documents, it will take a long time to digitise documents, not to mention that this may be impossible if the transfer of documents or the provision of material products is incomplete. No digitisation is allowed. In addition, the challenges while digitising documents in terms of quality, safety, editing, finishing, or reducing the effect of documents under online pedagogical scripts are also very important requirements to focus on.

When digitising documents or building additional digitised documents, the following advantages can be seen to contribute to creating favourable conditions of course construction. These are saving space, storage space, saving on printing costs, creating storage and storage space, preserving and storing documents for life and avoiding loss, crumple and damage, storing, searching and sharing document information quickly and easily, different types of digital documents are converted flexibly, increasing the ability to retrieve, check and share documents, capability of editing and reusing, and enhanced document security.

In the era of digital transformation, the transformation of the way traditional text is stored and used includes digitising documents to increase the efficiency of exploitation, use as well as reduce costs. It is inevitable. Currently, there are many units providing material digitisation services on the market, but before choosing a supplier, it is necessary to assess the prestige, responsiveness, and effectiveness. For teachers and lecturers, the digitisation of materials or materials needs to be done by the subject because the material needs to be digitised with many separate parts in addition to the sharing. Besides, this is an intellectual product that should be owned or copyrighted to pay attention to enforcement. In addition, the digitisation of the material to meet the online pedagogical scenario and specific series of activities based on the pedagogical ideas of each teacher and lecturer is important.

Some Difficulties and Challenges with Document Digitisation and Digital Transformation in Education When Building Online Courses

The digital transformation of the education and training sector is still facing many difficulties, as existing needs to continue to be overcome and perfected specifically (Lan 2021) as follows.

Currently, the whole education sector has identified the application of information technology as one of nine key implementation task groups, according to Resolution No. 29 of the Party Central Committee on comprehensive fun-

damental reform of education and training. This is a problem that is thoroughly grasped systematically and oriented through each level, so initially, there are advantages and a fairly effective basis. Specifically, teachers of the whole industry are mobilised to participate and contribute to sharing materials in the whole industry digital learning warehouse, contribute thousands of quality e-learning e-lectures, have a rich data warehouse with e-books, and a bank multiple-choice questions related to all subjects and professions.

If based on the level of application of information and communication technology in school administration and the application in teaching and education, in particular, many schools now reach level 1 (which is the application of information and communication technology to solve work and process information at some stage in school activities, like implementing documents, making grades, statistics of students' academic performance, monitoring the collection of expenditures, etc.). Some schools have started to reach level 2 (which is using face-to-face management software for some activities in the school such as student management, exam management, financial and property management, personnel management, etc.). At level 3, schools are trying to invest and orient implementation (that is, use the software system to manage the system, linking all activities in the school to create a connection between the teaching, learning, and management process).

Despite many achievements, the application of information technology, technology equipment, and digital learning in teaching and education is still difficult, it needs to continue to overcome the following.

- Awareness of teachers and students, as some teachers and students are not paying enough attention to the application of information technology, technology equipment, and digital learning in teaching and education because they are used to traditional teaching methods, especially some teachers who are not fully aware of the meaning, roles, as well as have a fear of change, which can lead to certain barriers within the team.
- Network infrastructure, information technology equipment (such as computers, cameras, printers, etc.), transmission lines, and Internet services for schools, teachers, students, especially in remote and disadvantaged areas, are still lacking and have backwardness (Lan 2021). Information technology infrastructure is still investing to ensure the stable and effective operation is a priority issue that needs to be addressed. The application of information technology in education is associated with an investment in computer systems, internal computer networks, the internet for teachers and students, peripheral devices such as projectors, power supply systems, and standard machine rooms. This is a difficulty that cannot be solved on a large scale and in a short time.
- Some other limitations from teachers and managers when accessing information technology applications in teaching are also a matter that needs attention. The computer level of teachers and students also has shortcomings with the specific applications of software, experiments with computers as well as updated technology devices. There is still a lack of human resources well versed in information technology to disseminate and guide the education sector in a regular, continuous direction, synchronous changes from perception to attitudes and action perspectives are also a challenge to overcome.
- Form of classroom organisation and related issues include evaluation and quality assurance. There will be adjustments when bringing information technology, technology equipment, and digital learning into teaching and education. Changing the form of classroom organisation, teaching, and learning methods more or less makes it difficult for teachers, students, and also educational administrators. For example, many schools today, to organise an hour of lessons by electronic lectures, using projectors equipped for the whole school (because there are no conditions to equip each classroom), must move the learning location, and teachers have to spend time preparing teaching facilities for that class or have to schedule.

These difficulties can have a small impact on psychological apprehension and investment in both time and skills for teachers and students in the application of information technology,

technology equipment, and digital learning in teaching and education.

Certain differences in experience, skills in the application of information technology, technology equipment, and digital learning to teaching and education of teachers between localities, between subjects as well as the general orientations and requirements of each educational institution, high school along with related issues can be considered as one of the practical conditions to pay attention to in the application of information technology, technology equipment, and digital learning to teaching, education that ensures practicality, feasibility but must be soft and flexible to adapt and exploit multi-objects should also be of continued interest.

Digitising, building, updating digital learning, appraising, and sharing digital learning requires investment in human resources (including management and human resources) as well as finance to ensure a full, quality digital learning warehouse, meeting learning requirements, research, and reference of students at all levels of study, discipline and subject (Lan 2021). Therefore, currently, the problem of building digital learning (such as e-books, e-libraries, multiple-choice question banks, e-lectures, electronic learning software, simulation application software) is still only developing spontaneously, and not going into the system and ensuring consistency, with difficulty controlling the quality and learning content as expected (Lan 2021). This will have some consequences such as the investment and implementation of highly interactive Virtual Learning Environment (VLE)/ Learning Management System (LMS) learning solutions (different from online meeting systems or existing software) that are also synchronous, sporadic and create difficulties in organising online courses. Limitations on the ability to share between schools lead to a one-time waste and a second waste when investing in a VLE system but not exploiting, used by the "hollowing out" of resources is possible.

Collecting, sharing, and exploiting education management data and digital learning needs a common legal corridor following the provisions on copyright, intellectual property, information security, electronic transactions, and information sharing laws, specifically as follows (Lan 2021). Stipulate the list of information subject to compulsory declaration and entry, distinguished from private personal information under personal rights, copyright provisions for electronic lectures (in which cases are used, under what conditions, in whole or in part), regulations on exploitation of databases and digital learning warehouses (who are entitled to exploit, what extent, what conditions, who appraises, who allows), and stipulate the legality of electronic records in general and scorebooks and e-transcripts in particular (especially in case of transfer and transfer of schools nationwide). Only when these bottlenecks are removed will it promote the development of digital data systems, digital learning large enough (including open data), meeting the requirements of national digital transformation in general, and education and training in particular (Lan 2021). The local phenomenon of data still exists in many localities, and schools create certain difficulties related to digitisation on the general level as well as the effective exploitation of the digitisation of documents.

The above analyses show the difficulty and challenges with the digitisation of materials in general and digital transformation in education when building online courses, in particular that are affected by subjective and objective factors. However, from the comparative level, there is a limitation in the digital transformation capacity of teachers and lecturers when building online courses and especially the concepts and habits of teachers and lecturers in general when using the internet, storing materials, creating products that can be the foundation or basis of learning such as papers, references, PowerPoint lectures, infographics, audio, visual and typical situations. Hence, it has a pretty big impact.

Digital Transformation Capacity of Teachers and Lecturers When Building Online Courses

Some Manifestations of the Digital Transformation Capacity of Teachers and Lecturers When Building Online Courses

At the limit of the paper, the researchers focus heavily on the need and capacity of teachers related to digital transformation to carry out teaching activities, namely the construction of online courses. Building online courses to ensure the organisation of training and retraining is an important challenge because this has certain meanings and effects. Specifically, the training or retraining of each group of students (or staff) always requires certain requirements.

For Students

Training according to output standards or requirements to be achieved and quality assurance on a general level shows that investing in online courses is one of the important solutions. Practice shows that if there are online courses, the method of learning credit will be effectively exploited by students based on assessing ability and developing a study plan. This is also one of the important solutions to motivate students to graduate on time or early to be able to implement proactively. At the same time, if the process of building and evaluating online courses is ensured following standardisation, the quality of the course, as well as the quality of the training process, will be better controlled, piecemeal promoted and contribute to ensuring the quality of the training issue. On the other hand, unlike evaluating learners' feedback with traditional training institutions, the improvement of the part takes longer, learners also wait until the lesson is completed to be able to respond and processing the feedback also takes longer. However, with online sections, the adjustment of content or method of organising the implementation of the part will proceed quickly and especially towards synchronisation. The teacher in charge can also better understand the satisfaction of the learner and the manager can assess the satisfaction of the learner on a general level so that the quality of training can be ensured if learners are considered the centre.

For Students (Staff, Teachers and Other Learners)

The practice of harnessing a training instructor for all staff at the facilities is very difficult. Even if there is a team in charge of training, the style and competence of each lecturer are not the same, so although the same training materials can be used, students will be affected by different teaching styles. Framing training programs for fostering and quality assurance are difficult for organisations. Even the effort to unify the learning material or the teaching plan has not yet been achieved to create similarities or uniformity in terms of the expected effectiveness of the course. The above reasons show that the digitisation of training materials is one of the effective solutions, ensuring uniformity and consistency throughout the training system.

Based on the Analysed Basis

The trend of digital transformation in education, requires when building an online course, the specific requirements of digitising documents as characteristic of the online course, orientation for the exploitation and use of digitised materials in the course's online pedagogical scenario, the methods of organising the course, and the characteristics of the subject of learning, especially the information technology capacity of the teacher in the spirit of the new professional standard. What is also required is to know how to use a computer to perform a number of tasks like calculation, statistics, text editing, planning and controlling the implementation plan. Also, to use basic software such as text editing, PowerPoint slideshow software, and work management software, and to understand the components of the network to connect, control and exploit services on the network, identify the necessary information and formulate selection criteria, and use of search techniques and archiving organizations. Having knowledge about the use of information technology to share, exchange information, cooperate with students and colleagues in a safe and effective manner is also required. Also, to understand information technology in teaching and include it in teaching activities, and know the source of information technology data related to teaching and education.

In the field of education and training, digital transformation will support educational and training innovation in the direction of reducing teaching, transmitting knowledge to developing learner capacity, increasing self-learning capacity, creating learning opportunities anytime, anywhere, personalising learning, contributing to the creation of lifelong learning and learning society. The explosion of IoT (Internet of Things), Big Data, AI, SMAC (social network, mobile, big data analysis, cloud computing) is forming the digital education infrastructure (Siebel 2019). Accordingly, many smart education models are being developed based on information technology application, effectively supporting the personalisation of learning (each learner has a synonymy and a separate learning method unlike

others, this is automatically implemented by information technology systems), make access to the huge knowledge store on the network environment fast and easy, and help the interaction between family, school, teachers and students almost instantaneously.

For teachers to meet the above requirements, it is required to mention the capacity for digital transformation in education and training defined including digitalisation of information (Lan 2021), creating large interconnecting and exploiting database systems, effective management, implementing online teaching and education, application of new technologies such as artificial intelligence (AI), blockchain engineering, big data analysis, considering the capabilities mentioned, it can be seen that competence, and is related to digital transformation capacity. This is also the specific capacity that the researchers are interested in, mentioned in the scope of this paper.

According to the most general conception, the capacity for digital transformation is defined as the ability to access, manage, understand, combine, communicate, evaluate and create information safely and appropriately through digital technology to serve a wide variety of sectors. It includes commonly known competencies such as computer use capacity, information technology capacity, information capacity, or communication capacity (UNESCO 2018).

Secker (2018) argues that the concept of digital transformation capacity has been around for more than 20 years and is often used at the same time as concepts such as digital skills, information capacity, communication capacity, or academic competence. Controversy surrounds which concepts embrace which concepts, which are more important, as well as perceptions of the role of technology, attitudes, and behaviours in these concepts. In general, however, there is a huge amount of information that exists in digital form, and learners need to be able to analyse rationally, think critically to evaluate them, and grasp how to use digital tools in sharing information for research and self-expression.

The capacity for digital transformation, therefore, is considered a vital factor to achieve success in learning, research, and career development in the future. For the most part, the ability to use digital technology is required by almost every profession and every job position. Digital industries become key players of the economy, educational institutions become digital business models, and faculty and students must be the ones who take advantage of the benefits of technology while supporting the community and promoting innovation, and creativity of the next generation.

Thus, it can be considered that digital transformation capacity is an important capacity in the context of the 4.0 industrial revolution, and especially the development of online education as well as the construction of online courses is an urgent need. Digital transformation capacity is understood as the ability to use computers, apply information technology, information, or communication to help reasonable analysis, critical thinking to evaluate digital information in the sharing of information for research and self-expression.

On this basis, it is possible to analyse the manifestations of the teacher's digital transformation capacity when building online courses including the following.

Folder Storage

Directory storage is understood as organising the clear, unified organisation of relevant document files in the storage device to avoid confusion, and lead to ease of search, migration, addition/reduction, or deletion and save time when needed. This is the optimal measure to help solve the storage, retrieval, sharing or search of documents very easily, and cut the maximum cost for management and storage space. It also makes it possible to edit and reuse documents, flexible in converting to different types of digital documents. In the production of learning or preparation of materials, directory storage is expressed in the naming of folders, memorisation of folder paths, or other code signatures so that savers can find or exploit easily and quickly.

Some notes or recommendations when organising folders:

- Organisation by year, so that at the end of each year one can pack (compress), store all the documents arising from the previous year to private memory, avoid loss and free up the working memory of the computer. This is similar to paper records, wherein one also has to clean cabinets when it runs out of space each year to make room for new documents.

- Divide into groups of related tasks each year, such that each workgroup consists of work ends. In the beginning, there are documents related to that. Usually consisting of only 4-5 levels, avoiding too deep decentralisation to take time when searching and opening folders.
- Change the stickers, colours of folders to create accents, attract attention with important folders.
- Have an important folder protection key such as set a password, or set to readable mode only.

Document Analysis

Document analysis is understood as a process of examining, cleaning, transforming, and modelling documents to discover useful information, informing conclusions, and supporting decision-making. In addition, document analysis requires systematic work, classification, selection, generalisation of data, and comparing conclusions with hypotheses to draw the necessary information from the document. Document analysis when building a course is the understanding and evaluation of the usability, the ability of the document to exploit, and some other value of the document.

Pros and Cons of Document Analysis

The advantages of document analysis include the use of available documents, it is less expensive in terms of effort, time, funding, and there is no need to use many people.

The disadvantages are that the document is less divided according to the signs that are desired, so it is difficult to find the cause as well as the back and forth relationship of the signs. Statistics have not been distributed at different social levels, and specialised documents require a highly qualified professional.

Determining the Meaning and Responsiveness to Online Pedagogical Requirements and Scenarios

Digital documents are just permanent documents that cannot be handy data and course materials without ensuring meaning and responsiveness. Identifying the requirements of learning activities, thereby building an online pedagogical scenario is an important basis for effective online teaching and this requires documentation that meets the relevant requirements.

The pedagogical scenario can be considered as, "the organisation and arrangement of activities for learners to achieve the goal of teaching and designed in the direction of a play". To have a good pedagogical scenario, the script designer must master what knowledge content to convey, and know who the student is, and from there build into learning activities capable of causing "interest" and "surprise" to learners.

Online pedagogical scenarios are understood to be the synthesis of learning activities (taking place in an artistically virtual learning environment by the organisation of the course designer). In particular, the activities are built on the requirements to be achieved, pedagogical requirements as a basis to comply. In the online pedagogical scenario, the teacher's activities are moderated and controlled, focusing almost mainly on monitoring, managing, and responding immediately when the learner needs it. Learners will actively participate in rich and diversified activities to create attractiveness and engage learners throughout the process of self-study on the system towards learning goals.

Check and Compare According to Requirements to be Met or Specific Goals

Testing and collating according to the requirements to be achieved or the goal is understood to clarify the object of learning, what the content of learning meets, how the overall time, and how the time is piecemeal. At the same time, it is important to ensure that the ideas work properly, with a focus, meeting the output standards of the lesson and bringing learners positive emotions, excitement and anticipation for the next class. The basic requirements in terms of pedagogy are also factors that cannot be ignored such as age-appropriate time, support in distance learning techniques with the application of information technology, pedagogical language, and encouraging assessment.

Performing a Digital Format or Converting a Digital Format

Performing a digital format or transforming a digital format is defined as moving all informa-

tion to digital (data digitisation) and digital applications that use digital data to simplify the way one works and change the way the organisation works (digitising processes). This is an important requirement because a partial or fully online course requires digital data to be exploited and secured.

Data Digitisation is the process of converting data from analogue to technical format. For example, hard copy papers converted into soft files on the computer, note on paper entered on a Microsoft Excel Spreadsheet or paper report converted into a PDF file.

Process Digitisation is a data processing process to simplify and automate the process. For example, using CRM software, HRM software to optimise workflows, or software to collect and analyse real-time data.

Complete Digitally Converted Data

Complete digitally converted data is understood as the database, which will be fully completed for the analysis, forecasting, and management policy, wherein the open learning materials and materials are fully formulated according to the educational program of all subjects, training institutions must plan to organise online training and improve the proportion of online training, educational and training institutions will promote and make the most of digital technology advantages to innovate models and ways of organising teaching so that learning will become easier for students, improve the individuality of learning, and learning opportunities are expanded for students in disadvantaged areas. The adjustment of digitally converted data is the step of reviewing, adjusting, and supplementing data, especially to check the safety, completeness, and technical correctness.

Mark or Encrypt According to Conventions to Meet Exploitation and Use

Conventional marking or encoding meets exploitation, which is essentially the presentation of documents in a convenient and concise format for easy transfer and processing on a computer device. It can also be understood that characters or digits are combined according to a systematic and logical principle to reflect object information that makes it easy to classify, organise or recall documents when used according to the objectives of the online course.

As such, the analysed manifestations show the ability of teachers and lecturers to digitise documents according to the orientation requirements of building online courses. This is a capacity that can be said to be interdisciplinary, and it adds to the professional capacity of teachers, lecturers especially the professional standards set in the new context. Of course, this needs to be further studied and discussed because this is an interdisciplinary field that needs relative consistency of the concepts of scientists, managers, and especially subjects, teachers and lecturers in the process of developing this capacity and development to build online courses today.

Self-assessment of the Digital Transformation Capacity of Teachers and Lecturers When Building Online Courses

It is possible to consider the results of self-assessment of the digital transformation capacity of teachers and lecturers when building online courses through the results of a survey of 42 high school teachers at the School of Pedagogical Practice and 85 lecturers of the University of Saigon. The results are shown in Table 1.

The Results of the Self-assessment From Table 1 can be Analysed as Follows

In the expression “archive by directory”, the good level in lecturers (5%) is higher in teachers (2%) by three percent, the level of decent in faculty (33%) is higher than in teachers (32%) at one percent, the average in faculty (55%) is higher than that of teachers (54%) by one percent, the level of weakness in teachers (7%) is higher than in lecturers (4%) by three percent, and the level of poorness in teachers (5%) is higher than in lecturers (3%) by two percent. Thus, in the directory archival expression, it is possible to see that the results of the lecturer’s digital transformation capacity are slightly higher than that of teachers. However, the overall results showed that this expression in the two sample groups was only average. To clarify the results, the re-

Table 1: Self-assessment of digital transformation capacity of teachers and lecturers when building online courses

(Good – G; Fairly – F; Average – A; Weak – W; Less - L)

Order number	*Manifestation*	*Teacher's degree (%)*					*Lecturer's degree (%)*				
		G	*F*	*A*	*W*	*L*	*G*	*F*	*A*	*W*	*L*
1	Folder storage	2	32	54	7	5	5	33	55	4	3
2	Document analysis	2	32	57	6	3	5	31	59	3	2
3	Determining the meaning and responsiveness to online pedagogical requirements and scenarios	1	36	52	7	4	4	33	56	5	2
4	Check and compare according to requirements or specific goals	1	32	55	8	4	3	34	56	4	3
5	Perform a digitalisation format or convert a digital format	1	34	53	7	5	3	34	55	5	3
6	Complete digitally converted data	2	31	58	6	3	5	30	59	4	2
7	Mark or encode according to the estimate to meet exploitation and use	2	36	53	6	3	5	36	53	4	2

searchers conducted interviews with the guests and obtained remarkable results. Teacher A said, *"The documents I use are usually paper, sometimes they can be saved on the computer to make it easy to format. Because it is not synchronised, when it is necessary to use it again, it is quite a time to review everything."*

According to Lecturer 1,*"With university teaching, almost all documents are stored on computers, paper documents are also available but very few. I easily use them when needed, but there is a difficulty that although arranged by time and topic group, the inconsistent naming also causes a lot of difficulties."*

Although there are differences in the way of storage, in general in both interviewing subjects it is difficult to search for documents because the archival storage methods are not uniform.

In the expression of "document analysis", the good level in lecturers (5%) is higher than in teachers (2%) by three percent, the level of decent in faculty (31%) is lower than in teachers (32%) by one percent, the average in faculty (59%) is higher than in teachers (57%) by two percent, the weakness in teachers (6%) is higher than in lecturers (3%) by three percent, and the level of poorer teachers (3%) is one percent higher than lecturers (2%).

Although the ability of lecturers in the expression of material analysis is slightly higher than that of teachers, in general in this manifestation, this skill is only average. The overall data also showed that this skill was slightly higher among the skills surveyed in the sample group. In an interview to clarify this expression to get answers from the subject, Teacher B said,*"The available documentation is not enough to meet the innovations of education or the changes of society. I regularly read new books and materials from which to choose new information to put into the lesson for students."* Similarly, Lecturer 2 said, *"When training in college, it is necessary to associate the content of the lesson with reality, so I and my colleagues have to spend a lot of time learning new, good research. From there, combine with the basic knowledge to give students honest, applied perspectives."* In this context, there are great similarities between the two objects, which are the necessity and importance of material analysis for teaching.

In the expression "determining the meaning and responsiveness to online pedagogical requirements and scenarios", the good levels in lecturers (4%) are higher than in teachers (1%), the level of decent in faculty (33%) is three percent lower than in teachers (36%), the average in faculty (56%) is higher than that of teachers (52%) by four percent, teacher weakness (7%) is two percent higher than in lecturers (5%), and the level of poorer levels in teachers (4%) is two percent higher than in lecturers (2%). In general, in this manifestation, the capacity of teachers is

still limited when the cumulative rate of two weak and poor levels is eleven percent indicating that the signal is quite negative, which needs to be improved. In the two sample groups, the figure is still ten percent below average, and fifty-five percent above the average object, which is worrying in the model group's digital transformation capacity. Conducting the interview, Teacher C expressed, *"When teaching in person as before, it is mainly based on the basic contents of the curriculum, and how it is communicated to students depends on the class, depending on the lesson. Online teaching is quite new, especially the online pedagogical scenario is newer, more difficult, requires building in advance as premeditated as a premedestanment of a lesson in the head."* The teacher added, *"Sometimes I have online lessons, although it's pretty much the same as in class. In terms of online pedagogical scenarios, there are more requirements, forcing each teacher to cultivate, research, design the lessons themselves, even have a backup plan."* It can be seen that despite having an understanding of online teaching and online pedagogical scenarios, many teachers and lecturers still have many difficulties in meeting the requirements of organisation and perfection (Ministry of Education and Training 2020b).

In the expression "examination and comparison according to requirements to be achieved or specific goals", good levels in lecturers (4%) are higher than in teachers (1%), the level of decent in faculty (34%) is higher than in teachers (32%) by two percent, the average in faculty (56%) is one percent higher than in teachers (55%), the weakness in teachers (8%) is 4% higher than in lecturers (4%), and the level of poorer in teachers (4%) is higher than in lecturers (3%) by one percent. Thus, from the data that can be seen in this manifestation in both lecturers and teachers, there are weak rates and less than quite high. On the contrary, the good rate is low. Interviewing to clarify expression 4, Teacher D said, *"When organising teaching, I often rely on goals and requirements to be met to build the content of the lesson accordingly. However, in some cases, the operation did not go as planned or did not conform to the actual conditions, thereby causing the operation to not bring the original desired results."* When interviewed with the same question, Lecturer 4 expressed, *"The goal and requirements to be met are the core to build the lesson, so that the lecturer knows what to do, how to do it. Many people misunderstand or misissuver the goal of making the lecture look bad, not the right focus, making the lesson useless."* The correct determination of the requirements to be achieved, the specific objectives of the lesson are extremely important, especially in the construction of the lecture and the reconciliation (Ministry of Education and Training 2020c).

In the expression "implementing digitalisation or digitalisation format conversion", good levels in lecturers and teachers are three percent and one percent, respectively, making the difference of two percent, the degree of goodness in lecturers and teachers is similar, that is, thirty-four percent, the average teacher (55%) is two percent higher than in lecturers (53%), the weakness in teachers (7%) is higher than in lecturers (5%) at two percent, and the level of poorer in teachers (5%) is two percent higher than in teachers (3%). It can be seen that in this expression there are good similarities of the two groups of objects and generally only average. During an interview with a High School E Teacher, they said, *"With teachers who have little computer manipulation or older teachers sometimes have some difficulties. However, this is not just one individual building. Groups and teams often have appropriate support so it does not affect the quality much."* According to Lecturer 5, *"Most lecturers can fulfil the basic requirements of digital document conversion. Of course, there are also some lecturers who are used to performing on paper records, so they are not used to using them."* Although there are still some individuals who have difficulty formatting digital documents, this is a problem that can be overcome and receive support from colleagues and organisations.

In the expression, "complete data has been digitally converted", good levels in lecturers (5%) are higher than teachers (2%) by three percent, the level of decent in faculty (30%) is one percent lower than in teachers (31%), the average in faculty (59%) is one percent higher than in teachers, at a weak level, lecturers (4%) are two percent lower than teachers (6%), and the level of poorer in faculty (2%) is lower than in teachers (3%) by one percent. Although this expression in teachers is quite low compared to

the lecturer, this is also a manifestation that both groups of subjects have a good rate of evaluation, quite slightly higher than the rest. However, the results show that this expression is also only average. Similarly, interviewing with Teacher F commented,*"In my opinion, if the transition is difficult, it is somewhat easier at this stage, because if you have built a digital document, it is not too difficult to string and review the content."* Agreeing with the above, Lecturer 6 said, *"In my opinion at this step there should be a combination of stakeholders to cross-examine the content, unify how it works, certainly based on a specific process so that all the documents are organised logically. It's convenient for effective use."* This is one of the two outstanding manifestations, which are rated at a fairly high average by the lecturers and lecturers.

In the expression, "marking or coding according to conventions to meet exploitation and use", good levels in lecturers (3%) are one percent higher than teachers (2%), the same level of teachers and teachers at thirty-six percent. Similarly, the average level in the two groups was similar with the same rate of fifty-three percent, and the weakness in teachers (6%) is two percent higher than in teachers (4%), and at a poor level in teachers (3%) is higher than in lecturers (2%) by one percent. Overall, this expression is also concentrated at an average based on the results of the evaluation. The researchers interviewed with Teacher G, who said, *"This arrangement is generally not too difficult, but mainly depends on the regulations, the guiding process of the team. If the consensus is good, it is easy to use and share documents."* According to Lecturer 7,*"Converting documents to digital form will create a very large repository of documents, used regularly and long-term. Therefore, if the organisation is not strict in marking according to the convention, it is a waste."* The above comment shows that this is an important stage, helping to create the practical effect of converting documents to digital format. Anova's inspection results are given in Table 2.

The Results of the t-Test are Shown in Table 2 as Follows

The results of the Anova test with Sig = 0.436, allowing for the assertion that there is no statistically significant difference in the level of assessment of the teacher's digital transformation capacity compared to the faculty in 7 manifestations when building online courses. Thus, from the data in Table 2 it can be seen that although there is a difference between teachers and lecturers (teachers are lower than lecturers), this difference is negligible.

In summary, from the analysis of data evaluating the digital transformation capacity of the two groups of faculty and teacher, objects on the sample group can be seen such as certain similarities between the two groups of objects when evaluating the manifestations of digital transformation capacity. In particular, the expression "document analysis" and the expression "complete data has been digitally converted" in both groups are slightly higher than other manifestations but the overall assessment is that the manifestations of this capacity are average.

Stemming from the above analysis, to ensure that digital transformation in education and training is effective, ensuring the digital transformation capacity of teachers and lecturers is a priority because of its importance and necessity. Without this unlocked digital transformation capacity or capability, it is difficult to meet the digital transformation tasks of the industry, especially the inability to develop online courses whether sold online or online in its entirety. It is not only a 'standstill' in the process of career development but also a reverse impact on digital education, online education, and smart education that has been taking place globally.

Currently, with about 24 million teachers, students, and the latter in the country being a very significant force, to ensure the success of digital transformation, it is necessary to first propagate, unify and smoothly understand throughout the industry, to each school, each individual and must ensure the effectiveness of this propaganda with post-evaluation feedback (Government 2019). Identifying digital transformation is an inevitable trend of the industry, taking place at a very fast pace, so it is necessary to prepare, invest worthily, create synergy, and have high determination (Lan 2021). This is a strategy that needs to be developed methodically, the system is based on analysing the barriers of digital transformation for the industry, difficulties, and challenges for teachers and lecturers digitising ma-

Table 2: Assessing differences in teachers versus teacher's level of digital transformation capacity assessment

		Sum of squares	*df*	*Mean square*	*F*	*Sig*
Folder Storage	Between groups	0.455	1	0.455	0.739	0.392
	Within groups	76.9	125	0.615		
	Total	77.354	126			
Document Analysis	Between groups	0.178	1	0.178	0.337	0.563
	Within groups	66.043	125	0.528		
	Total	66.22	126			
Determining the Meaning and Responsiveness to Online Pedagogical Requirements and Scenarios	Between groups	0.374	1	0.374	0.683	0.41
	Within groups	68.523	125	0.548		
	Total	68.898	126			
Check and Compare According to Requirements or Specific Goals	Between groups	0.543	1	0.543	0.979	0.324
	Within groups	69.253	125	0.554		
	Total	69.795	126			
Perform a Digitalisation Format Or Convert A Digital Format	Between groups	0.3	1	0.3	0.525	0.47
	Within groups	71.495	125	0.572		
	Total	71.795	126			
Complete Digitally Converted Data	Between groups	0.178	1	0.178	0.337	0.563
	Within groups	66.043	125	0.528		
	Total	66.22	126			
Mark or Encode According to The Estimate to Meet Exploitation, Use	Between groups	0.232	1	0.232	0.422	0.517
	Within groups	68.524	125	0.548		
	Total	68.756	126			
General Review	Between groups	0.31	1	0.31	0.611	0.436
	Within groups	63.339	125	0.507		
	Total	63.649	126			

terials and learning materials to support online teaching.

Mechanisms, policies, and legal corridors must be perfected, creating safe and favourable conditions for digital transformation throughout the industry, especially the digital transformation, which is inherently bound by security and copyright. Lan (2021), these are policies related to learning materials such as intellectual property, copyright, protection of personal information and information security in the cyber environment, policies to ensure the quality of teaching on the network environment such as cyber information security, guidelines related to political, ideological, ethical requirements of teachers and learners such as codes of communication, requirements for speech and behaviour and cultural interaction, regulations related to the conditions for organising online teaching and learning, legality and recognition of the results when teaching or learning online according to the level of school, level of learning or the responsibility of the head of the educational institution in organising online teaching (Government 2014). In particular, the forms of post-digit learning with relevant technical requirements are in terms of format, capacity, time, and specific requirements of image, sound and speed. It is indispensable to want the digitisation of documents to ensure relative consistency from the beginning.

One of the most important focuses is to prepare resources, especially human resources. On the one hand, it is necessary to train teachers and lecturers with updated output standards on information technology including focusing on the capacity to digitise materials. On the other hand, it is necessary to train a human resources team (managers, teachers, lecturers) who have the knowledge and skills to meet the requirements of digital transformation (Lan 2021). Stemming from practical data, the skills of using information technology, information security skills, skills to exploit and effectively use applications for teaching and learning work, especially the ability to digitise materials of teachers and lec-

turers are still limited as analysed. The adjustment or improvement of information technology standards is most necessary, as this can form a motivation for teachers and lecturers to constantly self-study and learn for life (Government 2015a). However, most importantly, this training and self-training should be organised, implemented in a substantive way, and the training or retraining organisation unit must have a monthly responsibility to ensure that learners are constantly updated and reviewed. This is a post-training responsibility that cannot be not fulfilled and should be focused today in training schools and training establishments with the function of training, fostering, and evaluating capacity in information technology. If the model exploits online courses from scratch, learners will have positive behaviours and up-to-date habits, and then this orientation is completely feasible (Government 2015a).

The digitisation of materials at any level, even when placed within the range of online course response, still needs technology equipment and especially the infrastructure of the destination. Therefore, the information technology infrastructure like telecommunications and basic facilities must be equipped synchronously throughout the education sector to ensure that the management and teaching-learning can be carried out equally between localities and schools with different economic circumstances, and ensure a smooth, stable and secure network environment. Doing this should mobilise social resources to join hands to support terminal equipment and participate in providing systems and solutions to meet the requirements of digital transformation (Lan 2021). This should be done based on the total data reviewing and evaluating the state of infrastructure and technology equipment as well as investment efficiency. Effective implementation of this will reduce the load of spreading investment and inefficient exploitation after investment (Government 2015b).

TPACK Model: Application of Information Technology in Teaching and Education

Identifying the model of application of information technology in teaching and education is a difficult task when the perspective and individuality of the research in this field is quite large. The understanding and application of information technology, exploitation and use of digital data and technology equipment needed to understand the right direction, have a scientific basis, not just manipulation or skills, small, minutiae. From the point of view of choosing a model suitable to the Vietnamese educational context and aiming to develop the capacity of teachers as the theoretical basis for the application of technology in teaching and education, the TPACK model is quite suitable.

The TPACK or TPCK model, short for Technological Pedagogical Content Knowledge, identifies the competencies teachers need to be able to teach effectively with the help of information technology. This model focuses on technological knowledge, pedagogical knowledge, and content knowledge, providing an effective approach to simple to complex teaching situations that teachers will face. The model outlines how to exploit teaching content and pedagogy (teaching methods) along with the application of technology (using materials, technology equipment, tools, software). The order of TK, PK, and CK keywords in the TPACK model is very important. Professional content is the main component that ensures the teaching of "right" and teaching "sufficiently". Complementary pedagogy gives teachers a "reasonable" and "attractive" teaching ability. Finally, the ability to apply technology increases students' interest and motivation for learning, helping teachers and learners achieve the highest teaching efficiency.

It is possible to analyse this model specifically as follows.

Subject Knowledge (CK)

It is the knowledge component of professional and specialised content along with the additional knowledge teachers need, as the core component that demonstrates the professional competence of teachers. This component is an important basis for teachers to choose and build teaching content suitable to the class and school level. For example, for the same concept, teachers at the high school level will present content differently from teachers at the elementary level at the depth, breadth of scientific knowledge, selecting relevant content to stick to the requirements to be achieved and the ability to absorb the age.

Pedagogical professional knowledge (PK) is the knowledge component of the teachers' theory and pedagogy. If this component is placed alone without acknowledging solidarity with other components, pedagogical knowledge does not mean that there are no other capacities. Overall in the model, this knowledge will be a tool for teachers to select teaching content, exploit and use technology effectively, follow the objectives of teaching and education, and contribute to achieving the highest teaching and education goals.

Technology Knowledge (TK)

It is the knowledge component of technical ability, informatics capacity of teachers, and the application of technology in teaching and education. Considering only this component, a person with only this ability becomes a pure "technical person", has no professional capacity and teaching ability, and cannot be a true teacher. With the correct exploitation and use of technological knowledge, teachers will both ensure pedagogical requirements and be the one who elicits scientific knowledge, suitable by effective teaching and education methods and techniques with the support of skilful and feasible technology.

Pedagogical Knowledge (PCK)

It describes a teacher's understanding of the fundamental areas of subject teaching and learning, including curriculum development, student evaluation, and subject-related results reporting. PCK focuses on promoting learning and finding a link between pedagogy and supporting components (such as programs, output standards, assessment tests) of a subject. However, without technological knowledge, teachers cannot improve the quality of lessons, as well as meet the needs of teaching and learning in today's digital age and pedagogical knowledge, as subjects must also exploit the ability to apply information technology, digital learning.

Technology Knowledge - Subject (CK)

It describes the teacher's understanding of the content of teaching subjects and technology that influence and motivate each other to implement the teaching. The stock market shows the selection and construction of teaching contents with exploitation and use of technology but no understanding of pedagogical professions. The absence of pedagogical knowledge (PK) can lead to misuse of information technology or technology equipment, or the integration of technology, the exploitation of technology in inappropriate or unnecessary teaching content, or unnecessarily increases the risk of "anti-pedagogy".

Pedagogical and Technological Professional Knowledge (TPK)

It describes the teacher's understanding of information technology, technology equipment specifically the application of modern technology to teaching, education, teaching experience, and learning in new ways. TPK relates to the ability to make modern technology deployed with pedagogical professional capacity in an appropriate manner, especially ensuring the objectives and teaching progress of the topic of learning/ lessons. Without subject knowledge (CK), someone can "teach well and attractively" but the learning content is not available, or scientific knowledge is not accurate, and skills lack accuracy, which will be very lacking in teaching, education.

TPACK model is the result of a combination of three basic areas, that is, subject knowledge (CK), pedagogical professional knowledge (PK), and technological knowledge (TK) to contribute to ensuring the teaching and education capacity of teachers. In other words, the TPACK model with all three main components of TK, PK and CK has stated that an important requirement is required in the capacity of teachers in the 21st century. This is also an important basis for guiding the application of information technology, digital data, and technology equipment in teaching and education according to a foundation or the most stable basis based on the internal strength of the teacher.

CONCLUSION

Thus, it can be affirmed that the digital transformation capacity of teachers for the digitisation of materials and materials that meet the online course of teachers and lecturers is still only average and mainly below in two specific mani-

festations, which are document analysis, complete digitally converted data is average and the remaining five expressions for folder storage, determining the meaning and responsiveness to online pedagogical requirements and scenarios, check and compare according to the requirements to be met or specific goals, perform a digitalisation format or convert a digital format, mark or encrypt according to the convention to meet the exploitation, use only stops at the near average and the rate below average is quite a lot. This shows that the development of the capacity to digitise materials and materials in lecturers, teachers as well as pedagogical students, and those in need, striving to become lecturers is very important in the current context.

RECOMMENDATIONS

To make effective use of this model, it is necessary to pay attention to some suggested questions, that is, how can teaching and education be expressed by technology? What teaching and education methods and techniques are suitable for the use of technology? With the requirements to be achieved and the ability of students, how can technology support teaching and education? With the knowledge base and skills already available of students, when exposed to technology and participating in lessons with the application of technology, what should teachers pay attention to? Is the exploitation of technology-oriented teaching and education of specific knowledge content with objectives and requirements to be achieved is appropriate and feasible.

REFERENCES

Government 2014. Promulgate the Action Program for Implementation of Resolution No. 29-NQ/TW dated November 4, 2013, on a Fundamental and Comprehensive Renovation of Education and Training, Meeting the Requirements of Industrialization and Modernization in the Conditions of Socialist-Oriented Market Economy and International Integration. *Government Resolution No. 44/NQ-CP*, Hanoi, 9 June, 2014.

Government 2015a. Promulgate the Action Program for Implementation of Resolution No. 36-NQ/TW dated July 1, 2014, of the Politburo on Promoting the Application and Development of Information Technology to Meet the Requirements of Sustainable Development and International Integration. *Government Resolution No. 26/NQ-CP*, Hanoi, 15 April, 2015.

Government 2015b. About E-government. *Government Resolution No. 36a/ NQ-CP*, Hanoi, 14 October, 2015.

Government 2019. Regarding Several Tasks and Solutions Focusing on E-Government Development in the Period of 2019 - 2020, oriented to 2025. *Government Resolution No. 17/NQ-CP*, Hanoi, 7 March, 2019.

Lankshear Colin, Knobel Michele 2008. *Digital Literacies: Concepts, Policies, and Practices*. New York: Peter Lang Publishing Inc.

Le Nguyen Thi Ngoc Lan 2021. Building a Digital Transformation City for Ho Chi Minh City from Singapore's experience. Thailand: The Graduate School of Public Administration, National Institute of Development Administration *The 2021 EROPA Virtual Conference*, 25-34

Ministry of Education and Training 2020a. Amending and Supplementing Several Papers of the Regulation on Evaluation and Classification of Middle and High School Students Issued Together with Circular No. 58/2011/TT-BGDDT dated 22 December 2011, of the Minister of Education and Training. *Circular of the Ministry of Education and Training No. 26/2020/ TT-BGDDT*, Ha Noi, 26 August, 2020.

Ministry of Education and Training 2020b. Promulgate the Elementary School Charter. *Circular of the Ministry of Education and Training No. 28/2020/ TT-BGDDT*, Ha Noi, 4 September, 2020.

Ministry of Education and Training 2020c. Charters of Middle, High Schools, and High Schools with Many Levels of Education. *Circular of the Ministry of Education and Training No. 32/2020/TT-BGDDT*, Ha Noi, 15 September, 2020.

Papadopoulou A 2019. Art didactics and creative technologies: No borders to reform and transform education. In: Linda Daniela (Ed.): *Didactics of Smart Pedagogy*. Denmark: Springer, Cham, pp. 159-178

Secker J 2017. The trouble with terminology: rehabilitating and rethinking 'Digital Literacy'. In: K Reedy, J Parker (Eds.): *Digital Literacy Unpacked*. London: Facet Publishing, pp. 3-16.

Siebel 2019. *Digital Transformation* (Trans by Pham Anh Tuan). Ho Chi Minh City, Vietnam: Ho Chi Minh City General Publishing House.

Tore Hoel, Jon Mason 2018. Standards for smart education – towards a development framework. *Smart Learning Environments*, 5(3).

Ulster University 2021. From <https://www.ulster.ac.uk/library/help/digital-information-literacy> (Retrieved on 7 November 2021).

UNESCO 2018. *A Global Framework of Reference on Digital Literacy. UNESCO Institute for Statistics*.

Paper received for publication in November, 2021
Paper accepted for publication in February, 2022