OPPORTUNITIES AND CHALLENGES OF DIGITAL TRANSFORMATION IN EDUCATION IN THE COVID DISASTER IN VIETNAM

OPORTUNIDADES E DESAFIOS DA TRANSFORMAÇÃO DIGITAL NA EDUCAÇÃO NO DESASTRE DE COVID NO VIETNÃ

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Abstract: Coronavirus affects the education system in the world. Schools, colleges, and universities are closed to control the spread of the coronavirus. School closure brings difficulties for students, teachers, and parents. So, online learning is a solution to continue the education system. However, the lack of network infrastructures, computers, and internet access is challenging. This paper aims to review the impact of the COVID-19 pandemic on the education and status of digital transformation in education in Vietnam. Verify the opportunities and challenges in the digital transformation in education and recommend some issues that need to do be concerned to promote the transformation process in education in Vietnam.

Keywords: Digital transformation. Education. Covid-19. Vietnam.

Resumo: O coronavírus afeta o sistema educacional no mundo. Escolas, faculdades e universidades são fechadas para controlar a disseminação do coronavírus. O fechamento de escolas traz dificuldades para alunos, professores e pais. Portanto, o aprendizado online é uma solução para dar continuidade ao sistema educacional. No entanto, a falta de infraestruturas de rede, computadores e acesso à Internet é um desafio. Este artigo tem como objetivo revisar o impacto da pandemia COVID-19 sobre a educação e a situação da transformação digital na educação no Vietnã. Verifique as oportunidades e desafios na transformação digital na educação e recomende algumas questões que precisam se preocupar para promover o processo de transformação na educação no Vietnã.

Palavras-chave: Transformação digital. Educação. Covid-19. Vietnã.

INTRODUCTION

At the end of 2019 in Wuhan, the high technology business hubs of China experience an epidemic of an entirely distinctive coronavirus that appeared that had killed a few thousand Chinese within the fifty days of spreads and thousands of other citizens are suffering. The novel virus was nominated as COVID-19 novel coronavirus by Chinese scientists. Later on, in a shorter period, this COVID-19 spread worldwide. Several country's economies are severely affected due to COVID-19. Further, the outbreak has changed the operating conditions all over the globe within a month.

The consequences of a pandemic are unstoppable and uncontrollable for many industries of the world. Later on, almost 120 countries have stopped face-to-face learning; approximately a billion students' education is affected worldwide with COVID-19. Most of the education system is operating through e-learning (Azzi-Huck and Shmis 2020; Shahzad et al. 2020a,b). Meanwhile, to tackle the COVID-19 pandemic, the Vietnam education, and training ministry, has issued the order to close all the schools as an emergency measure to stop spreading the infection.

The spacing society on a national scale and schools closure to prevent the spread of Covid 19 pandemic disease; everyone is advised to stay indoors. However, educational activity cannot be stopped. Like other countries in the world, it is difficult for Vietnam to build a fixed scenario for the education sector, because the COVID-19 epidemic is still complicated.

The sudden closure of schools disrupted teaching and learning activities and required the education sector to make adjustments in management as well as teaching and learning. Schools closure, educational institutions, and teachers faced the challenge of how to connect with students and ensure continuity of instruction through online training. Therefore, the implementation of digital transformation in education and training to change the method of teaching and learning to adapt to the new situation is essential and urgent in the context of the widespread covid 19 pandemics (Ho Tu Bao, 2020).

However, in big cities, the facilities are better, so the digital transformation is more convenient, while, many remote areas with difficult facilities conditions to ensure continuity of distance learning is a big challenge. The article clarifies the opportunities and challenges in the

digital transformation process in education to adapt to the effects of the covid epidemic in the coming time.

METHODOLOGY

To clarify the impact of the COVID-19 pandemic on the education and status of digital transformation in education in Vietnam and recommend some issues that need to do be concerned to promote the transformation process in education in Vietnam. The research uses descriptive qualitative methods. Qualitative research is a method of constructing the meaning of phenomena based on the views of respondents (Creswell, 2012). Descriptive statistical analysis with a qualitative approach, also study of the nature or context of an entity as a source of data. Qualitative research is a naturalistic research method because research is conducted in natural conditions and accordance with real conditions. (Sugiono., 2012). The data used in research are secondary data, that has been collected to resolve the problem are taken from literature, articles, journals, and websites on the internet relating to research (Sugiono, 2012).

RESULT AND DISCUSSION

Impact of COVID-19 on Vietnamese Education

The COVID-19 pandemic is spreading rapidly. Like all sectors, education at all levels is affected. COVID-19 affects all over the education system, examinations, and evaluation, starting of new semester or term and it may extend the school year. After The Prime Minister issued Decision No.173/QD-TTg on the declaration of acute respiratory infections caused by new strains of coronavirus. 63 provinces and cities immediately let the students stay at home to prevent epidemics. Nearly 24 million pupils and students of more than 53,000 education and training institutions nationwide cannot go to school. To overcome these difficulties, the Ministry of Education and Training has twice announced the adjustment of the schedule and exams. To support educational work for schools under the influence of the Covid-19 epidemic; The Ministry

of Education and Training has adjusted the school year timeframe; guide to streamline the contents of semester 2, the school year 2019-2020. The last nearest time was on March 13, 2020. Accordingly, the 2019-2020 school year is going to be ended before July 15, 2020. But the high school graduation exam takes place 1.5 months later than usual and one month from the first adjustment.

With the viewpoint "temporary stop going to school, don't stop learning", educational institutions have strengthened forms of teaching through the internet and on television. Can see that, through the Covid-19 pandemic, all of 63 provinces and cities organize teaching via television or teaching online. This is the first time that the online teaching method has been widely deployed nationwide. Thus, this pandemic is also an opportunity for the education industry to deploy online teaching from universities to high schools, especially for senior students (grades 9 and 12). Specifically, 80% of high schools applied the form of online teaching, 240 university institutions applied online training at different levels; of which, 79 institutions managed and taught completely online. Vietnam has 79.7% of students studying online. This was higher than the average of the OECD countries (67.5%) (Sugiono, 2012).

The application of online management systems as learning, teaching, and learning organization processes and online assessment was also applied by many schools. However, online learning also reveals many limitations that need to be overcome such as not ensuring equality, because many students do not have computers and internet at home, students are not really active in learning...

Digital transformation

"Digital transformation is the process in which people change the way people live, work, and produce with digital technologies". The digital transformation is closely related to the Industrial Revolution 4.0 and leads to the trend that machines will replace humans in many current jobs and create new jobs.

Education is one of the industries affected by digital transformation and faces various challenges caused by rapid and varied changes in the environment. According to Mehaffy, these

changes can be divided into areas: people (learners, teachers, sponsors, managers), university model, course model, data, and analysis. learning, cost, measure success, and threats to acceptability. Digital transformation will be followed the direction of reducing preach, imparting knowledge to developing learners' competencies, increasing self-study ability, creating learning opportunities anytime, anywhere, personalizing learning, contributing to creating a lifelong learning society.

The explosion of technology platforms IoT, Big Data, AI, SMAC is forming digital education infrastructure. Accordingly, many intelligent educational models are being developed based on IT application; effectively supports the personalization of learning; Making access to a huge knowledge base in the network environment quickly and easily; Helping the interaction between families, schools, teachers, and students is almost instantaneous.

Digital transformation in education and training focuses on digital transformation in educational management and teaching, learning, testing, evaluation, scientific research. In educational management includes digitizing management information; creating large database systems; deploying online public services; applying 4.0 technologies (AI, blockchain, data analysis...) to manage, forecast, and support decision-making in education quickly and accurately. Teaching, learning, testing, and evaluation include digitize learning material (e-books, e-lectures, e-learning, multiple-choice question banks), digital libraries, virtual labs, deployed online training system, built virtual universities (cyber university) (George Mehaffy, 2012).

Content of digital transformation in education

The question is that digital transformation in education encompasses the transformation in which field, in what aspect, and how far. The answer is not the same for individuals, organizations, and countries, because the starting point of digital transformation is very different. Obviously, online training is not a new thing, but implementing it in the completely no-choice and passive situation of the outbreak of the covid-19 pandemic will be very difficult and complicate (Creswell, 2012).

The most conspicuous are the changes in the inputs. To deploy online education, all inputs to the educational process must be digitized, the most important of which are learning materials, documents, and books. All learner data must be digitized to perform the learner management and learning outcomes assessment process. One of the major problems with online training is the credibility of the training process. How do we ensure the training, evaluation, testing, verify the results, and recognize certification for the right learner? How to verify the identity of learners? The latest technologies have supported this but ensuring the strictness of traditional exams remains open. Moreover, when training methods change, equipment and facilities for training and education will change also. Digital transformation is not simply the digitization of data, but also hardware transformation, leading to changes in the management of resources for education and training.

Second, the educational process has fundamental changes. Modes change lead to the traditional pedagogical methods and techniques will not suitable and inefficient. The way of deploying, implementing, and method must be changed, which requires creativity and flexibility in applying and using the equipment so that the teaching meets the expected results. Digital transformation is not only digitizing lectures, or applying software to composing lessons, but also converting the whole way of teaching methods, classroom management techniques, and interacting with learners into digital space; exploiting information technology to organize successful teaching. This requires we had to research and apply artificial intelligence in design content as well as teaching tools. Taking the advantage of technology to make a personalized educational program, that is impossible to apply in traditional training form with a large number of students (50-60 students per class). In addition, all data about students' learning processes are also tracked and stored by technology, not by the conventional record system.

Next, in terms of outputs: digital transformation must ensure that the testing and evaluation are carried out during the educational process, including evaluation of training results. Not only the evaluation results are digitized, but the evaluation process must be deployed and implemented by applying technology also.

Finally, there should be an appropriate policy system for online training. Policy formulation and promulgation require thorough and scientific research but in fundamental it is not a big

challenge. The main challenge is policy implementation because for policy to come to life, there must be a system of monitoring, management, and quality assurance tools for online education to ensure the validity of this form. It means the institutions that facilitate education need to be converted to digitization in terms of implementation way, from taking input data to extracting output data.

In summary, digital transformation in education is a process of changing the method of implementing education. When carrying out digital transformation, the entire way of education and training, organizing, implementing, and managing will change also. Obviously, educational management thinking needs to be transformed, more open and more flexible to be able to visualize and capture the intangible elements.

Guaranteed conditions for digital transformation in education and training

First of all, digital transformation requires new technology infrastructure and equipment for both learners, teachers, educational institutions, and management agencies. The ICT infrastructure and basic facilities must be synchronously equipped throughout the education sector to ensure that management, teaching, and learning can be carried out equally among localities and schools that have different economic circumstances; ensure a smooth, stable and secure network environment. Accompany with hardware devices are software applications and platforms for all educational actions and management activities of all levels to take place on that. If the application of IT in education mainly refers to separate programs and software, digital transformation requires all these individual things have to be compatible and interconnected, integrated and accessible on the same platform. This platform enables teaching actions, management, learning, testing, assessment, examination, student management, as well as all interaction between learners, teachers, and school implement at the same time.

Digital transformation also cannot be successful if the people who directly conduct the training lack of using technology skilled. Therefore, it is necessary to foster human resources (managers, teachers, technical staff, and technology experts) with knowledge and skills to meet the requirements of digital transformation. First of all are skills of using IT, knowledge of information

security, skills of exploiting and effectively using applications serving teaching-learning work. In addition, new skills are needed to organize teaching activities to 'keep' students in the 'class', as well as maintain student attention on learning tasks and activities.

The next important factor that determines the meaning of digital transformation is the readiness of learners. Survey results showed that learners have a lower level of readiness to learn online than teachers. More than 76% of students surveyed were not ready for online learning, for many reasons. Besides technical reasons such as equipment and telecommunications infrastructure, there are problems because the teaching methods and techniques of the lecturers have not convinced the learners. Hence, learners need to prepare mentality, spirit, skills and support sufficient infrastructure to learn online. They also need to be taught how to study online effectively.

Digital education culture, including issues of learning attitude, understanding of academic ethics, self-discipline, sense of lifelong learning that need to develop in the community learners and the general public. With about 24 million teachers, students, and students, to ensure success in digital transformation, it is necessary to propagate, unify and smooth the awareness throughout the industry, to each school, to each individual.

Mechanisms, policies, and legal corridors must be completed, creating a favorable legal framework for digital transformation in the whole industry. These are policies relate to learning materials such as intellectual property, copyright; related to the quality of teaching in the network environment such as cyber information security; related to politics, ideology, and ethics of teachers and learners such as personal information protection, information security in the network environment; and regulations related to the conditions for the organization of online teaching and learning, quality accreditation, legality and recognition of results when teaching and learning online (George Mehaffy, 2012).

Status of digital transformation in education and training in Vietnam

Implementing Resolution No. 29 of the Central Committee of the Party on the fundamental and comprehensive renovation of education and training and Project on strengthening IT

application in educational management, supporting the innovation of teaching-learning, scientific research of the Prime Minister. A series of policies to promote the digital transformation of education were issued, gradually completing the legal framework such as regulations on applying IT in management; online training organization; university-level distance training regulations; regulations on management; operation and use of the database system; model of IT application in high school; and many other executive directive documents.

In education management, the whole sector has deployed digitization, built a shared database from the central to 63 Departments of Education and Training, 710 District education offices, and about 53,000 educational institutions. Currently, the education sector has digitized and identified the data of about 53,000 schools, 1.4 million teachers, 23 million pupils. This database has effectively supported enrollment, statistics, and reports in the whole industry; helping managers at all levels to issue effective management policies. And it has contributed to solving the problem of teacher surplus and shortage in schools according to each locality, subject. In high school, about 82% of schools use school management software, electronic grade books, electronic school records, and most higher education institutions use school management software. The electronic administrative management system connects 63 Departments of Education and Training and more than 300 universities and colleges across the country with the Ministry of Education and Training operates smoothly and stably, promoting positive effects.

In terms of teaching and learning, teachers of the whole industry are mobilized to participate in contributing and sharing learning materials; contributed to the Vietnamese Knowledge System nearly 5,000 quality e-learning lectures, a repository of doctoral theses with nearly 7,000 theses, a multiple-choice question bank with over 31,000 questions... learning societies and promoting lifelong learning.

Regarding digital human resources, at the high school level, implementing the new general education program, the subject of Informatics include in compulsory teaching right from grade 3; STEM education is integrated into subjects, linking students' learning through technology application activities to solve problems and phenomena in life. In higher education, implementing a specific mechanism to train IT human resources, thereby helping training institutions increase opportunities to cooperate with businesses and international organizations to mobilize social

resources to participate in the process of training IT human resources, linking training with the demand for human resources in enterprises and the needs of society.

However, the current digital transformation in the education sector still faces many difficulties and shortcomings that need to be further overcome and improved, specifically as follows:

- Network infrastructure, IT equipment (such as computers, cameras, printers, scanners), transmission lines, Internet services for schools, teachers, and students - especially in remote and disadvantaged areas - are still lacking, backward, not synchronized, many places have not met the requirements for digital transformation (both in education management and teaching-learning).

- Digital transformation in education leads to inequality in learning opportunities and access to knowledge among students in different regions and schools.

- The construction of digital learning materials (such as e-books, e-libraries, multiple-choice question banks, e-lectures, e-learning software, simulation application software) is developing spontaneously and still not in order and into a system, it is difficult to control the quality and content of learning.

- It is necessary to complete regulations on education majors, specifically: Regulations on online learning programs, study duration, online assessment, recognition of online learning results; stipulating conditions for organizing classes and schools in the network environment (including both short and long); Collecting, sharing, exploiting education management data and digital learning materials; regulating the legality of electronic documents.

Opportunity to accelerate digital transformation in education

The prolonged COVID-19 pandemic, from a positive perspective, is a "leverage" for schools to promote online training and digital transformation. During the pandemic, schools closed, millions of students and students had their studies interrupted. This puts pressure on schools, learners, and families alike, and presents unprecedented situations in the past and the opportunity to explore new transformations in education also. The sudden change in teaching forces the universities and lecturers have to change, by all means, and experimenting with different methods

to find the right solution. The COVID-19 pandemic allows universities to try and fail to find out the ways to solve the problem until there is a right or acceptable result for the online training, thereby also reveal the strengths and weaknesses of online teaching. It can be said that it is "the COVID-19 pandemic has created an opportunity to promote digital transformation in education". Online training from situational solutions becomes a trend during the epidemic period (Phung Xuan Nha, 2020).

Industry 4.0 promotes digital transformation in education: Industry 4.0, along with physical systems in virtual space, IoT, and IoS, is not associated with a specific technology but it is the convergence of many technologies based on digital technology and integrating all smart technologies. Therefore, the development and popularity of information technology, as well as Internet users in Vietnam, is an advantage in digitizing educational activities. According to statistics, the number of Internet users as of 1st Jan 2020 reached 68.17 million, accounting for 70% of the population, including 65 million social network users and more than 145.8 million mobile data network connections in Vietnam (Sugiono, 2012). The rapid increase in the number of internet and smart devices users in recent years is a favorable condition to accelerate the process of digital transformation in education.

Promoting cooperation between education institutions: For digital transformation, schools must jointly develop e-learning materials, exchange practical experiences, and strengthen international cooperation in online training. Open educational resources will be distributed on the network, helping all subjects able to access knowledge easily. With an open repository of materials, no matter where, at any time, with social distancing or not, learning will not be interrupted. It is important that to have learned and teaching data, the schools need to share, support, and communicate with each other, the schools must share resources, thereby forming common values. This is also an opportunity for education to strengthen cooperation with each other to perfect solutions as well as implement digital transformation.

Personalized learning experience: Normally, with a large class, many students with different levels, teaching and learning will face many obstacles: A large number of students in the classroom can make some students are unnoticed. Or not all students are suited to the same approach to knowledge, transmission, and use of the same methods. Digitization is a solution to reduce

inequality in education. Access and use of digital technologies can help reduce learning gaps between students from different social classes. Learners can learn with any experience and with every other individual, even beyond the classroom. Personalization in learning has been widely applied at universities around the world to help lecturers effectively transmit knowledge based on the ability of each student, focusing on the learner. However, the application of technology in education in general and the digital transformation process in education in particular in Vietnam is still limited.

Experience a new teaching method: The context of the pandemic has also opened up a new online teaching trend that few educational institutions have paid attention, or have never thought about, besides the traditional form of class. Combine with traditional teaching methods, and an online learning channel is designed and maintained in parallel, this is a progressive new step that needs to be replicated and maintained at all levels. This is also a new learning approach, avoiding inertia and laziness when limiting the learning task in textbooks. In fact, this form of learning initially makes many students very excited, they are really passionate about exploring, experiencing, and self-improvement, improving practical knowledge and cultivating in-depth understanding for themself.

Challenges for digital transformation in education

Technology application capacity: Despite the number of people using the internet and social networks, smart mobile has increased significantly in recent years, but the use of technology for educational purposes is not high, especially in general education. So it is very important to improve the technology application capacity and perfect the skills to use cyberspace. On one side, not all teachers have the capacity and confidence to use digital tools to support teaching. In addition, multidimensional, unverified, or biased information is provided by cyberspace exposes the user to information disturbances, distractions, or harassment. Daily exposure to digital data requires more in users' critical thinking and resistance and the proactive ability to be proactive in filtering information to get useful information for themselves.

Financial capacity: Digital transformation will make the elements that inherently are the strength of the traditional education model disappear and the teachers are not the private property of the university because they can join any profitable organization. The school's brand value at that time was not measured by limited indicators such as facilities, seniority, and excellent individuals of the school, but by public trust, digital marketing ability... One of the challenges when schools convert to a smart school model, a series of factors will have to change related to hardware, software, technology, and smart classrooms, along with smart pedagogy activities, learner management, smart teachers, and smart curriculum. Therefore, the school needs more money to invest in the digital equipment system. Besides, the families with many children who need to study online may not have enough dedicated devices for each child, making it difficult to keep track of all classes (Thanh Xuan, 2020).

Inequality in education: We often think that digitizing education will create 'digital equity' thanks to the advantage of accessing technology that is not limited in space and time. However, this may also deepen inequalities in access to education between the regions and students with different socioeconomic conditions. Students in mountainous or rural areas with a poor telecommunications infrastructure, or who cannot afford the cost of telecommunications services, are at risk of being left behind, not only in access to education high quality but also basic education.

In addition, students with disabilities (hearing-impaired, visually impaired, or with motor disabilities...) are also at great risk of digital inequality due to problems related to input factors (books, documents, languages, equipment ...) and educational process (manipulation, communication with equipment, software, teachers...). For example, the digitization of documents and learning materials for the target group that must use their language system such as sign language will certainly have many limitations, not be prioritized, causing many disadvantages for this group.

Legal corridor for digital transformation: The challenge for digital transformation is how to ensure that learning and teaching, as well as educational activities, are substantive. Therefore, building a legal system on digital transformation in teaching and learning activities is necessary. These are policies related to learning materials such as intellectual property, copyright; related to

the quality of teaching in the network environment such as cyber information security; related to political ideology and ethics of teachers and learners such as personal information protection; and regulations related to the conditions for organizing online teaching and learning, quality accreditation, legality and recognition of learning results. These are all unprecedented issues, but must be done in a short time.

Recommendations

To take the advantage of the opportunity and overcome difficulties to implement digital transformation in education, the next time, we need to do well on the following issues:

- Invest in upgrading IT infrastructure for educational institutions to meet the needs of personalized learning, connecting all subjects and objects in the educational process, learning anywhere, anytime; meet the "intelligence" index of the learning environment, classroom and school. The State needs to have policies to mobilize socialization, create a mechanism for private enterprises to invest deploy educational technology, and joins with schools in education and training activities.

- Research and apply educational management models according to technology approach (IoT, Big Data, Blockchain), school management in the direction of opening, connecting, and sharing technology infrastructure, large database. Creating a mechanism for schools to actively develop technology integration programs; allowing the use of handheld devices in the classroom/school. Focus on improving the database system of the whole education sector; connecting and sharing data from central to local, and synchronized with national databases, step by step formulate the national open databases and thoroughly digitize. Using electronic documents, school records, and electronic grade books instead of paper documents; Direct operating, meeting, and training activities are carried out mainly in the network environment.

- Strengthening IT capacity and modern technological equipment for lecturers; universalize digital knowledge through regular training and retraining programs; especially for teachers to meet professional standards in IT application and use of technological equipment in teaching and education. Develop human resource training programs on educational technology, management of

new educational technologies; integration of information technology and education in interdisciplinary programs

- Develop appropriate legal frameworks to promote and evaluate the effectiveness of technology application processes in education. In which, focus on the policy of perfecting the education management database; complete the legal framework to promote online teaching and learning through the Internet; policies to manage online courses, avoid loss of control, and protect the legitimate interests of learners.

- Promote the development of digital learning materials (for teaching-learning, testing, assessment, scientific research) at all academic levels, sectors, and subjects. Forming a repository of digital and open learning materials for the whole industry, linking with the world to narrow the gap between regions. Continue to innovate teaching and learning methods based on applying digital technology, encouraging and supporting the application of new educational and training models based on digital platforms.

CONCLUSIONS

Digital transformation is the trend of all industries in the 4.0 industry era, including the education industry. The prolonged covid epidemic has forced educational institutions to accelerate the process of digitalizing educational activities. These create many difficulties for schools in terms of finance, human resources, legal basis... However, digital transformation in the covid period also allows schools to experiment with new management, teaching, and learning forms. With the attention of the state and the whole society, with the right solutions, the digital transformation in education will soon have good results.

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Conflict of Interest

The authors declare no conflict of interests.

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