



## Education sector of Binh Duong province flexibly deploys digital transformation responding to the Covid-19 Pandemic

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### Abstract

In the context of the unpredictable development of the Covid-19 pandemic, which has left many heavy consequences on all areas of life, economy - society, digital transformation has really become a trend, a Compulsory requirements for countries, industries, businesses, etc., in order to live together safely, flexibly and effectively adapting to Covid-19. For the education and training sector, the sector has always been proactive and flexible in responding and implementing teaching and learning activities to ensure the realization of the dual goal of "pausing going to school, not stopping learning". In Binh Duong province, following the general direction of the Party, Government, Provincial People's Committee, and ministries, branches, the Education sector of Binh Duong province has pioneered in promoting the application of information technology, digital transformation during the Covid-19 period. Education sector in Binh Duong province has achieved many positive effects during the pandemic, up to now, the trend of digital transformation in education has been positively affecting the industry's activities, meeting the changing requirements fundamentally and comprehensively renew education and training, improve the quality of human resources, and create momentum on the next stage of comprehensive digital transformation.

**Keywords:** Education, Binh Duong province, digital transformation, Covid-19

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### 1. Introduction

#### 1.1. Overview of digital transformation in the field of education and training

##### 1.1.1 The concept of digital transformation

"Digital transformation" is a phrase that is mentioned quite a lot in today's era, a concern of administrators, leaders, and business executives. It is difficult to have a clear and specific definition of digital transformation, because the process of applying digital transformation will be different in each different field.

Digital transformation is a concept born in the era of the internet boom and has become popular in recent times, describing the application of technology in all aspects of businesses. If effective, this activity will completely change the way a business operates, increase cooperation efficiency, optimize work efficiency and bring value to customers. (According to Digitaltransformation.vn in 2020).

Gartner (2020) believes that: digital transformation is the application of digital technologies to change business models, create new opportunities, revenue and value. Microsoft believes that digital transformation is about rethinking how organizations gather resources, data, and processes to create new value. According to FPT, digital transformation in organizations and businesses is the process of changing from a traditional model to a digital enterprise by applying new technologies such as: big data, internet of things (IoT), cloud computing (cloud),... change operating methods, leadership, work processes, company culture.

There are many different definitions of digital transformation, however, in order to be able to define it briefly and easily, digital transformation is the integration of digital technology companies into all areas of an enterprise, taking advantage of technologies to fundamentally change the way it operates, its business model and provides value to its customers, etc.

It can be said that digital transformation is the act of transferring our activities from the real world to the virtual world in the network environment. Accordingly, people access more information, shorten the distance, narrow the space, save time. Digital transformation is an inevitable trend, happening very quickly, especially in the context of the current 4.0 Technology Revolution.

In the world, many countries have been implementing national strategies on digital transformation such as in the UK, Australia, Denmark, Estonia. The content of digital transformation is very wide and diverse, but it has a number of main contents in common, including: digital government (such as online public services, open data), digital economy (such as digital finance, e-commerce), digital society (such as education, health care, culture) and digital transformation in key industries (such as agriculture, tourism, electricity, transportation).

### **1.2. The process of digital transformation in the field of education and training in Vietnam**

The "National Digital Transformation Program to 2025, with a vision to 2030" approved in the Prime Minister's Decision No. 749/QĐ-TTg dated June 3, 2020 determined as follows: Platform development supporting teaching and learning remotely, thoroughly applying digital technology in management, teaching and learning; digitizing documents and textbooks; building a platform to share teaching and learning resources in both face-to-face and online forms. Developing technology for education, towards personalized training. 100% of educational institutions implement distance learning and teaching, in which pilot training programs allow students to study online at least 20% of the program's content. Use digital technology to assign homework and check students' preparation before going to class. Simply put, digital transformation in education is the application of advanced technologies to enhance the learner's experience; improve teaching methods as well as create the most convenient learning environment. Digital transformation applications will create a smart educational model, thereby making learning and absorbing knowledge simpler and easier for learners. The explosion of technology platforms has created favorable conditions to impart knowledge and develop learners' self-learning ability without being limited in time and space.

The content "National Digital Transformation Program to 2025, orientation to 2030" with contents related to the Education sector focuses on two contents: Digital transformation in management and digital transformation in teaching, study, test, evaluate. In particular, digital transformation in management is digitizing management information, creating interconnected large database systems, deploying online public services, applying 4.0 technologies (AI, blockchain, etc.) data analysis, to manage, operate, forecast, support leaders at all levels, manage decision-making in leadership and administration. Digital transformation in teaching, learning and testing and assessment is digitizing materials (e-textbooks, electronic lectures, e-learning lecture repositories, multiple-choice question banks), digital libraries, laboratories. virtual experiment, deploying online training system...; converting all teaching methods and methods, classroom management techniques, interacting with learners into digital space, exploiting information technology to organize successful teaching. The application of technology or digital

transformation in education has been meeting actual needs, bringing many practical effects to schools and organizations. Digital transformation in education is not just online teaching, it is a total and comprehensive solution with: Organization, Human Resource Management, management: digital learning materials, students, grades, test, exam. Technology helps to free up teachers' labor so that teachers have more time for creativity in teaching and management. Vietnam has been digitally transforming education through a series of policies that have been issued. According to statistics, there are 63 education - training institutions and 710 education and training departments have implemented the building of a common database for education. At the same time, currently, 82% of high schools have used software to manage schools. In addition, the application of digital transformation has contributed to promoting "lifelong learning" activities with online documents. Typical is the sharing of 5,000 electronic lectures along with 7,000 theses, more than 31,000 multiple-choice questions... from qualified instructors.

In addition, a number of other policies have also been implemented, namely the implementation of new general education programs: i) Informatics will officially become a compulsory subject for students from grade 3, which helps students have access to a lot of modern knowledge and skills at home and abroad; ii) teaching is integrated with Steam technology, helping students to solve difficult math problems as well as explore many phenomena in life most intuitively; iii) For digital transformation applied in higher education, universities/research institutes have increased opportunities to cooperate with businesses and deploy activities in teaching associated with the demand for human resources from businesses. From there, schools/institutes will promptly grasp information, update knowledge, adjust content and programs, forecast new professions according to the trend of economic restructuring, production structure, and more with the development of social life.

### **1.3. The importance of digital transformation in the context of the Covid-19 pandemic**

In Vietnam, digital transformation in education has taken a big step forward, towards the goal of "Vietnam pioneering and becoming one of the leading countries in digital transformation in education and training". If in the past, management in education was mainly through records and books, now, the management of records and books of officials and teachers has been simplified by the information technology. The data of the education sector have all been updated into the software system to make it convenient for managers without cumbersome books. The trend of applying digital technology in teaching and learning is also expanding. The education industry has developed an online teaching model so that learners can learn anywhere, anytime, actively in learning more effectively. For the first time, an industry database was formed. Accordingly, the education sector has completed digitization and assigned identifiers to more than 53,000 educational institutions, 24 million pupils, students and 1.4 million teachers. At the same time, building and developing a shared digital data warehouse (including open learning materials) with about 5,000 e-learning lectures, 2,000 video lectures on television, 200 virtual experiments, 200 textbooks, 35,000 multiple choice questions and over 7,500 doctoral theses.

Under the impact of the Covid-19 pandemic, the driving force

for digital transformation has become stronger than ever. The form of online teaching and online examination has been positively evaluated. The PISA report of the Organization for Economic Cooperation and Development (OECD) commented: Vietnam's online learning for Covid-19 prevention and control has many positive points compared to other countries and territories. Vietnam has 79.7% of students learning online. This rate is higher than the overall average of OECD countries (67.5%). At the university level, more than 50% of educational institutions also offer distance learning, many of which are fully online, and some combine online and face-to-face training. Accordingly, online teaching has helped shorten the real time of teaching when students return to school, enhancing the coordination between families, schools and society in educating students. This form of teaching also helps teachers and students familiarize themselves with and strengthen information technology skills, adapting to new learning forms of advanced education in the 4.0 technology era.

It can be said that the impact of the Covid-19 pandemic has created a revolution, with teachers and educational administrators looking to technology solutions to support education and distance learning. However, digital transformation in education is not limited to posting online lectures and implementing online teaching. Although some educational institutions have used technology solutions over the years, the importance of digital transformation in the educational environment is now well recognized by most schools and universities more clearly in the context of the outbreak of the COVID-19 pandemic. Governments in many countries are also looking for ways to mitigate the immediate impact of school closures and promote continuity of education for all. The digital transformation process in the education sector brings many benefits to schools in the short, medium and long term, not just stopping at the temporary response to the Covid-19 pandemic. However, the implementation of technology infrastructure in the education sector sometimes encounters industry-specific difficulties.

## **2. Education sector of Binh Duong province flexibly deploys digital transformation to respond to the Covid-19 pandemic**

### **2.1. Teaching and learning "in the time of Covid-19" in Binh Duong province**

During the outbreak, like many localities in the country, Binh Duong province temporarily closed school for students. However, the education sector of Binh Duong province has also clearly expressed the view of "stop going to school but never stop learning", the Department of Education and Training requires educational institutions and school units to actively prepare methods for the education the project to adjust the unit's education plan in line with practical conditions for program implementation, timely prevention and response when the Covid-19 epidemic develops complicatedly; proactively organize online teaching in a timely and effective manner. Schools in the province have actively developed online teaching and review plans for students, advising students not to gather and exchange. Ask teachers to have the form of assigning tasks and homework to students through text messages, online assignment and regularly guiding, answering and checking. The Education Department of Binh Duong province has also directed schools to guide teachers to reset the online learning system and do homework through the learning social network

Viettelstudy.

On the other hand, other schools in the province have also actively and flexibly deployed online teaching to ensure efficiency and safety in disease prevention and control. Besides, Binh Duong Department of Education and Training also cooperated with Department of Information and Communication to train teachers of schools on deploying online teaching applications. Along with that, the E-learning electronic lecture database of the Ministry of Education and Training with thousands of lectures selected in the E-learning lesson design contests was also consulted and selected by the teachers and instruct students.

To promote the application of information technology towards digital transformation in management, teaching and learning, many schools have invested in internet systems, smart TVs for classrooms and function rooms. Teachers teach through software, models, and vivid visual images. In addition, smart devices also help teachers directly download videos, images and materials for the lecture of each class. At the same time, from the direction of digital transformation of the industry, teachers have also tried to research and learn in many different ways such as participating in training classes, researching on the internet, investing in teaching facilities, etc. more convenient for data mining, e-learning preparation, teaching organization in a digital environment, meeting the increasing requirements of digital transformation activities.

With efforts to overcome difficulties due to the impact of the Covid-19 pandemic, the Education and Training sector of the province has completed a dual goal: Effectively preventing and combating the epidemic while completing the school year plan, ensuring quality of education. Accordingly, in the 2020-2021 school year, the province currently has 97 public schools equipped with advanced and modern teaching equipment for shared classrooms, 54 public high schools with STEM classrooms. The rate of students passing graduation reached 99.74%, in which the high school graduation rate reached 99.98%, the overall average score of the exam subjects was 7,021 points, ranked 3rd in the country; The average score of 7/9 subjects is ranked in the top 10 nationwide.

### **2.2. Education sector of Binh Duong province promotes digital transformation to improve education quality**

The whole education and training sector of our country has actively promoted the application of information technology and implemented digital transformation in education management. Up to now, 100% of Education and Training institutions have high-speed internet connection, 90% of schools use management software, most of which are management software according to online model. Report on digital transformation in education, over the past time, the results of information technology application (IT) and digital transformation of the Ministry of Education and Training in particular, the education and training sector in general has achieved some important results.

For preschool and general education, the Ministry of Education and Training has built a database system to manage detailed information of all schools from preschool to high school, including the component database components (including schools, classes, students, teachers, facilities, finance,) and have compiled information and data from 63 Departments of Education and Training, 710 Departments of Education and Training. Thereby digitizing and attaching identifiers of nearly 24 million student records (digitizing

information about background, learning process, training, health...), more than 1.5 million teacher records, staff and managers (profiles, qualifications, assessment standards) from 53 thousand schools and information about facilities, school toilets.

In 2020, the Prime Minister approved the National Digital Transformation Program until 2025, with a vision to 2030, in which education and training is one of the areas that need to be prioritized for the implementation of digital education. Implement Plan No. 3776/KH-UBND of Binh Duong Provincial People's Committee on the implementation of the project "Strengthening the application of IT and colleges in the education and training sector in the period of 2022-2025 and orientation to 2030", identifying colleges as an important task. As an inevitable trend, Binh Duong Department of Education and Training has issued a plan to promote the comprehensive application of IT.

In particular, the department focuses on building open educational resources for teaching and learning inside and outside the school, for lifelong learning, and online learning. Initially, schools have implemented STEM teaching through natural sciences, experiential activities, and organized teaching of STEM subjects in the spirit of interdisciplinary teaching. The Department reviews and standardizes the sector database and directs the units to well perform the updating, reporting and statistics on the education and training sector database (csdl.moet.gov.vn) of the Department of Education and Training, Ministry of Education and Training; pilot organization of data synchronization from applications to the industry database of the Ministry of Education and Training. The Department also continues to direct and effectively use the free Google mail system for the entire education and training sector with the domain name sgdbinhduong.edu.vn and has equipped email accounts with support services to each teacher and each teacher.students, serving well the management, teaching and learning.

After the Covid-19 pandemic, the Education sector of Binh Duong province continued to identify promoting digital transformation as an important solution to improve the quality of education and training, a premise for building an advanced education, a enter the world. However, to realize this big goal, the city needs to remove barriers and challenges, especially in terms of strategy, investment costs and technological resources.

The solution in the coming time, the education and training sector of Binh Duong province needs to strengthen digital transformation and application of information technology in education and training; strengthening the conditions for ensuring and applying information technology skills in online teaching and learning and in the inspection and assessment of education quality at all levels and levels of education in Binh Duong province.

If in the past, management in education and training was mainly through records and books, now, the management of records and books of officials and teachers has been simplified by information technology information (IT). All data of the education and training sector has been updated into the software system, making it more convenient for managers. In teaching, in the past, teachers had to work very hard to find images, symbols, and teaching aids, now teachers can use the internet to actively exploit rich educational resources for electronic lectures to create attractive and interesting for students. Therefore, using electronic lesson

plans and applying IT in management, teaching and learning is a trend in the education and training industry.

The education and training sector of Binh Duong province continues to build a learning infrastructure, a shared digital repository for the entire industry, including: electronic lectures, multimedia digital learning materials, electronic textbooks, simulation software and other learning materials; develop an online question bank system for subjects; Platform implementation of online courses. Encourage the development and exploitation of big data and artificial intelligence in the field of education and training. Continue to effectively implement the Project "Strengthening the application of information technology and digital transformation in education and training in the period of 2022 - 2025, with a vision to 2030" and the Project "Development of data application population data, identification and electronic authentication for national digital transformation in the period of 2022 - 2025".

In the school year 2021-2022, Binh Duong Department of Education and Training rewarded the provincial E-Learning lesson design contest at the lower and high school levels for 57 individuals and 8 winning teams. The contest has created a rich and quality source of data for the construction of shared data warehouses deployed throughout the industry over the past time. The Department also organized training on implementing STEM educational content for 414 teachers. The whole sector has 97/385 public schools equipped with modern and advanced teaching equipment for shared classrooms, reaching 25.19%. For STEM classrooms, the department invested in 54/266 public high schools, reaching 20.30%.

### **2.3. Education sector of Binh Duong province promptly proposed solutions to promote digital transformation during the Covid-19 pandemic**

Teaching and learning during the Covid-19 outbreak can be considered as a "test" for the digital transformation of education in Binh Duong province. Decision No. 749/QĐ-TTg dated June 3, 2020 of the Prime Minister approving the national digital transformation program to 2025 with orientation to 2023 clearly stated digital transformation in the field of education: "Developing technology for education, towards personalized training. 100% of educational institutions implement distance learning and teaching, in which pilot training programs allow students to study online at least 20% of the program's content. Using digital technology to assign homework and check students' preparation before going to class." Implementing the policy of the Government, the Binh Duong education sector developed a plan to implement Decision No. 131/QĐ-TTg dated January 25, 2022 of the Prime Minister approving the project "Strengthening information technology application information and digital transformation in education and training in the period of 2022-2025, with a vision to 2030"; Resolution No. 05-NQ/TU dated May 19, 2022 of the Standing Committee of the Provincial Party Committee on digital transformation of Binh Duong province to 2025, orientation to 2030.

In response to the pandemic, Binh Duong's education sector has had solutions suitable to the actual context as well as the development trend of the digital transformation era. Specifically:

Firstly, perfecting management policies in the field of education, ensuring synchronization and consistency among

policies from top to bottom, from general to industry-specific policies. Especially, it is necessary to affirm and officially acknowledge the form of online teaching and learning and the results of the online teaching and learning process as the form and result of formal training, having stability, quality, and longevity long.

Second, ensure all conditions for learners' learning to take place smoothly and safely. Firstly, all teaching and learning activities must strictly ensure the rules of epidemic prevention; ensure that 100% of staff, teachers and students are fully vaccinated. Ensuring the safety of teaching staff and learners is a prerequisite for "normalizing" learning activities. Third, the industry has propagated and disseminated information, increased awareness and skills for both groups of teachers and parents. In the past two years, it can be seen that although the trend of digital transformation has taken place and entered everyone's life, the psychology and skills of both teachers and parents are not yet up to standard careful when faced with new conditions. Therefore, not only learners need to adapt, but also teachers and parents need to practice the skills that are required in the context of the complicated development of the Covid-19 epidemic. Digital transformation in education will be a long and stable process. Fourth, strengthen infrastructure, ensure hardware and software equipment to meet digital transformation during the epidemic period. The key factor for the digital transformation in education to take place widely and effectively is having a full range of teaching and learning facilities and tools. It is necessary to have a network infrastructure that covers all localities and is stable, even in remote and remote areas; need to ensure that learners have enough equipment for online learning; It is necessary to have a teaching platform that is Vietnameseized, easy and convenient to use and suitable to the characteristics of each school level.

Fifth, strengthen and coordinate various forms of education. Teaching during the epidemic period has been carried out online via the Internet or via television. However, it is necessary to further expand teaching forms to suit the circumstances and conditions of different learners such as: there are teaching programs via radio; Deliver study materials to your home.

### 3. Conclusion

Digital transformation in education is an important task of the whole political system, contributing to improving the quality and efficiency of state management. Currently, digital transformation in the education sector in Binh Duong province still has many problems that need to be solved. Therefore, in order for the digital transformation in the education sector to be carried out on schedule, the Party committees and authorities, especially the heads, need to pay attention to direct the implementation of digital transformation in the industry. Educate more aggressively and effectively. Hold paperless meetings; implementing digital signatures, increasing investment in upgrading facilities and equipment to meet the requirements of digital transformation, associated with propaganda, training, and raising public awareness about the transformation. especially in the education sector to promptly respond to the epidemic and contribute to improving the education quality of Binh Duong province today.

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