



Model of smart lecture halls towards the trend of high-tech teaching and the connection between Business and University

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ABSTRACT

The application of high-tech equipment to teaching and learning at universities is a common trend in the world, especially in countries with advanced education. The Edtech trend has developed in Vietnam since 2018, marking the development of Vietnamese education, when technological progress from new technologies has been strongly deployed in education. This helps to form a new teaching method towards digital education. It is the maximum promotion of the role of learners and teachers, especially this trend towards developing learners' capacity. Therefore, the study is trying to examine the impact of digital transformation and the issue of university-enterprise cooperation in developing intelligent learning models. That helps to improve teaching effectiveness and student learning outcomes in higher education. The method of survey and survey by questionnaire combined with in-depth interview method is applied to evaluate, analyze, identify and prove the proposed hypotheses. The study proposes the widespread application and deployment of the smart lecture hall model in creating a new learning method for existing educators that integrates Information and Communication Technology (ICT). Simultaneously combined with Team-Based Learning teaching methods. Smart classroom model facilitates two-way interaction, students clearly show their central role in teaching sessions. The "Smart Classroom" model will continue to contribute to shortening the gap in education infrastructure of Vietnam with other countries in the region and the world, towards realizing the goal of digital transformation in education. Research results from this article will help universities have more solutions to increase the use of digital technology in teaching towards implementing the digital transformation roadmap at universities in Vietnam.

Keywords: Digital transformation in education, Smart lecture hall model, digital transformation in education, Samsung smart school, Team-based learning, corporate responsibility to the community.

INTRODUCTION

Using technology to increase teaching and learning efficiency is a growing trend that is being promoted in advanced education systems. Some universities in Vietnam are also looking to modernize their lecture halls. This model has been affirming its superiority in meeting the increasing demand for innovation in teaching and learning methods today. The "Smart Lecture Hall" model is structured by two main parts. In which, the hardware is an interactive lecture hall with modern equipment invested by FDI enterprises. The content includes building lectures with specialized software and training for lecturers and students to familiarize themselves with the new teaching and learning model. All classrooms are equipped with large touch screens, mounted at different positions in the room to help learners easily follow the lecture. In addition, each student uses a computer with an Internet connection to exchange and receive materials from the instructor (Nguyen Thi Hang, 2021).

The smart classroom model is very different from the old learning method. Although universities also have many modern teaching methods, from online teaching, to filming, taking pictures to build lectures. But that's still not professional. When there is a smart lecture hall, the teaching is integrated with the online teaching method. That helps students interact with all available learning resources. Therefore, increasing interaction, flexible and intuitive learning for learners. Along with that, the university can use this lecture hall for distance learning, and cooperate with domestic and foreign universities to participate and organize scientific conferences.

In the past, students were only taught directly by teachers and showed slides, but the intelligent lecture hall model helps learners to observe more visually the content and images in the lecture. Especially for final year students who have to study specialized subjects, associated with the actual work going on at the enterprise, this method will help to accurately approach specific cases. With a smart classroom that has facilitated two-way interaction, students clearly play a central role in their teaching sessions. The "Smart Classroom" model will continue to contribute to shortening the gap in education infrastructure of Vietnam with other countries in the region and the world.

That will contribute to creating motivation for universities to continue to innovate in education, especially in the context of integration and the policy of promoting digital transformation in education (Viktoriia et al., 2022).

In Vietnam, this model is the result of cooperation between universities and businesses – that is, the realization of educational support programs of FDI enterprises. Samsung Electronics of Korea has invested in developing schools for Thai Nguyen and Bac Ninh provinces, and many other educational support programs, such as: Samsung Smart Library, S-hub, Samsung Sono school... In the territory of Vietnam, Samsung currently has 8 production, business, research and large projects of this Group. Those 8 establishments are concentrated in 3 localities, namely Bac Ninh, Thai Nguyen and Ho Chi Minh City.

The smart lecture hall model prioritizes developing teaching skills using high technologies such as IoT, VR, AI, Blockchain technology. Technology such as IoT (Internet of Things - Internet of Things) helps to enhance management and supervision in universities, and to monitor learners' behavior. Big data technology helps managers analyze learners' learning behavior for appropriate support and advice. Blockchain technology helps build a system to manage information and educational records of learners, allowing to consolidate, manage and share data from many universities. It also supports recording learning history, transcripts of learners to ensure data information is consistent and transparent. In addition, the smart lecture theater model prioritizes activities that increase interactivity, practicality - application. This is done through the application of Virtual Reality - VR, Augmented Reality - AR in education to create virtual laboratories. Virtual reality models have the ability to interact with users, helping learners to have multi-sensory experiences, easy to understand, easy to remember and curious and exciting for learners. At the same time, it also increases interaction, practice and application of knowledge right in the classroom (Thi Hang Nguyen, 2022).

Equipment in smart lecture halls includes smart interactive screens with classroom management software, Samsung Galaxy Tab 9.7 tablets, wireless internet connected to servers and accessories, to bring maximum convenience for teaching. The smart lecture hall model takes full advantage of the features of 4 core technology groups: (i) Digital technology: AI, Big data, IoT, Blockchain, Cloud, Autonomous Robot, Simulation, Quantum Computing ; (ii) New physics and materials: Nano, 3D Printing, Photovoltaics, Self-driving cars, Electric vehicles, Flying devices; (iii) Biology: Stem cells, Biochips, Biosensors, Neurotechnology, Individual medicine, Biomedical imaging and (iv) Energy and environment: Small satellites, Wind turbine technology, Smart grid, Battery technology, Ocean energy. However, Vietnam is a country with a limited level of development, so the investment in modern equipment for education is also a concern. The connection between universities and businesses has helped to untie that knot. The "Smart Lecture Hall" model is one of the projects under Samsung's corporate responsibility program for the community in the field of education, following the model of smart school (Samsung smart school). That will contribute to meeting the increasing demand for innovation in teaching and learning methods, especially in the fields of higher education in order to create a skilled and skilled workforce. (Hang et al., 2020).

According to this model, interactive lecture halls are flexibly arranged depending on the learning needs of each learning method, can be arranged into group areas, easily changed into rows in the traditional or separate way. individually to increase interactivity. Therefore, the teaching contents are also gradually transformed from "static" to "dynamic". In addition to presenting interactive lectures with images and sounds in the form of video clips, animations, etc., specific types of images for students to study are displayed in 3D visualization (Mastel-Smith et al., 2018).

This smart lecture system is also combined with the "Team-based learning" method of learning, which is a model model in teaching innovation (developed by Dr. Larry K. Michaelsen at the University of Oklahoma, USA). The team-based learning method that has a positive effect in lightening the cognitive load of blended education is group-based learning (TBL). TBL focuses on providing students with the ability to apply their knowledge to solve single or multiple problems. By doing this, TBL aims to facilitate both conceptual and practical knowledge of students. It is an evidence-based collaborative learning teaching strategy designed around instructional units, known as "modules", taught in a three-step cycle: preparation, assurance testing classroom readiness and application-focused assignments". TBL is an active educational method that gives students the opportunity to solve a problem they often complain about: the inability to put theory into practice (Baldwin et al., 2018). With a smart classroom that facilitates two-way interaction, students make it clear that they play a central role in teaching sessions. The "Smart Classroom" model will continue to contribute to shortening the gap in our country's educational infrastructure with other countries in the region and the world (Bawa., 2016).

Group-based learning (TBL) is a pedagogical strategy that engages learners' knowledge through individual examination and group collaboration. After individual responses, students join groups and work through problems and complaints when they are incorrect. This process motivates students by holding them accountable to themselves and to each other, and introduces them to a variety of thought processes devoted to a single problem. To increase motivation and create a fun gaming environment, instructors often group their students into teams and have them compete on different learning tasks in the classroom. TBL dramatically changes the focus of classroom time from instructors communicating course concepts to applying course concepts by groups of students. This strategy is flexible enough to be implemented in classes of varying sizes including large lecture courses, and students have reported developing creative thinking and oral communication through TBL. (Huggins, et., 2015)

LITERATURE REVIEW

Digital transformation and the strong development of the 4.0 technology revolution, along with the process of globalization and deep international integration, have had a strong impact on all areas of social life, including education. Developing high-quality human resources to participate in operating the digital economy is demanding for each country. Therefore, countries in general and Vietnam in particular need to constantly innovate and reform their national education systems to further improve the quality and efficiency of higher education. This is aimed at an education that adapts to the context of digital transformation and the covid 19 pandemic. The issue of human resource quality must be prioritized by educational institutions and countries in order to make meaningful changes. overate. (Esen et al., 2022).

Technological achievements such as IoT (Internet of Things - Internet of Things) have enhanced management and supervision capabilities in educational institutions.

Big data technology is widely applied in education, helping to analyze learners' learning behavior for appropriate support and advice. Blockchain technology helps build a system to manage information and educational records of learners, allowing to consolidate, manage and share data from many schools. At the same time, it also supports recording learning history, transcripts of learners to ensure data information is consistent and transparent. The development of technology has led to changes not only in machines but also in the abilities and skills of individuals living in society. The link between academic performance and technology is becoming stronger. At the same time, it also requires you to acquire 21st century skills. It is important to create real opportunities for young people to develop skills such as responsibility and independence (Scott et al., 2015).

Grasping the advantages of research products of Deep Learning science, the education system has also put artificial intelligence into teaching based on the virtual assistant platform. Not stopping there, the current educational innovation is also focusing on standardization in order to reduce the difference between students in achievement. Therefore, the AI tutoring system was born with the aim of optimizing the lessons for each level and ensuring that it is suitable for the students' ability to absorb. The application of AI technology in education towards a future that can replace teachers with robots, apply advanced technologies in teaching, in order to create high-quality human resources to meet social needs (Tadeyeva et al., 2021).

The use of modern technologies in teaching and learning is very important to maintain the quality of education through online learning and the need for communication between teachers and students (Choi et al., 2021). Nowadays, online learning has become popular (Kumar et al., 2019). In turn, Semwal et al. (2019) tested that learning through digital technologies is as effective as traditional technology. The results of Klimova (2020) demonstrate the effect of blended learning on learning English. The author argues that the success of learning depends on a variety of methods used to meet the needs of the selected sample of students (Klimova, 2020).

The smart learning model makes it possible for students to have full-time access to mobile phones and/or laptops to keep up with their academic activities. Using technology to increase teaching effectiveness is a trend in advanced education systems. This model allows all classrooms to be equipped with large touch screens, mounted at different locations in the room to help students easily follow the lecture. The students have the choice to use whatever they want. Social media gives learners access to any course they want regardless of their socioeconomic status. Many E-Learning platforms have provided free access to their courses for the benefit of learners for the duration of the course. The process of teaching, learning, communicating, researching, finding work and exchanging information, everything is done only with the help of social media. This has changed the way knowledge is shared, knowledge seeking, and interpersonal communication is made. (Zhu, 2012).

This study tested and demonstrated that the use of intelligent learning through online interactions has a significant impact on student learning outcomes and satisfaction. Social media is the nullifier of ICT because it facilitates the sharing of ideas, thoughts and knowledge through virtual networks and communities. Social media includes social networking sites (Ex: Facebook, Twitter, etc.) and other platforms like Wikipedia, YouTube, blogs, instant messengers, data sharing/transfer sites, podcasts, etc This also includes E-Learning websites. Social media is about enhancing knowledge seeking and knowledge sharing behavior. Social media is also effectively used to communicate with any professional and seek conceptual clarity from different backgrounds. It helps to provide more knowledge to learners and influence them to participate in an

extracurricular activity. Those who have participated in a similar activity use this to connect talent and potential to a mass audience (Vezhaventhan et al., 2022).

Next is the cooperation between universities and businesses in developing a smart lecture hall model. Cooperation between universities and businesses in the direction of creating high-quality human resources to meet the needs of society has attracted the attention of countries around the world. This is to link universities with businesses to solve the problem of labor supply and demand. However, in the past time, the building of this relationship is still fragmented, has not been really focused or has been focused but is still formal and inefficient. This relationship is mainly still the self-advocacy of each university and enterprise. This relationship building and management activity still has no overall solution, mainly based on traditional methods, statistical means, synthesis and analysis. The article studies the construction of an information system, creating a tool to support the connection between Schools - Learners - Enterprises in order to provide and exchange information and bring job opportunities for graduates (Jagannathan et al., 2022).

Around the world, training at universities has been focused on building relationships, links and cooperation, and deep connections with businesses. This was done very early by universities around the world. In order to have high-quality human resources, businesses also actively build relationships to participate in the training process in universities. This comes from many reasons, but the most obvious in the relationship between universities and enterprises is rooted in interests, to meet and satisfy the interests of the parties involved (Eliezer Geisler et al., 1989). Research by a group of scholars Eliezer Geisler has pointed out 12 main reasons as the basis of evidence and explanation for the cohesion in the relationship between businesses and universities today.

One of the main reasons is that businesses can access, exploit and take advantage of high-quality human resources right from universities. It is the students, more especially the access to highly qualified scientists. They are people who have the ability to use technologies to practice modern experiments, the ability to perceive and think quickly and deeply to approach high technologies, solve professional problems well or capable of applying advanced and modern technology. Therefore, businesses must carry out social responsibility with the University. By investing in technology equipment for teaching (Thi Hang Nguyen, 2022). In addition, universities around the world have also sought and cooperated with businesses in order to realize the missions and goals, organizational structure and policies of universities, and orient and interests of researchers at universities. Such cooperation helps universities to attract modern technology and facilities from enterprises. This is one of the contents showing the program of corporate responsibility to the community of FDI enterprises in the field of education (Thi Hang Nguyen, 2022).

It is very necessary to build and define orientations and models of cohesion between the two sides, towards the mutual benefits of the parties. This is an inevitable issue in order to ensure balance and balance between industries and sectors in the economy. This is shown in the scientific publications of Martin (1997), Martin (1996), Scott (1998), Barker (2016). Through this partnership, it has helped universities to improve, innovate and enhance their governance efficiency (Association of Technology Managers, 2000), and at the same time, help businesses improve efficiency. , improve innovation capacity, creativity in production and business activities Robert et al. (2016).

This study aims to propose a model of smart lecture halls at universities in the context of digital transformation. This model prioritizes hands-on learning and creative experiential activities. In Vietnam, this model is formed from the result of cooperation between universities and enterprises. This is one of the projects under Samsung's corporate responsibility to community program in the field of education. To obtain this data, a questionnaire was framed and answered from 70 lecturers, 20 administrators and 150 learners. They are people who have been studying at Thai Nguyen University of Medicine and Pharmacy and University of Medicine and Pharmacy in Ho Chi Minh City.

METHODS AND MATERIALS

The author collects information, processes specific and accurate data on the development of smart lecture hall models at universities in the context of digital transformation. From there, it serves as a practical basis for a comprehensive assessment of the development and management of technology use activities to increase teaching effectiveness, ensuring objectivity and accuracy. Conduct an analysis, specify the limitations and causes of the smart lecture hall model at universities in recent years. On that basis, propose a system of solutions to develop the model of smart lecture halls in Vietnamese universities in the direction of digital transformation in education.

The article focuses on surveying the current situation of applying smart lecture hall model at universities in Vietnam. Survey on the current situation of managing activities of applying smart lecture hall model at universities in Vietnam.

Survey object: The author conducted a survey in 02 typical universities that have applied the smart lecture hall model to increase teaching efficiency in universities, namely Thai Nguyen University of Medicine and Pharmacy and Ho Chi Minh City. Bright.

Observational method: Observing the management process and implementing the application of smart lecture theater model at Thai Nguyen University of Medicine and Pharmacy and University of Medicine and Pharmacy in Ho Chi Minh City. The author observes the preparation and practice of lectures, the use of teaching methods and means, and students' learning activities. Thereby to collect information to serve the assessment of the current status of application of smart lecture theater model at Thai Nguyen University of Medicine and Pharmacy and University of Medicine and Pharmacy in Ho Chi Minh City.

Questionnaire survey method

Investigate and survey the current situation of the management of lecture preparation and practice; using teaching methods, means and learning activities of lecturers and students. Conduct surveys and surveys using questionnaires with 70 lecturers, 20 managers and 150 learners who are students. They are people who have been studying at Thai Nguyen University of Medicine and Pharmacy and University of Medicine and Pharmacy in Ho Chi Minh City.

In-depth interview method: to collect, supplement and clarify the information obtained from the practical survey related to the preparation and practice of the lecture; using teaching methods, means and learning activities of lecturers and students. Conducted interviews and discussions directly with 14 lecturers, managers at all levels, students and students of Thai Nguyen University of Medicine and Pharmacy and University of Medicine and Pharmacy in Ho Chi Minh City.

Theoretical research methods

Conduct research, analysis, systematization of legal documents, resolutions, directives, instructions, plans to implement the school year's tasks. At the same time, the author collects cooperation documents and agreements on receiving smart lecture hall investment projects at two Vietnamese universities.

Data processing methods

To assess the current status of management of lecture preparation and practice; Using methods, teaching means and learning activities of lecturers and students, the author uses a 4-level scale corresponding to the performance levels: good, good, average, weak. The questionnaires of the survey subjects were collected for processing. The questions expressing agreement or disagreement are calculated and determined relative to the percentage.

RESULTS

On the basis of survey and collection of actual data, the author used statistical mathematical tools to process and calculate percentages according to the collected variables. Thereby to evaluate, analyze, identify and prove the proposed hypotheses. At the same time, the author calculates the average score of each content with two The average score for each level is calculated as follows:

Level		Point
Level 1	Weak	1
Level 2	Medium	2
Level 3	Graded fairly	3
Level 4	Good	4

The average score is calculated using the formula

$$\bar{X} = \frac{1}{N} \sum_{i=1}^4 x_i \cdot f_i$$

In which:

\bar{X} : Average score of each factor;

N: Total number of managers, lecturers, students and trainees participating in the survey;

x_i : Evaluation scores of administrators, lecturers, students and trainees on each factor. $x_i = 1, 2, 3, 4$ (corresponding to four levels)

f_i : Frequency or number of occurrences of the point x_i

Using the scale: The scale used is a 4-step scale, the distance between the average score levels is calculated by the

formula: $L = \frac{n-1}{n} = \frac{4-1}{4} = 0.75$

Weak level: from 1 to ≤ 1.75 ; Average level: from $1.75 <$ to ≤ 2.5 ;	Graded fairly: from $2.5 <$ to ≤ 3.25 ; Good level: from $3.25 <$ to ≤ 4.0 .
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Assessing the status of stakeholders' awareness about the importance of applying the smart lecture hall model at the University

Awareness of administrators, lecturers, students and trainees about the importance of applying smart lecture hall model at the University today. The author analyzed the survey results for 70 lecturers, 20 administrators and 150 learners and obtained the following results (Table 1).

The total number of questionnaires distributed was 150 surveys for 100 enterprises. After collecting the number of distributed questionnaires, the author eliminated 5 unsatisfactory responses, and the author selected 150 valid responses for data entry. Thus, the valid sample size to be included in the study is $n = 150$. After entering data into the SPSS data processing software, the characteristics of the research sample are statistically as follows (Table 1).

Table 1: Perception of lecturers, administrators and learners about the importance of applying the smart lecture model at the University

Level	Lecturers		Management officer		Students	
	Quantily	%	Quantily	%	Quantily	%
Very important	25	35.7	8	40.0	31	20.7
Importance	38	54.3	10	50.0	109	72.7
Normal	7	10.0	2	10.0	8	5.3
Not important	00		00		2	1.3
Average score	3.08		2.86		2.72	
The level	1		2		3	

The results show that lecturers and administrators at universities highly appreciate the importance of applying the smart lecture model at the University today. In which, lecturers: when asked about the importance of applying smart lecture hall model at the University, 35.7% of lecturers rated it as very important in the process of education and training; 54.3% of lecturers identified as important activities; 10% considered normal activity (mean score 3.08).

For Managers: when asked about the importance of applying smart lecture hall model at the University, 40% of lecturers rated it as very important in the process of education and training; 50% of lecturers identified as important activities; 10% considered normal activity (mean score 2.86).

For Students and Students: When asked about the importance of applying the smart lecture hall model at the University, 20.7% of the lecturers rated it as very important in the education and training process; 72.7% of trainers identified as important activities; 7.3% consider it normal and 1.3% of respondents consider it unimportant (mean score is 2.72).

Assess the actual situation of implementing plans and roadmaps for using technology to increase teaching effectiveness

The survey results for the University side included 70 lecturers, 20 managers and 150 learners and obtained the following results.

Table 2: Assess the actual situation of implementing plans and roadmaps for using technology to increase teaching effectiveness

Level	Content	Đối tượng	Mức độ đánh giá								ĐTB	Thứ bậc
			Tốt		Khá		Trung bình		Yếu			
			SL	%	SL	%	SL	%	SL	%		
1	Determining the goals, requirements for the implementation of the plan and roadmap for the application of the smart lecture hall model	University	52	57.8	21	23.3	15	16.7	2	2.2	2.79	3
		Learner	48	32.0	89	59.3	10	6.7	3	2.0	2.81	2
2	Determine the plan to implement the plan and the roadmap to apply	University	55	61.1	18	20.0	12	13.3	5	5.6	2.92	1
		Learner	44	29.3	82	54.7	16	10.7	8	5.3	2.81	2

	the smart lecture hall model											
3	Using technology devices and bringing multimedia content into teaching and learning	University	29	32.2	27	30.0	21	23.4	13	14.4	2.78	4
		Learner	27	18.0	32	21.3	45	30.0	46	30.7	2.71	7
4	Adaptability to the construction of interactive lecture halls with modern equipment	University	25	27.8	34	37.7	14	15.6	17	18.9	2.74	6
		Learner	26	17.3	33	22.0	47	31.3	44	29.3	2.76	5

(University: Lecturers and administrators; Learners: Students and Alumni)

Through the survey results in Table 2, it shows that the identification of goals, requirements for the implementation of the plan and the roadmap for the application of the smart lecture hall model are well done. Most universities in Vietnam have increased the application of information technology and digital transformation in education and training for the period 2022-2025, with a vision to 2030. In which, the common goals are clearly defined: Take advantage of technological advances to promote innovation in teaching and learning, improve quality and access to education, and effectively manage education; building an adaptive open education on the digital foundation, contributing to the development of digital government, digital economy and digital society. Digital transformation has increasingly "penetrated" into teaching and learning activities, bringing many positive signals in teaching activities.

DISCUSSION

According to the teachers participating in the study, the Smart Lecture Hall model has helped them save time in preparing lectures, increase creativity and interact with learners. With smart classrooms, educational efficiency is significantly improved. It has facilitated the development of two-way interoperability, with students clearly demonstrating their central role in the teaching sessions. Course management tools such as Canvas software help teachers understand the learning progress of students. Students can also discuss and share documents, videos, and audios related to the lesson. In addition, universities also encourage lecturers to apply technologies to support the automatic recording of lectures. After the class, the teacher posts the video online for students to review. Through the survey, after applying this technology, the percentage of students absent from school did not increase, on the contrary, the level of knowledge mastery of students was significantly improved. The "Smart Classroom" model will continue to contribute to shortening the gap in education infrastructure of Vietnam with other countries in the region and the world.

Our results are in agreement with Hang et al. (2020) that in order to successfully implement digital transformation in education, it is necessary to apply modern technology to improve teaching effectiveness. The smart lecture hall model is essentially the application of modern technologies to improve the efficiency of higher education. There, the teaching contents are also gradually transformed from "static" to "dynamic". In addition to presenting interactive lectures with images and sounds in the form of video clips, animations, etc., specific types of images for students to study are displayed in visual 3D. This is also consistent with the statements made in the study of Jagannathan et al. (2022).

We agree with Vezhaventhan (2022) that Social Media is used to communicate and interact with teachers in open learning spaces. It also helps to provide additional knowledge to learners and influence them to participate in an extracurricular activity. People who have participated in a similar activity use this to connect talent and potential to a mass audience. Furthermore, technology for organizing research work is an integral part of students' professional training in a digital environment (Andryushin, Shcherbatov & Makarevich, 2018).

In order to have a diverse technology platform and not need to invest, universities need to strengthen connections to mobilize funding from FDI enterprises. From there, the quality of labor supplied to businesses will increase and they will not have to pay for retraining. In return, businesses must fulfill their social responsibility to the University by investing in technology equipment for teaching. This is in agreement with the study of Barker (2016) and Robert et al. (2016).

CONCLUSIONS

Smart lecture hall is a model that has just appeared in Vietnam since 2018, thanks to the support of FDI enterprises, but has brought remarkable effects in higher education. Before this model appeared, universities also applied online learning methods, teaching content designed by lecturers. However, the online teaching content is because the teachers themselves filmed and took pictures to build the lecture, so it is not professional.

Since having smart lecture halls, modern technology has been integrated with online teaching methods. That helps students interact with all available learning resources. The university has also used smart lecture halls to diversify types of training. Various types of distance learning, linking with domestic and foreign universities to participate in scientific seminars have been realized thanks to the smart lecture hall model. Therefore, the smart lecture hall model is expected to gradually replace the traditional lecture model with a one-way transfer of knowledge from teacher to student. Instead, there is a two-way exchange between teachers and learners, improving interaction, thereby improving efficiency and developing learners' thinking. In addition to the improved training quality, the seating space and the system of tables and chairs in this lecture hall are flexibly arranged, making it easy to group groups or separate individuals depending on the requirements of the lesson. Supporting devices in the lecture hall include smart interactive screens, tablets, other classroom management software, and an internet system that provides maximum support for lecturers and students in the teaching and learning process.

Research has revealed the effectiveness of the Smart Lecture Hall model to improve teaching and learning efficiency. All classrooms are equipped with large touch screens, mounted at different locations in the room to help students easily follow the lecture. The Smart Lecture Hall model allows each student to use a computer with an Internet connection to exchange and receive materials from the lecturer. Students who used the smart lecture model had significantly higher learning outcomes. On the other hand, they are also more interested and love learning. The Smart Lecture Hall model, if developed, can help learners have the opportunity to exploit multimedia learning resources, different from traditional libraries. Instead of asking the librarian or looking up the computer to find the location of the book and then the shelf, students just need to access the management system on the computer in the library, find the book, press confirm, the book will be automatically delivered.

The results obtained on the effectiveness of the Smart Lecture Hall model can be used to plan and organize the educational process in higher education institutions for research and widespread application. The study initially analyzes the outstanding effectiveness of the Smart Lecture Hall model in a specific higher education institution. In the next study, we will continue to evaluate the effectiveness of applying and deploying this model through comparisons between groups of research subjects to see more clearly the effectiveness of this model. It is also a step in line with the context of digital transformation, so that universities in Vietnam can realize the goal of digital transformation in education.

The use of high technology for teaching combined with the "Team-based learning" method will create a model in teaching innovation. Smart lecture hall model facilitates two-way interaction, students clearly demonstrate their central role in teaching sessions through actively interacting with lecturers, making lecturers capable of "transforming translate" more towards learners. This model is a great opportunity for students to interact with available learning resources, helping to enhance their thinking, cognitive, and creative abilities. This is the basic factor to improve the quality of human resources for the development of the digital economy. Smart school is considered a modern school model, suitable for the development of the industrial revolution 4.0. Strengthening cooperative relationships with businesses will create opportunities for learners to discover and construct knowledge, develop self-control and adaptive capacity, and think creatively through practical experiences at the university. At the same time, to show social responsibility, businesses will invest in technology infrastructure for universities to improve teaching quality. The application of smart technology for education is the right direction. However, the State needs to continue to perfect the document regulating the application of professional standards to guide member universities to apply. It is possible to form a number of shared databases for universities so that universities can communicate about data. Train staff in knowledge and skills related to organizing, processing, distributing and sharing information resources as well as principles, processes and procedures for conducting this coordinated activity. Universities also need to actively innovate the management and handling of work records in the network environment. Enhance teaching in a combination of face-to-face and online to improve the level and capacity of digital technology application in educational activities.

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