

Application of Flipped Classroom Model in Teaching History of Public Schools in Vietnam

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Abstract This paper presents a practical survey study at some high schools in Hanoi to analyze and draw conclusions about the possibility to apply the flipped classroom model in teaching history subjects at public high schools in Vietnam. At the same time, the study also points out some modifications of the application of the flipped classroom model in teaching history and proposes some solutions to apply this model in teaching history at public high schools in Vietnam to develop students' learning competency and improve teaching quality.

Keywords: *the flipped classroom model, history teaching, students, public high schools, Vietnam*

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1. Introduction

Vietnam is a developing country. Educational innovation since the 50s of the twentieth century has brought Vietnam's education many outstanding achievements. However, in public schools managed by the State, the teaching model is still traditional, knowledge- feeding, teacher- centered "in normal school hours, presentation teaching method still dominates combined with occasionally asking questions and sometimes, using visual means as well as proposing problematic situations..." [1]. The trend of world integration and the challenges of the 4.0 revolution require that education innovation in Vietnam must focus on developing learners' competencies [2]. This is an urgent issue for teachers to select suitable teaching models aimed at developing students' learning competencies. One of the main focuses of the issue is organizing teaching activities, selecting teaching models towards students' competency development.

Different from the traditional classroom models of lectures being conducted in class and homework being assigned to be done at home, the flipped classroom model requires teachers to send the content of the lectures to students beforehand via some electronic means (online lectures, compact discs, videos...) and homework assigned at home as in traditional classroom models would be transferred into practical exercises for learners to discuss in class "The flipped classroom has two components: moving the lecture outside of class, practical application assignments, formerly homework, into the classroom" [3].

The flipped classroom model is a blended learning format between modern teaching and traditional learning to create a flexible learning environment, which is learner-centered. The way of organizing teaching activities in the

flipped classroom demonstrates the idea of placing learners at the central position of the teaching and learning process, and at the same time, this model gives teachers opportunities to organize classes in an open way to optimize students' competencies. Based on flipped classroom model, at home, learners are proactive, creative, free to choose time, workspace, self-study content with videos, online lectures, materials and in class, students would interact, give feedbacks, discuss in groups and engage in practical exercises.

The flipped classroom model was born in the 90s of the twentieth century. The concept of a Flipped classroom / flipping the classroom was proposed by Alison King (1993) [4] with the idea of encouraging teachers to use the amount of time in class to organize learning activities aimed at students' comprehensive understandings of lessons, in contrast with feeding students information in traditional classrooms. Since then, research on developing the flipped classroom models has focused on the direction of making use of the available time in class to deepen students' understandings into the content that has been given to them beforehand with the support of technological devices. Specifically, lectures which were directly taught to students in traditional classrooms are now often pre- recorded in video forms posted on YouTube to equip learners with basic knowledge of the lesson to be ready for classroom discussions. At first, the flipped classroom model was primarily applied on students of colleges and universities because of the fact that their creativity and different learning styles are not restricted to standardized curriculum. In particular, the private non-profit university - MEF University in Istanbul - Turkey (2014) applied "the flipped classroom" model and as a result, creating its own special educational values [5]. Later, the flipped classroom model has gradually been extended to students

who for various reasons, do not fully attend classes to keep up with the program [6]. Jonathan Bergmann and Aaron Sams may serve as a vivid example. These two chemistry teachers from Woodland Park High School recorded their lectures to provide students. These lectures have completely changed the way teachers teach and the way students learn. These aforementioned examples show that the flipped classroom model in teaching is not only effective for students at universities but also effective for those at high schools, helping learners develop their own learning competencies and provoking their interests in the subject at the same time.

In Vietnam, recently, the flipped classroom model has been tested in some universities in teaching modules with the support of information technology. The results show that students are excited about this teaching method because this model has promoted their creativity and self-learning consciousness [7]. These results were published in Journal of vocational education and training [8]. In another article [9] the authors Nguyen Quoc Vu, Le Thi Minh Thanh argued that the application of the flipped classroom model, especially the construction of questionnaires used in models can boost students' creativity. In another article, the author Le Thi Minh Thanh [10] clearly defined the benefits of the flipped classroom model as well as proposed the process of applying this model effectively in teaching at universities. The author Tran Thi Thu Quyen investigated students' perceptions of the flipped classroom model on Facebook for educational purposes [11]. These articles only focus on the application of the flipped classroom model into teaching technical and natural science subject at universities. However, up to now, there have not been any articles mentioning the use of the flipped classroom model into teaching social science subjects.

The study of the flipped classroom models shows that there are many forms of this model: basic flipped model- at home, students are assigned "homework" by watching videos, lectures or reading materials related to the content and in class, students practice what they have learned through exercises; discussion- oriented flipped model - at home, teachers ask students to watch videos, lectures first and in class, time is designed to discuss those assigned topics; modeling- based flipped model- at home, instructional videos can be reviewed over again by students and they are required to report the content in their own words and understandings; group- based flipped model- starting like other forms of the flipped classroom model and the difference is that students would be grouped to share the content of the specific topics prepared at home before. Whichever model the teacher chooses, in essence, the flipped classroom model prioritizes students' learning activities, the implementation process is the thing that makes a difference.

When applying the flipped classroom model into teaching, the factors of modern facilities and teaching devices play a very important role *"The flipped classroom model is heavily dependent on technology; students must have access to a computer (or similar device) and the internet so they can watch videos at home. Ensuring access to technology is the responsibility of educators. For students who do not have access at home, schools can*

increase the operating hours of computer labs at school or increase access to library computers. Where possible, some schools might consider providing all students with their own personal electronic device with internet access. Likewise, teachers must have access to, and be comfortable with, technology that will allow them to record and edit videos, and then upload them to the internet so that they are accessible to students" [12]. At the same time, the attitude of being open to new things of teachers has become a dominating factor in teaching and learning process. The question is: (1) Can public high schools in Vietnam apply the flipped classroom model to improve the quality of teaching subjects? (2) What are the changes of teaching history when using the flipped classroom model? (3) What are the solutions to apply the flipped classroom model in teaching history at public high schools in Vietnam?

2. Content

2.1. Survey of Teaching Conditions in Some High Schools in Vietnam

The differences between the traditional classrooms and the flipped classrooms require the teaching and learning conditions to meet the activeness and the teacher- students interaction as well as students- students interaction. Those requirements focus on three aspects, including facilities, teachers' competencies and student- related issues. In terms of facilities (1), projectors, computers, stable and high- speed Internet connections, teaching softwares need to be fully equipped. In terms of teachers' competencies (2), teachers are required to have specialized knowledge, pedagogical skills and the flexibility in using technological devices to design the content of lessons, lesson content, organize learning activities and test and assess students. In terms of student- related issues (3), the number of students in a class is not too big and students have the ability to self- study and use technological devices.

There are many types of schools in the education system in Vietnam, including public school, semi-public school, private school, international schools. Whether in these different types of schools with different teaching conditions, can the flipped classroom work effectively?. We conducted a survey of teaching and learning conditions in some high schools in Hanoi. The scope of the survey includes semi-public, private, international schools, such as Nguyen Tat Thanh Senior and Junior High School; Phan Huy Chu High School; Luong The Vinh secondary and high schools; Marie Curie Junior and Senior High School; Nguyen Binh Khiem High School; Wellspring International School; Hanoi Academy International school; Olympia International High School and some public high schools. The survey focused on the following issues: (1) information technology platform for teaching (computers, projectors, Internet connection, softwares for teaching); (2) the annual training session for teachers (skills of using technological devices; innovating teaching and assessing methods); (3) students (class size, the rate of using technological devices) (see Table 1 and Table 2).

Table 1. Conditions for teaching - learning at some semi-public, private and international schools

Number	Content	NTT	PHC	LTV	Marie Curie	Wellspring	Academy	Olympia	
1	Information technology platform (%)	Computer	100	100	100	100	100	100	
		Projector	100	100	100	100	100	100	
		Internet connection	60	50	60	60	100	100	
		Wifi	30	20	40	50	100	100	
		Teaching software	40	30	30	40	100	100	
2	Annual Training Sessions for teachers	IT skills	Sometimes	Sometimes	Sometimes	Sometimes	Regular	Regular	Regular
		Innovating teaching methods	Regular	Regular	Regular	Regular	Regular	Regular	Regular
		Renovation assessment	Regular	Regular	Regular	Regular	Regular	Regular	Regular
3	Student	Class size (number of student)	>30	>30	>30	>30	<30	<30	<30
		(%) use IT	80	60	75	80	100	100	100

Note: NTT (Nguyen Tat Thanh Senior and Junior High School); PHC (Phan Huy Chu High School); LTV (Luong The Vinh secondary and high schools), TT (sometimes); TX (regular), > 30 (more than 30 students); <30 (less than 30 students).

Table 2. Conditions for teaching and learning at some public high schools

Number	Content	Amx	CVA	NH	KL	PDP	VD	Other	
1	Information technology platform (%)	Computer	100	100	100	50	40	50	30
		Projector	100	100	100	50	40	50	20
		Internet connection	60	50	60	40	40	50	0
		Wifi	30	20	40	0	0	0	0
		Teaching software	40	30	30	10	10	20	0
2	Annual Training Sessions for teachers	IT skills	Some times						
		Innovating teaching methods	Some times						
		Renovation assessment	Some times						
3	Student	Class size (number of student)	>30	>30	>30	>40	>40	>40	>40
		(%) use IT	100	100	100	50	60	50	30

Note: Amx (Amsterdam High School); CVA (Chu Van An High School); NH (Nguyen Hue High School), KL (Kim Lien High School); PDP (Phan Dinh Phung High School); VD (Viet Duc High School); Other (high schools in districts), TT (sometimes); TX (regular), > 30 (more than 30 students); > 40 (over 40 students).

Analyzing the survey results, we draw some conclusions:

(1) Semi-public, private high schools, especially international schools in Hanoi are pretty well- equipped. Especially in international and private schools, technological facilities (computers, personal computers, projectors, interactive boards, high-speed Internet connections, free wifi...) are modern and supportive in teaching. Class sizes at schools are not very big, with 15 to 25 students in a class (Wellspring, Hanoi Academy, Olympia). Teachers with high competencies are thoroughly selected and then, they take part in annual training sessions focused on innovating methods, organizing teaching and learning activities, assessing and applying technology in teaching. These sessions would support teachers in enhancing the quality of teaching and learning. With the teaching conditions provided in the system of semi-public, private and international schools, these schools not only satisfy the basic requirements of traditional classrooms but also meet the requirements of flipped classrooms.

In fact, with the support of these teaching facilities, the quality of teaching in many semi-public, private and international schools in Hanoi has been acknowledged.

(2) About conditions for teaching at public high schools: Hanoi consists of 4 central districts and 25 other districts. The system of public high schools includes 4 specialized schools (Amsterdam, Chu Van An, Nguyen Hue, Son Tay) and 109 high schools. Specialized schools and schools in 3 high schools in central districts including Kim Lien High School, Phan Dinh Phung High School, Viet Duc High School are well- equipped, good quality of teachers and students. Apart from these schools, other schools still have some limitations in terms of teaching facilities, quality of teachers and quality of students.

Firstly, the facilities are not well- equipped with the absence of the system of computers, projectors and the internet connection. In some cases, wifi or the internet connection would be unstable and office or teachers' room – limited. *Secondly*, although the annual training sessions of teachers may be organized by Ministry of Education and Training, the Department of Education or based on the invitations of schools to invite experts on technological skills or innovative teaching and assessing methods, the training sessions have not yet been held annually and the quality of training sessions have not met

requirements as teachers are not fully aware of updating information, innovating or sharpening their skills. *Thirdly*, class sizes and the skill of using technological devices are also factors that matter. As stated in the regulation, the number of high school students in a class does not exceed 45 people; however, in many schools, the number of students exceeds 50 people per class. The levels of knowing how to use technological devices are in variety. Most students at high school in small towns or provinces, due to limited living conditions as well as families' financial issues, are not very familiar with using technological devices in learning. *Fourthly*, the quality of teachers at these schools is also uneven. Teachers are trained from different sources, leading to the fact that their specialized knowledge and pedagogical skills are not on the same level. Teachers graduated from prestigious pedagogical would understand the psychological aspects of students and they are always aware of self-training to innovate and improve their teaching quality so that they would meet the demands of education innovation. However, there is also a number of teachers and trainers that are still limited in terms of specialized knowledge and lack of eagerness to adapt to new things. In fact, there is a long-held belief that teachers who have already been on the payroll in public schools are often passive, dependent and are lack of enthusiasm in partaking in training or updating information. Some who are even sent to take part in training sessions are still not eager to actively learn as well as apply modern teaching methods to improve their teaching quality.

The above survey results show that in many public schools in Hanoi, the conditions for teaching innovation in general and the application of modern teaching models as the flipped classroom model have not yet met the demands. Modern teaching models as the flipped classroom model, if regularly applied in teaching, would put positive impacts on both teachers' teaching activities and learners' acquiring knowledge process. As regards teachers, positive impacts can be seen in many stages: (1) design teaching content with orientations (promoting students to pre-study the problem themselves); (2) using a variety of methods to activate learners' activities (working in groups, solving problems, applying cognitive games...); (3) selecting modern technical tools and supporting means that make interactive information become updated (using a variety of software, editing software, multimedia video illustrator or web platform to manage and organize teaching through blogs or social networks); (4) good implementation of formative and summative assessment. As regards students, positive impacts can be witness in choosing time, location and learning styles matching learners' abilities, interests so that they can show their activeness in learning.

Every teaching model has its own strengths and weaknesses and the flipped classroom model is no exception. There are some drawbacks of this teaching model: *"More troubling are issues of student motivation; flipped classroom approaches wager the success of in-class activities on the likelihood of students completing their pre-class assigned work. This leads to the perennial problems of student preparation: how do teachers know if students have prepared; what they know; and if the preparation was useful?"*[13]. This requires: (1) Those

who teach need to put their effort into preparing teaching resources and learning materials as well as designing suitable learning tasks that match learners' levels; (2) teachers are required to have specialized knowledge and pedagogical skills to select appropriate approaches, methods and techniques to support students during learning process or maintain students' activeness throughout the lesson; (3) Technological devices and the foundation of technology which are in poor conditions in many remoted areas may put negative impacts on both teachers and learners; (4) web-based learning environment may cause self-study learners some problems (being distracted or being lack of learning eagerness, feeling dissatisfied or overloaded with the content or the number of tasks, being neglectful of assigned tasks or self-learning videos).

The survey results show that the conditions for applying the flipped classroom models in public high schools in Vietnam, despite many limitations, are initially formed to improve teaching-learning quality and these would be positive signs for the application of many other innovative teaching models in the future. The key factor lies in teachers' open-mindedness and their effort to take up new challenges in order to enhancing students' learning process.

2.2. Changes for Teachers and Students when Applying the Flipped Classroom Model in Teaching History at Public High Schools in Vietnam

What are the changes when applying the flipped classroom model in teaching history at public high schools? Normally, in traditional history classes (knowledge-feeding base), teachers focus on presenting information, students mainly passively listen to lectures and the time budget for activities is very limited. In the state of acquiring knowledge passively, the majority of students will find it difficult to think, imagine, deepen their understanding while they are listening to lectures, thus falling into the state of "low level thinking" – being passive in receiving information. If the flipped classroom model is applied in teaching history, 'listening to lectures' stage would be conducted at home and students' questions on the content, the historical figures would be proposed to discuss or draw a conclusion at the end of the lesson. Students constantly have to interact and their "high level thinking" will be activated. Modern teaching facilities and supporting equipment will enable students to easily carry out these activities. For example, students will use the teacher's video content to learn and prepare questions for the lesson and spend more time in class for discussions, feedbacks and exercises activating their thinking. At the same time, technology facilities also help teachers organize activities in the teaching process such as guiding students to deepen their knowledge through effective learning activities. Teachers can prerecord lectures by using videos, PowerPoint, online lesson-designing apps for testing and assessment. Thus, the main duty of both teachers and students is to deepen their understanding into the content, making the teaching-learning process more interesting (Table 3).

Table 3. Differences between reverse class and traditional class

	<i>Traditional class</i>	<i>Reverse class</i>
Before class	Students do homework related to the previous lesson	The teacher assigns students many exercises related to the content of the next lesson
In the class	Teacher gives directional questions Students learn textbooks Teachers give lessons, take note. Students take notes	Students do many exercises Discuss, discuss and criticize Students reinforce their knowledge in the learning process
After class	Teachers assign homework to students	Students reinforce the knowledge of the lesson Teachers continue to give homework to students (related to the following lesson)

The way in which the flipped classroom is conducted is obviously different from that in traditional classes. For this reason, applying the flipped classroom model certainly brings about many positive changes for students:

Firstly, as the teaching content in the flipped classroom is teacher- oriented and learners may make use of online lectures and materials before the class to gain their own knowledge of historical figures and events in advance independently, students are able to discuss, develop their critical thinking to reach the appropriate conclusion. This is a positive way of learning in which students are directly involved in learning activities to explore, self-identify problems to be solved in learning, self-building knowledge, not in a passive way of receiving information from teachers. From the available knowledge and experience of students, studying following the flipped classroom model promotes students to actively acquire new knowledge and find appropriate solutions to their learning issues. By doing this, students can systematize their knowledge on history, develop their independent thinking, cooperate with each other to promote teamwork. New knowledge is reinforced and thus, meeting the requirements in study and life.

Secondly, students are actively involved in exploring past events, historical issues and they can explain, exchange information, debate, evaluate facts, principle-based phenomena, causes, features and meanings of historical events. This learning experience contributes to the formation and development of comprehensive competencies for students, especially autonomous, self-learning, collaborative skills, problem-solving skill, information seeking and sharing skill, practical thinking, and history evaluation skill. Therefore, students' new history knowledge and perception would be more objective.

Thirdly, studying history in the flipped classroom would make students proactively acquire knowledge with excitement and they will look forward to expressing their own knowledge in an active way. This is an important way to motivate students to engage in learning history and change their attitude towards this subject, which is often underestimated by parents and society.

Fourthly, by organizing teaching and learning activities in history subjects with the flipped classroom model, teachers are required to devote their time to researching and designing learning activities. In this way, competencies in specialized knowledge, class management or applying technology of both teachers and students in a competitive world demanding students to acquire as much knowledge as possible.

Those changes of teachers and students when applying the flipped classroom model in teaching history show that this method, whether applied in semi- public, private,

international or public schools would all be effective in developing students' competencies and arising their interests into this subject.

2.3. Some Solutions to Orient the Application the Flipped Classroom Model in Teaching History Subjects at Public High Schools in Vietnam

From the results of the survey on teaching conditions using the flipped classroom model and the changes this method makes in teaching history in public high schools, we propose some solutions to orient the application of the flipped classroom model in teaching history at public high schools in Vietnam:

* *Raising teachers' awareness of applying modern teaching models in innovating teaching - learning process* to create attractive history lessons as well as draw students' attention to promote their active learning. Due to some factors such as parents' attitude or schools' prejudice about the role of history subject, students tend to neglect this subject and be uninterested in it. The key factor deciding students' learning quality is mostly determined by teachers. To ensure students' learning quality, teachers need to regularly update, improve their professional skills and be eager to make changes in their teaching styles. Moreover, the Ministry of Education and Training should be in charge of organizing regular training sessions on enhancing teachers' teaching styles, methods and techniques and applying using technology in teaching to upgrade the quality of teaching history at public high schools in Vietnam.

* *Promoting investment in modern facilities and technological devices to promote effective teaching.* In order to meet the requirements of educational innovation in the era of technology revolution 4.0, facilities and devices for teaching at public high schools in Vietnam are required to be upgraded and updated. Some devices such as computers, personal computers, projectors, interactive boards need to be equipped with Internet links, free wifi connections. By doing this, a digital learning environment would be created to improve the quality of teaching and learning in schools.

* *Applying the flipped classroom model needs to meet the requirements of teaching history at public high schools in Vietnam. The synchronization between the model and the features of the subject should be taken into consideration. In Vietnam, the synchronize of these two factors would be displayed through many aspects:*

Firstly, objectives of history subject need to be gained.

The objectives of history subject at public high schools in are to help students acquire knowledge of local and

world history in a scientific and objective way. In this way, students' learning skills are sharpened and their appreciation towards local and world history's values is promoted. Applying the flipped classroom model needs to ensure the objectives of history subject and teaching activities should be controlled and well-oriented for students.

Secondly, the active roles of teachers and students in teaching and learning history need to be maintained. Whichever teaching models are chosen, teachers and students should be the core subjects of the process. By using the flipped classroom model, the subjectivity of both teachers and students would be clearly seen in the activities of designing online lectures and conducting learning activities. With different teaching models in both traditional and modern classes, the subjectivity of students should be prioritized. Students should be active and open-minded in applying already-known knowledge to extend their understanding as well as expressing their own points of views in the process of gaining new knowledge and discussing with teachers. In order to bring about the effectiveness in teaching, learning activities in class should originate from students' needs in furthering their understanding of historical events being discussed. With the guide of teachers, students would work together to solve problems actively, independently and creatively. In teaching and learning process, the relationship between teachers and students play an important role. That relationship aims at teachers and learners cooperating with each other to solve cognitive problems. This relationship is the mini-version of students' life in a bigger society called 'classroom'. Furthermore, when gaining knowledge, students should be aware of evaluating and adjusting knowledge to match their demands and the requirements of society. For these reasons, promoting the activeness in students' learning activities is the core duty in innovating teaching methods and education in Vietnam. The eagerness of learners in learning contributes to the changes in teaching styles, methods and techniques of teachers. If teachers are active in organizing and managing activities, students would be enthusiastic about adjusting their learning activities.

Thirdly, the basis, accuracy and scientific quality in teaching history at public high schools need to be ensured. history teaching process at high school. In a class society, teaching in each country must ensure the basic, accurate, scientific and ideological characteristics appropriate to the cognitive abilities of students. Teaching history at public high schools in Vietnam now meets this requirement. However, teaching history still focuses on feeding knowledge, thereby educating ideology, politics, moral qualities and fostering cognitive abilities for students.

Each lesson often refers to issues that require both intensive and extensive knowledge of historical events. The teacher must select the basic facts to deepen students' understanding and find out the relationships among events to help students understand the nature of problems. So, teaching with which models, when designing the lesson, teachers should clearly define what to teach, how to teach, what the purpose of teaching is. In teaching, the selection of past events must show the comprehensiveness of the history, including cultural and diplomatic factors. At the same time, it is necessary to point out the dialectical

relationship between those fields. For example, when teaching students about military events, in addition to orienting students to understand the military historical events of the people objectively and honestly, teachers need to guide students to explore the interactions between military and diplomatic factors, the way of military and civilian organization in battling, thereby helping students better understand the victories or failures in the process of preventing invasion.

The accuracy factor in lesson content is demonstrated in determining the right time and space of historical events. That contributes to training skills such as comparing, setting a calendar, summarizing events to help students remember longer.

The science factor in lesson content is closely related to the strength of the teaching process. This is an important in the learning process at public high schools, contributing to solving conflicts among the volume of knowledge, the time budget for learning and the level of awareness of students. Modern teaching theory prioritizes the fact that teaching should be focused on 'development areas' of students, ensuring that knowledge would be in students' solving ability and thus, leading to students' development through motivating them to be active and eager in acquiring knowledge.

In teaching history at public high schools, the appropriateness is shown in selecting the content, methods and techniques and organizing learning activities of students through Assembly, positive thinking and activity of cognitive determining the sufficient amount of knowledge without giving definitions or using difficult terms and names in lessons.

Fourthly, focusing on teaching history following the orientation of 'learning with practicing'. The principle of "learning with practicing" comes from the nature and origin of science. Science was born in the process of human practice, so it was always associated with human activities and social activities. The principle of "learning with practicing" has become one of UNESCO's basic pillars of education in the current trend of internationalization and globalization. "Learning to know, learning to do, learning to live together and learning to define identities". Teaching history at public high schools in Vietnam is based on that premise. History does not repeat what happened, but it is a logical and systematic inheritance, a relationship between the past and the present and the preparations for the future. History knowledge can help students draw conclusions and assessments for today's life and for their directions of future actions. Thus, learning history not only fosters cognitive competency but also develops the ability to act independently, proactively, and practically. Practicality in learning history is shown through these aspects:

- Using visual aids (maps, pictures, statistics tables ...), doing different types of history exercise (especially cognitive exercises), promoting the ability to collect and read books for self-selection of additional knowledge and clarification of the knowledge being learned.

- Use the learned knowledge to acquire new knowledge and apply it to the awareness of events that are happening to adjust appropriate attitudes towards present.

Applying the flipped classroom model in teaching history, with the support of modern teaching facilities,

will help teachers to design exercises to promote independent thinking, creativity and independent and practical working skills for students.

Finally, *change the way of testing and assessment in teaching history*. Each way of organizing teaching activities will have appropriate forms, methods of testing and assessment as these are vital steps in teaching process.

Testing and assessment not only aim to confirm the status of the results of the teaching - learning process but also contribute to adjusting the teaching - learning activities of teachers and students. Currently, testing and assessment at public high schools in Vietnam are score- base with simple forms and methods of testing and assessing, without encouraging the creativity of learning, and the teacher still holds an exclusive role in the assessment process. By applying the flipped classroom model, students become the center of the classroom. Thus, innovating testing and assessment is a must by prioritizing students' self-reflection, outcomes assessment and students' progress. *"Hence examination is not limited in form to problem sets, essays and written project reports. Exams may be administered digitally in class by systems such as DigiExam (<http://www.digiexam.se>). They simplify the handling of the exam and multiple-choice questions may be machine graded. Online examination is still difficult to trust, for instance with respect to authentication of the students' identities and to prevent additional persons and resources being available at the student's site to assist with the test. However, these problems are no greater than with take-home exams which are commonly used..."* [14]. As a result, assessment process is no longer teacher- centered but focuses on objective, fair and equitable assessment, appreciate students' self- reflection, peers' and teachers' assessment in order to adjust their learning activities accordingly. If students know how to self- test and self- assess, they will be more active in the process of forming new knowledge from existing knowledge. At the same time, they will know their own weaknesses to adjust and build new knowledge accordingly.

3. Conclusion

Educational reform in Vietnam in the context of the development of the 4.0 revolution has created conditions for teachers to develop traditional teaching values as well as applying new teaching models, methods and techniques to activate students' cognitive awareness and optimize their potentials. The fact that the reality of educational context at public high schools in Vietnam still faces up to many challenges has led to limitations in applying modern teaching models such as the flipped classroom model in

terms of facilities, teachers and students. However, in the renovation process, the application of the flipped classroom model in particular as well as other modern teaching models in general can be successful if teachers are ready to make changes and apply them into practical teaching. These innovations need to be carried out synchronously, from the form and method of teaching to the means and equipment for teaching, so that the renovation process will become successful and boost the ranks of Vietnam education on global scale.

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