INTRODUCTION

1. Reasons for thesis topic

Climate Change (CC) is one of the most challenges and the greatest risks that humanity in the twenty-first century will have to face and overcome. In this situation, the climate change education (CCE) is considered as a strategic solution and is the core content of sustainable development in high schools. In Vietnam, integrating contents of CCE into the program of educational levels and disciplines has been implemented in accordance with the decision of the Government and the Ministry of Education and Training.

Geography education plays an important role in raising the awareness of students on the challenge of CC in Vietnam. Geography provides students the knowledge of CC in both global and local areas, therefore it helps students be able to "Think globally and act locally".

In the trend of innovating Geography teaching methods at present, the use of information and communications technology (ICT) in education on CC is increasingly popular and has become a new trend in teaching geography. Theoretical and empirical evidence have shown that ICT is a powerful tool to conduct CCE in high schools.

Acutely aware of the problems mentioned above, with the desire to contribute to the CCE for young generation and for high schools students in Hai Phong in particular, I choose the research topic "**Organizing climate change education activities in teaching Geography grade 12 with the help of information comunication technology**".

2. Goal and objectives of the Research

2.1. Research Goals

The aim of the thesis is to establish principles, viewpoints, methods and processes to design and effectively organize CCE activities in teaching Geography grade12 with the support of ICT. The thesis contributes to the innovating methods and improving the quality of education responding to CC and disaster prevention.

2.2. Research Objectives

- Develop rationale and practicalities of organizing CCE activities in teaching Geography grade 12 with the help of ICT.
- Establish principles and processes to design and organize CCE activities in teaching Geography grade 12 with the help of ICT, including the establishment of processes to design and organize EL with modular approach; organize teaching with Webquest and projects methods using ICT on CC.
- Organize pedagogical practices to verify the effectiveness and feasibility of organizing CCE activities in teaching Geography grade12 with the help of ICT.

3. Object and scope of the research

3.1. Research Object: designing and organizing CCE activities in teaching Geography grade 12 with the help of ICT

3.2. Scope of the study

- *Content*: The study focuses on designing and organizing CCE activities in teaching Geography grade 12 by using ICT tools.
- *Object and scope of the survey*: students grade 12 and Geography teachers (in 19 high schools in Hai Phong).
- *Pedagogical practices*: organize 3 typical experiments on the CCE in teaching Geography grade 12 with the support of ICT in 3 high schools in Hai Phong: Le Quy

Don high school; Thai Phien high school and Hai An high school.

4. Research Hypothesis

If CCE activities in teaching Geography grade 12 are suitably designed and organized with the help of ICT, the quality and efficiency of CCE will be enhanced. This enhancement will contribute to the innovation the Geography education in high schools.

5. Research Overview

There have been many researches of the authors in the world and some of the work of the authors in Vietnam refers to the basic issues of CC on the world and Vietnam, the role and the significance of CCE in schools. Many scientists have studied in depth the content integration CCE issues into general education programs, including on geography and organizing CCE activities with the help of ICT. However, there has been not researches which establish and express visually of the principles, processes and organizational design CCE activities in teaching geography with the help of ICT, including the establishment of procedures set EL according to modular approach, Webquest and teaching projects using ICT on CC.

6. Research Approaches and Methodologies

6.1. Research Approaches

System-structure perspective, learner-centered teaching perspective and technology perspective, education for sustainable development perspective are the dominant perspectives throughout the process-oriented research topics.

6.2. Research Methodologies

In order to achieve the objectives and fulfill the tasks, we have applied the following research methods: Methods of analysis and synthesis; Methods of sociological surveys; Expert methods; Educational products observation methods, Pedagogical Experimental Methods (PEM), Statistics methods.

7. New contributions of the thesis

- Clarify rationale and practicalities of organizing CCE activities in teaching Geography grade 12 with the positive direction.
- Establish principles and processes to design and organize CCE activities in teaching Geography grade 12 with the help of ICT.
- Establish principles and processes to design and organize EL with modular approach.
- Establish processes to design and organize teaching with Webquest on the CCE.
- Establish processes to design and organize projects methods on CCE with the help of ICT.
- Verify theoretical results of research through pedagogical experiments.

8. The structure of the thesis

Apart from the Introduction, Conclusion, Appendix and Reference, the Content and results of the thesis are presented in three chapters:

- Chapter 1: Rationale and practice fundamental of organizing climate change education activities in teaching geography grade 12 with the help of ICT.
- Chapter 2: Designing and organizing climate change education activities with the help of ICT in teaching geography grade 12.
- Chapter 3: Experimental pedagogy.

Chapter 1.
RATIONALE AND PRACTICE FUNDAMENTAL OF ORGANIZING CLIMATE CHANGE EDUCATION ACTIVITIES IN TEACHING GEOGRAPHY GRADE 12 WITH THE HELP OF INFORMATION COMUNICATION TECHNOLOGY

1.1. Climate change education in high schools

1.1.1. The challenge of climate change

In recent years, people have witnessed the vagaries of many natural phenomena. One of the most visible example is the striking change of weather and climate which affects our life everyday. CC is considered one of the greatest challenges of humanity in the twenty-first century in general and to education in particular. In this thesis, CC is studied on the following aspects : 1) Concept; 2) Expression; 3) Cause; 4) Impact and 5) Solutions to handle with CC.

1.1.2. Climate change education in Geography teaching

1.1.2.1. Concept CCE

CCE is understood as the using the pedagogical approach to orientate actions and enhance knowledge, skills, values and attitudes of young generation for the reduction and effective response to CC towards sustainable development goals (ref. [73]).

1.1.2.2. Role of CCE in Geography teaching

The important role of CCE in geography teaching in high schools is reflected in the role of general education to the challenge of CC and in the position and role of geography in CCE. As an independent subject in high schools, Geography has an important position in environmental education in general and in CCE in particular.

1.1.2.3. The goal of CCE in Geography teaching

The important goal of CCE in high schools is to help students: be interested in climate protection issues, understand causes and consequences of CC; access to protective measures responding to global CC especially at the local level; develop the competence to act; change behavior and attitudes; and enhance the creative values.

1.1.2.4. Contents of CCE in Geography teaching

To achieve these preceding goals, CCE in Geography teaching has to clarify the following basic contents: firstly, the status and trends of CC in the world and Vietnam; Second, causes and consequences of CC in the world and Vietnam; finally, impacts and solutions to response to CC.

1.1.2.5. Methods for conducting CCE in Geography teaching

Organizations CCE in geography teaching in high schools is essentially the organizing the CCE integrated teaching in geography teaching. Organizing integrated teaching on CCE in teaching geography is meant to be “a teaching approach on CC requires the learners to apply the knowledge and skills to solve a complex situation with problems of CC to develop personal capabilities and qualities”. The process of integrated teaching on CCE in Geography lessons is carried out in two forms: In the classroom and through extracurricular activities.

1.2. Organizing CCE in Geography teaching in the view of modern teaching

1.2.1. Organizing CCE with learner-centered perspective

Thoroughly understand this perspective, the designing and organizing CCE need to meet the following orientations and requirements: 1) The designing and organizing

CCE activities are initiated from the needs, motivations, characteristics, capacities, the conditions of learners and focus to learners; 2) Design and organize interactive and cooperation activities in CCE; 3) Design of activities and tools to perform the segmentation in CCE; 4) Design and organize CCE activities in different spaces and 5) Design tools for students self-assessment.

1.2.2. Organizing CCE with the standpoint of education for sustainable development

CCE is a part of ESD, so the organizing CCE activities should be carried out according to basic approaches of ESD including: 1) CCE should be organized as an open learning process; 2) CCE need to be held in orientations to strengthen the feasibility and diversify the forms of learning and 3) CCE should be organized in a systematic manner with connections.

1.2.3. Organizing CCE with teaching technology perspective

Teaching technology perspective (TTP) emphasizes the process of teaching process to create the best products under specific conditions. This perspective is applied in designing and organizing CCE activities with the help of ICT based on the relationship between three elements: Input (Base and conditions; Lesson objectives), process (process of designing and organizing lessons) and output (value orientation, action of students on CC).

1.3. Organizing CCE in geography teaching with the help of ICT

1.3.1. The role of ICT in organizing CCE

According to the Encyclopedia of Vietnam: "Information and communication technology (ICT) is a collection of scientific methods, the means and tools of modern technology, mostly computer engineering and telecommunications to exploit and effectively use abundant and potential information resources in all areas of humanity". (ref. [76]).

ICT plays an important role in teaching geography in general and in CCE in particular on three aspects: 1) In the innovation of CCE teaching methods embodied in: innovating learning method of students; innovating teaching methods of teachers and strengthening interactions of students in the learning process; 2) innovating means and tools in CCE; 3) innovating evaluation processes.

1.3.2. Organizing CCE with blended learning approach

1.3.2.1. The necessity of organizing CCE with blended learning approach

Concept: "Blended learning is a model of organizing teaching and learning based on the use ICT to combine the advantages of traditional teaching with online teaching". (ref. [35]).

Features: blended learning teaching model helps students take advantages of many abundant resources and materials on CC in digitized formats such as video, pictures, maps and other materials. CC is an urgent problem around the globe, in every country, every region. Therefore, accessing rich resources may help students accurately update and immediatly share CC issues through geography lessons. In addition, the interaction between students-students-teachers and community becomes more active.

1.3.2.2. Requirements of organizing CCE with blended learning approach

Elements of the two main components in organizing CCE with blended learning approach include: students materials; interaction between teachers and students; collaboration of students; personal activities of students; teaching and learning activities; and evaluation. These elements is combined in different degrees accordingly

to conditions such as the level of integrating CCE contents in lessons, qualifications of teachers and students, and the facilities of the university.

The combination of these elements generates 3 different levels of organizing CCE with blended learning approach: **Level I**: teachers give lessons in computer and lecture in class as well as offer materials on CC to students. **Level II**: teachers set up the tasks for students, guide students exploit materials and finish product. **Level III:** teachers conduct lessons and CCE activities inside and outside the classroom through multimedia lectures, in parallel to guide students to settle complex tasks on CC.

1.3.3. The basic forms of CCE activities in teaching Geography with the help of ICT

CCE activities are essentially the lessons integrated CC contents in teaching geography. In this thesis, the term "CCE activities" is used for characteristics of the operations - CCE lessons. The dimensions of the organizing of the lessons integrated CC contents is not only the classroom space but also outside community with the support of different teaching methods and tools. The use ICT to organize CCE lessons in teaching Geography allows us give three main activities, namely:

1.*3.3.1. Organizing electronic lessons on CCE with modular approach*

Previously, the concept of electronic lectures was popularly used. However, recently, the concept of electronic lessons is more and more popular, since electronic lectures are considered as tools of teachers (i.e. teachers conduct lessons designed in teacher-centered view) while electronic lessons are designed with learner-centered perspective.

Electronic lessons (EL) on CCE with modular approach are essentially "lessons which are built and designed on a computer with contents of Geography (Biology, ...). Lessons with the help of tools or computer softwares (ex.PowerPoint), with interactions and managements to convey a relatively independent content unit in CCE. In each activity, modules of lessons are structured in a particular way, contains elements: objectives, contents, tools, teaching methods and evaluation processes. These elements are tightly connected as a complete body".

Organizing EL on CCE with modular approach is essentially the organizing CCE activities in classroom lessons with the help of PowerPoint with modular approach. This kind of lesson has basic characteristics: The completeness; integrability; and independence. EL on CCE with modular approach facilitates the personalization of learning, distributed learning, flexible and complete assessments with instructions in lessons.

1.3.3.2. Organizing CCE activities with the help of Webquest

Webquest is a kind of research-oriented teaching, in which learners mostly work with the information from the Internet (Nguyen Van Bien, 2014) [ref. 17], [68]).

A website built for learning is also called a Webquest. A structured Webquest usually consists of 5 components: 1) Introduction; 2) Identifying tasks; 3) Process; 4) Presentation of results and evaluation and 5) Conclusion.

The organizing CCE activities with the help of Webquest has the following characteristics:

- Subject is often linked to practical and complex situations on CC.
- Orientate student's interests, activate student's motivations.
- Develop the self-reliance of learners.
- The learning process is an active and constructive process.
- The learning process is a social process with interactions.

- Learning process is a research-orientated process.

1.3.3.3. Organizing projects on CCE with the help of ICT

Organizing project-method teaching (PM) on CC with the help of ICT is a form of teaching or a complex teaching method in which with the guidance of teachers, students acquire knowledge and skills by settling a case study on CC. This case study is usually integrated in curriculum and combines theory with practice to create specific products by using ICT tools.

Project-method on CC with the help of ICT in geography teaching has important implications. More precisely,

- Project-method has practical orientation [20], [47] with the selected theme comes from the real problems of CC.

- Through project-method, learners are provided with opportunities to develop thinking skills such as detecting and solving problems, analyzing and planning and making decision.

- In the implementation of the project, students must be active and and involve with all stages and contents from the selection of topics to evaluation of the product. This method activates motivations and interests of learners [20], [47].

- The project-method develops competencies and team work skills of students as well as enhance the capacity of use ICT competence of both teachers and students.

1.4. Integrating CCE in the program of Geography grade 12

1.4.1. The structure and content of the program of Geography grade 12

Geography grade 12 - Geography of Vietnam includes 2 main components: physical geography of Vietnam and Economic-social Geography of Vietnam. According to the program distributed by the Ministry of Education and Training, the program of Geography grade 12 contains 43 lessons including 33 theorical lessons and and 10 pratical lessons. Distribution through knowledge units is as follows (Table 1):

Table 1. The structure of Geography program grade 12 [47]

No	Contents	Hour
1	Vietnam on the path of innovation and integration	1
2	Physical Geography	14
3	Population geography	4
4	Economic geography	24
5	Local geography	2
6	Review and test	8

1.4.2. The ability to integrate CCE in the program of Geography grade 12

The program of Geography grade 12 is the most suitable “address” for designing and organizing CCE lessons in comparition with other grades as well as with other subjects. CCE integrated in the teaching of Geography grade 12 was conducted in three different levels: (1) The total level; (2) The partial level and (3) The connected level.

In addition to the content of the formal lessons presented in the program, CCE contents can be implemented through extracurricular lessons.

1.5. Situation of organizing CCE with the support of ICT in teaching Geography grade 12

To conduct CCE systematically and effectively, we have to rely on the legal basis of CCE and the strategies responding to CC in Vietnam expressed through the resolutions of the Party Central Committee, Goverment and materials of the Ministry of

Training and Education on CCE. From a legal base system has issued in recent years, we can see that the issue of CC and CCE in Vietnam has been interested and developed. This is an important practical basis to systematically proceed CCE at all education levels.

The author has conducted investigations and surveys to find out the real situation of the organizing CCE activities in teaching Geography grade 12 with the help of ICT through two ways: the survey and class observation, direct observation (Annex 1, 2). The respondents are geography teachers of 19 high schools in Hai Phong (40 teachers) and students grade 12 from 4 high schools (545 students) (see Appendix 3 for the list of high schools surveyed). Here are the results of the research process on pratical basis of the thesis:

- *On the demand and ability to organize CCE activities with the help of teachers*: All teachers (40/40) are concerned about the issue of CC and have awareness of integrating this content into coursework in high school, especially in Geography. All teachers have implemented the content of CC among whom 60% of teachers do it regularly.The teaching methods integrated CCE which have been implemented are diversify and include methods of presentations, discussions, problem solving, project teaching, club, team communication on CC... However, the use ICT tools is still limited, basically is used PowerPoint presentations, other tools are rarely used.

- *Awareness, needs and abilities of students to carry out the CCE activities* with the help of ICT: Perception of students in 12 high school in Hai Phong on CC is quite good: 85.5% of students are concerned with this issue; 88.8% of students said that they often integrate content learning in the CCE Geography subjects. The majority of students have expressed interest and desire to regularly learn the CCE lessons using ICT.

- *On conditions of teaching CCE with the help of ICT*: 19 high schools in Hai Phong of the survey are equipped computer classrooms with Internet connection to effectively exploit information and organize CCE activities with the help of ICT in teaching geography.

In summary, by practical research we show that high schools in Vietnam in general and Hai Phong in particular is capable of organizing the CCE activities with the help of ICT. However, most of basic elements and conditions for the organization of CCE activities with the help of ICT in high schools in our country have differences. So we need to study, design and organize CCE activities forms of teaching in different ways based on the situation of each school but ensuring the general requirements of the design and organizations.

Chapter 2.
DESIGNING AND ORGANIZING CLIMATE CHANGE EDUCATION ACTIVITIES WITH THE HELP OF INFORMATION AND COMMUNICATION TECHNOLOGY IN TEACHING GEOGRAPHY GRADE 12

2.1. Purposes and principles of designing and organizing CCE with the help of ICT in teaching Geography grade 12

2.1.1. Purposes

- Design and organize some basic activities of CCE with the help of ICT. In teaching Geography grade 12, we consider three basic forms of activities as follows. Organizing EL with modular approach on CCE in classroom with the help of PowerPoint; Organizing CCE lessons in class with the aid of Webquest and Organizing Project method on CC with ICT applications combined with outdoor activities.

- Through designing CCE activities with the help of ICT, we identify manners, methods and processes to organize the forms of CCE activities. Hence, our work contributes to the innovation and modernization of Geography teaching methods.

2.1.2. Principles

Contents of CCE need to be clearly and logically integrated in lessons.

- Clearly identify the objectives, inputs, products and processes. In other words, teaching must be standardized and processed in a coherent way.

- Students must be the center of the process of teaching.

- CCE lessons need to be enhanced the use of modern equipment with various forms of organization in order to combine lessons with real life.

2.2. Designing and organizing electric lessons on CCE with modular approach in teaching Geography grade 12

2.2.1. The neccesity of designing EL on CCE with modular approach in teaching Geography grade 12

EL on CC with the help of PowerPoint designed in modular approach are considered as an important tool in organizing CCE activities in classrom. Different from linear electronic lectures, EL with the help of PowerPoint with modular approach is not only the tool to serve the learning of each student (the modular approach allows each individual access the objectives, contents, methods and assessment of the lessons by his/her unique way), but also the tool supporting teacher's lectures.

EL with the help of PowerPoint with modular approach have especially flexible structure, each module contains all the elements of the teaching process. In teaching Geography grade 12, with modular approach we choose appropriate lessons to totally integrate CCE contents.

2.2.2. Principles for designing EL on CCE with module approach

When designing this kind of lessons, we need to comply with certain guidelines combining principles of EL and principles of constructing learning contents with modular. These principles are:

- Ensure the scientificity (guarantee lesson objectives; the accuracy of contents; the independence of learning contents).

- Ensure the modernity (the visual expression and aesthetics of lessons).

- Ensure the pedagogy (suitability with students' psychology, aesthetic in the slide,

the skillful combination between teaching principles and teaching methods).

2.2.3. Process of designing EL on CCE with modular approach in teaching Geography grade 12

2.2.3.1. General process

In viewpoint of education technology and the model GIPO, we devide the design and organization of EL on CC in teaching geography into four stages as follows (Figure 1).

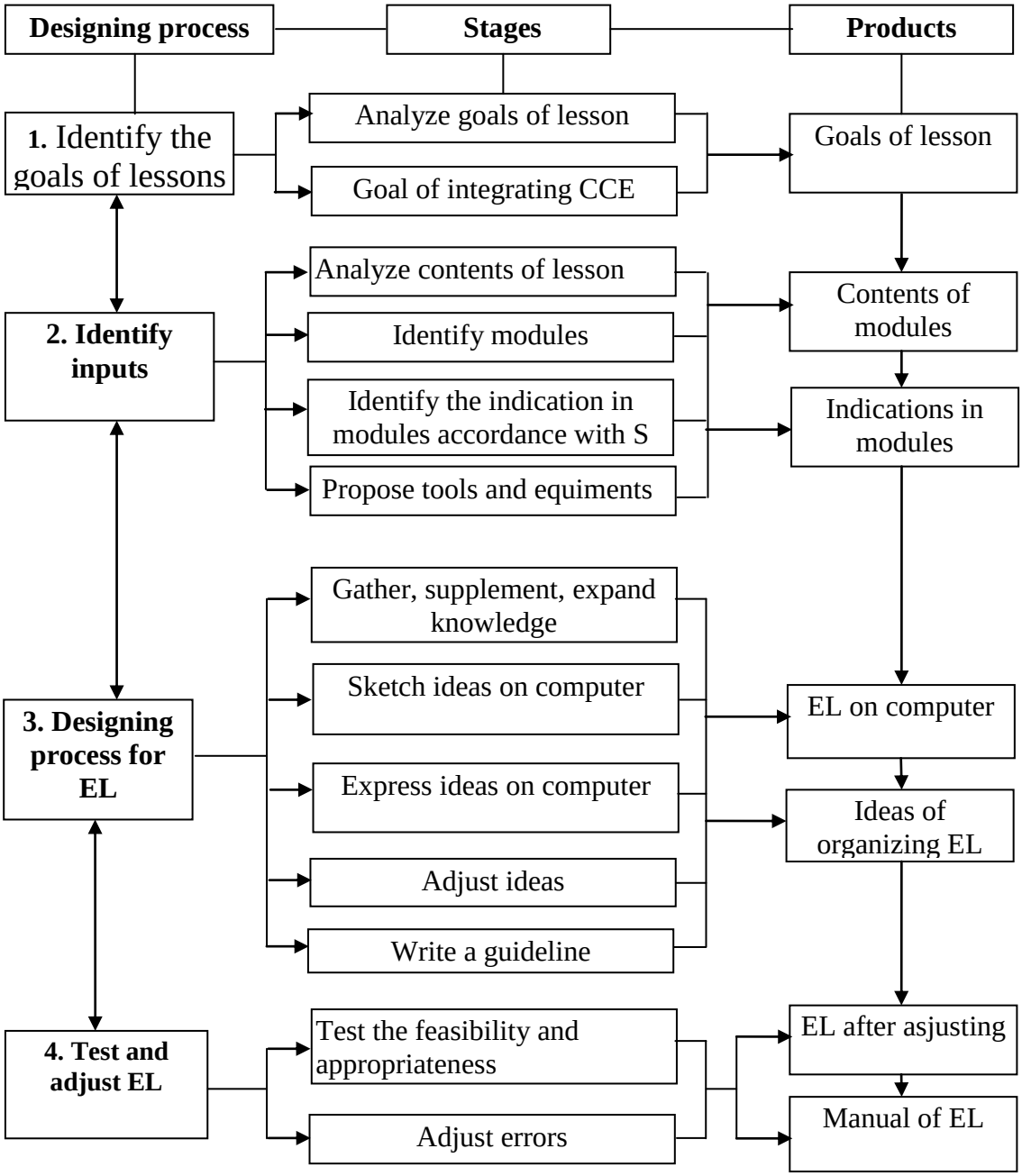


Figure 1. Designing process of EL on CCE with modular approach

- Stage 1: Identify the target of lessons.
- Stage 2: Identify the input of the process of designing EL.
- Stage 3: Design EL using PowerPoint with modular approach.
- Stage 4: Test the feasibility and effectiveness.

Below, we describe the four steps of designing EL on CCE with modular approach using PowerPoint tools.

2.2.2.2. Stage 1. Define objectives of lessons

- Analysis the objectives of lesson.
- Identify the targets and addresses of CCE integrated in lessons.

2.2.2.3. Stage 2. Determine the input of the process of designing EL

- Analysis the content of lessons.
- Identify learning modules.
- Determine indications for each student in each module.
- Measure the facilities, teaching equipments needed.

2.2.2.4. Stage 3. Process of designing EL with modular approach

After identifying the goals and inputs for the designing process of EL on CC, teachers use PowerPoint software to perform this design as follows.

- Step 1. Collect, supplement and expand knowledge.
- Step 2: Sketch ideas for Els on computer.
- Step 3: Express the ideas on the computer.
- Step 4: Adjust the ideas.
- Step 5: Write a guideline.

2.2.2.5. Stage 4. Test and adjust EL

The purpose of this stage is to test and adjust the modules on CCE accordingly to the trials results.

Overall, the process of compiling a specific module content should be performed in a sequential process. The basic rule is to access, develop the modular approach theory. Hence, teachers need to master the modular structure, the relationship between the components of the structure.

2.2.3. Designing and organizing EL with modular approach for the Lesson 8 "Nature is deeply influenced by the sea"

2.2.3.1. Define the goals of lesson

a) Analysis of lesson objectives

After this lesson, students have the ability to:

- Know the general characteristics of East Sea (recognize the depth contour, continental ranges, ocean currents, coastal terrain, relations between the coastal and inland terrains).
- Establish and demonstrate the impact of East Sea toward Vietnam Nature (indentify characteristics of climate, terrain, coast, coastal ecosystems, coatal resources and natural disasters waters, and by searching, processing information and analyzing diagrams, graphs, tables, figures to see the profound impact of the sea, especially the effects of natural disasters on our country).
- Relate to the local situation about the impact of CC on coastal terrain, creatures,..

b) Identify the address of CCE integrated in the lesson

- The level of integration: partial
- Address: Section 2 (titled The influence of the East Sea to the nature of Vietnam, especially the part d. Disaster).

2.2.3.2. Identify the input of the designing process of electronic lessons

a) Stage 1. Analyzing the contents of lesson

The lesson ¨Nature is deeply influenced by the¨ has duration 1 unit. The contents include two main sections as follows.

Section 1. Overview of East Sea

Section 2. The influence of East Sea to the nature of Vietnam

b) Stage 2. Identify modules of lesson

Corresponding 2 sections, we build two modules in EL: Section 1 - Module 1: Overview of the East Sea and Section 2 - Module 2: The Impact of the East Sea to the nature of Vietnam

c) Stage 3: Determine the indications in each module for each student

Module 1. Overview of East Sea, we have the following indications: Map of East Sea; 2 key questions; Sectional diagram of Vietnam Sea; the area of Vietnam in East Sea, Images of Vietnam maritime sovereignty; Knowledge of this section, technical indications for presentation.

Module 2: The Impact of East Sea to the nature of Vietnam has the following indications: Poll on the impact of East Sea to the natural resources of Vietnam.

d) Propose necessary conditions and teaching equipments

Teaching facilities; Computer, projector and EL.

2.2.3.3. Design EL with modular approach using PowerPoint

This stage include 5 basic steps as follows.

a) Step 1. Collect, supplement, expand knowledge

b) Step 2. Sketch ideas on computer

- Ideas of design
- Write scenaries for EL and construct indications
- Structure of EL ¨Nature is deeply influenced by the sea¨ includes three main parts: Content 1: Overview of East Sea; Content 2: Influence of East Sea to the nature of Vietnam; Content 3: Hints and indications to perform EL.

A. Introduction

- Teachers ask students motivative questions.
- Teachers orientate the lesson.

B. Main part

1. Overview on East Sea

-Teachers give questions, students discuss and answer then conclude the knowledge about general characteristics of East Sea (two questions).

- Indications: Sectional diagram of Vietnam Sea; the area of Vietnam in East Sea, Images of Vietnam maritime sovereignty;

2. The influence of East Sea to the nature of Vietnam

Teachers divide students into 4 groups accordingly to 4 sections in the textbook; set up questions for each group. Students discuss and present resuts of their group. Group 1: Climate; Group 2: Coastal terrain and ecosystem; Group 3: Coastal natural resources; Group 4: Diasater.

C. Conclusion

Teachers summarize the lesson.

c) Stage 3. Express ideas on computer

The design has 48 slides including 39 main slides about the content of lesson; polls; questions; image and material about East Sea and the influence of East Sea as well as CC to our country.

d) Stage 4. Adjust ideas

Adjust the contents such that they form a complete module. Then, write them to a CD.

e) Stage 5. Write an indication

- Technical indications
- Method indications
- Indications for organizing EL with modular approach.

2.2.3.4. Test and adjust EL

Final product in designing EL with modular approach includes: EL and indications to perform EL.

2.3. Designing and organizing on CCE lessons with the support of Webquest in teaching Geography grade 12

2.3.1. The purpose of organizing EL on CC with the support of Webquest in teaching Geography grade 12

Webquest is regarded as a new teaching tool to help students explore, master the knowledge and skills by creating specific products. Compared with EL with the help of PowerPoint with modular structure, the organizing classroom lessons according to Webquest has more advantages.

This kind of lesson is suitable for good students.

Organizing lessons with the support of Webquest is open.

Organizing CCE lessons with the support of Webquest helps to diversify the forms of learning to attract students, and helps to classify students.

2.3.2. Process of designing a CCE lesson accordingly to Webquest

Started from the structure of 1 Webquest as shown in Chapter I, we provide a process to design and organize Webquest learning including 5 stages:

- Stage 1: Introduce lessons (select and introduce topics/lessons).
- Stage 2: Identify tasks and make a plan.

Tasks must be meaningful and suitable with with the level of students. Problems or tasks specify topics of CC which have been introduced. Tasks are central ingredient of the Webquest. The tasks orientate the activities of students; avoid to give too many the review tasks. Thus, started from a general problem, please state separate tasks succinctly and clearly. These tasks need to be rich with various requirements and tools. Normally, topics are divided into smaller sub-topics in order to give tasks for each groups. The groups could also solve the same problem from different approaches.

Teachers offers table of evaluation criteria according to the Webquest, table for assessing the level of participation of members in each group.

- Stage 3: Processing.

Processing Webquest includes some main stages as follows: gathering information and discussing in groups to process information.

- Stage 4: Presenting the results and evaluating.

Present results and introduce Webquest products to the class: Each group has 3-5 minutes to present reasons to choose a subject, a video to introduce the group and its activities during the construction of Webquest. The groups present their products in 15-20 minutes (Power Point presentation, mind map, specific products, videos,...). Within 10 minutes, the groups answer the questions raised by other groups and teachers.

Assess learning outcomes: Students comment on Webquest products of their group and other groups. Students self-evaluate the Webquest performed by his group and other groups.

- Stage 5: Conclusion.

Students draw conclusions about their achievements after completing this lesson. If necessary, teachers give questions, exercises to enhance and expand students knowlege.

2.3.3. Design and organize Webquest teaching the lesson 15 "Environmental protection and disaster prevention" in teaching Geography grade 12

2.3.3.1. The reason for choosing topics

- To develop sustainably and response to the global CC, the use of natural rescources must be always parallel with the protection. Currently, the problem of using and protecting of natural resources, and preventing disaster has gained much interest. As a country with diverse natural resources, but a lot of natural disasters, how does Vietnam use and protect natural resources and environment?

- Contents of lesson is shown in the following diagram:

2.3.3.2. Teaching objectives

After the lesson organized in Webquest form: ¨Environmental protection and disaster prevention¨, students have ability to:

- Analyze some negative impacts due to the destruction of nature to Vietnam, as well as the strategies and policies on natural resources and environment of Vietnam.

- Apply some methods of natural protection and disaster prevention in local, know how to behave when the disaster happening and how to cope with CC. Be awareness of environmental protection and economical use of resources. Actively involved in the propagation and education to raise awareness of environmental protection for people living in their localities.

- Analyze the data on the fluctuation of forest resources, biodiversity and the land in our country; master the skills for using ICT such as Word, PowerPoint, images, sound, video clips...to make Webquest products; develop some soft skills: responsibility, adaptability...; have a positive attitude with independence, creativity, team collaboration; initially access to scientific research methods.

2.3.3.3. Equipments and materials

a) Preparation of teachers

b) Preparation of students

2.3.3.4. Organize teaching activities

Contents 1. Introduction to Webquest teaching

Activities 1. Learn about Webquest teaching and technical support

Teachers introduce to Webquest teaching:

- What is the Webquest teaching?
- What are the differences between Webquest learning and previous learning activities?
- How does Webquest learning look like ?

Content 2: Make a Webquest on the topic "Environmental protection and disaster prevention"

Step 1: Identify the tasks and plans

Students are divided into 4 groups to perform the tasks in the Webquest "Environmental protection and disaster prevention" as follows:

Group 1: Present the storms and its prevention in our country. Relate to your local.

Group 2: Present the flooding and other natural disasters and the manners to prevent floodings, flash floods in our country. Relate to your local.

Group 3: Present flash floods and droughts, and drought prevention in our country. Relate to your local.

Group 4: Strategies for environmental protection and disaster prevention in our country. Relate to your local.

- Each group nominates a leader and a secretary.
- Teachers give orientation questions and introduce some websites.
- The groups plan to perform Webquest: identify goals, assign tasks, manners to implement, deadline, ... and do regualr reports.
- Teachers offer the table of evaluation criteria accordingly to outcomes, polls, and attitude to participate in activities of the group members.

Step 2: Make a Webquest (1-3 weeks)

- The groups gather informations.
- Discuss with teachers about difficulties in the implementation process by phone, email or in person.
- Implement experience activities (a half-day) in the Astronomy meteorological station to learn about the disaster happened in Hai Phong.
- Students make photo, film and interview their the family and staff at the meteorological station Astronomy on disasters that occurred in Hai Phong.

Step 3: Introduce the Webquest to the class

- Each group has 3-5 minutes to present reasons to choose its subject, a video to introduce the group and the group's activities.
- Each group report its product in 10 minutes (Power Point presentation, mind map, specific products, videos, ...)
- In 10 minutes, each group answer questions raised by other groups and teachers.

Step 4: Evaluate outcomes

- Students comment on Webquest product of their group and other groups.
- Students evaluate the implementation process of their group and other groups through a review table.
- Teachers assess students through a table of evaluation criterias on the result and level of participation of the members in the group.
- Teachers summarize the lesson and make comments, evaluate and score each group and each individual based on the transcripts, the evaluation form.

The whole class make a common file based on the entire record of Webquest for preparing the next one, including:

- The products of Webquest.
- The evaluation form of groups, individual assessments.

2.4. Designing and organizing CCE projects with the support of ICT in teaching Geography grade 12

2.4.1. The purpose of organizing the CCE project with the support of ICT

- Change in perception and behavior - attitude of students to the local CC issues.
- Expand learning space, combine inside classroom lessons with outside activities.
- Enhance the competence of students, firstly the ICT competence to learn and reflect the local CC issues.

2.4.2. The process to apply CCE project with the support of ICT

2.4.2.1. The process

General process to design and organize the project is built in 4 stages, including:

Stage 1. Preparing the project implementation

Stage 2. Planning the project

Stage 3. Implementation the Project

Stage 4. Presentation and evaluation products.

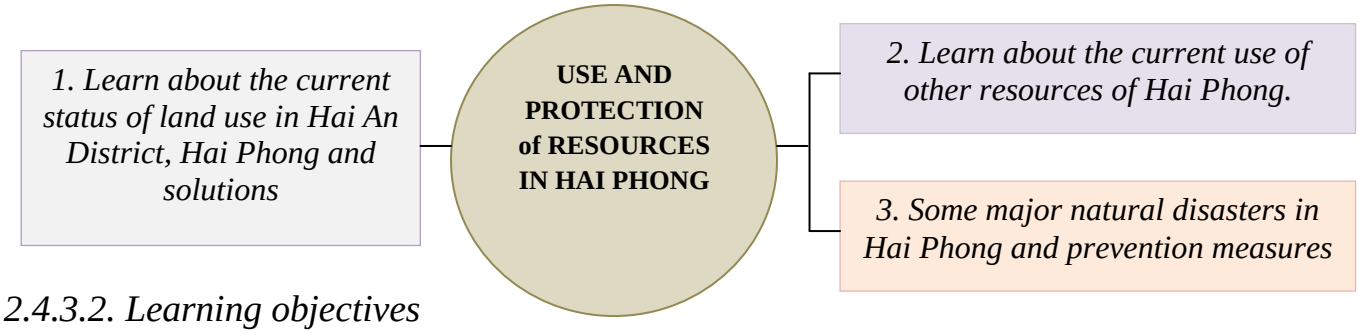
2.4.2.2. Process of designing and organizing stages of the project

2.4.3. Organizing of the project "Learn the use and protection of natural resources in Hai Phong" with the support of ICT

2.4.3.1. The reasons for choosing project

- Name of the project: Learn the use and protection of natural resources in Hai Phong
- Introduction the project:

Contents of the project wiill be demonstrated by the following diagram:



2.4.3.2. Learning objectives

By the learning the project "The use and protection of resources in Hai Phong" with the help of ICT, students have the ability:

- Know the degradation of forest resources, land, biodiversity and the cause of the decline, resource depletion and environmental pollution of Hai Phong.
- Present and evaluate some of the negative impacts caused by natural phenomena which make damages of life and property in Hai Phong.
- Analyze and use the data table on fluctuations of climate in Hai Phong. Know how to behave when the disaster happen and cope with CC. Develop problem-solving competence, cooperation, communication and the ability to use information technology, research in the field, using maps, charts, pictures, video clips.
- Be aware of the environmental protection, economical use of resources; Actively participate in activities contributing to solving problems and environmental resources by schools and local organizations; Actively involved in the propagation and education to raise awareness of environmental protection for people living in their localities.

2.4.2.3. Preparing the project implementation

- Identify the object of the project.
- Determine the conditions of teaching and preparation of teachers, students.

a) Preparation of teachers

- Some topics to suggest for students selected to carry out the project.
- Data sources to introduce students to conduct project.
- Contact local authorities to prepare students to conduct geographical surveys fact-investigation service of the project.
- Guide the organization planning the project.

b) Preparation of students

- *Construction project ideas*: For sustainable development and global response to CC, the use of natural resources has to go with the protection. After completing Lesson 15 "Environmental protection and disaster prevention", students need practice activities to understand and cope with natural disasters in their locality. Then they are truely involved with the protection of natural resources and the environment.

Hai Phong is a coastal city, facing profound influences and impacts of natural conditions, especially by the sea. Therefore, the use and protection of nature in Hai Phong has important implications.

- *Construction of guiding questions:*
- *General questions*: Why does the use and protection of natural resources of Hai Phong have an important role?
- *Lesson questions*:

+ What are the characteristics of resources in Hai Phong?
+ What are the kind disasters that often occur in Hai Phong?
+ What are the solutions of your locality to limit the damage's influences?

- *Help students identify goals and discuss project ideas:* Teacher and students construct project ideas together "Let's act as environmental researchers of Hai Phong, learn about the current state of using natural resources in Hai Phong and some major disasters, propose some prevention measures"?
- *Plan and develop evaluation criteria*:

2.4.3.4. Stage "Planning the project"

Step 1: Define the tasks need to be done in the implementation of project:

1. Learn about the current status of the use of land in Hai An District, and prevention measures.
2. Learn about other resources of Hai Phong (organisms, tourism, minerals, ...)
3. Learn some major disasters in Hai Phong and prevention measures.

- Techer orientate the students in implemention project with two forms of the following products:

1. Products 1: PowerPoint Presentation, Exercise.
2. Products 2: PowerPoint Presentation, Exercise.
3. Products 3: Poster A0

Step 2: Assess the needs and prior knowledge of learners: Before implementing the project, teacher investigate the needs and abilities of students.

Based on results of questionnaires, the ability and qualifications, teachers divide students into groups according to the different product orientation.

Step 3: Group and make plan for the project:

- Teacher poll the interests of students; Students fill in the second sheet (your ability). Teacher announce the results and make groups based on the interests.

- Groups discuss and elect leaders, secretaries.

Step 4: Assign tasks to each group, guide students to make a plan.

Group 1: Learn about the status of the use of land in Hai An District, and prevention measures.

Group 2: Learn about other resources of Hai Phong through books, the Internet and relatives.

Group 3: Learn about major natural disasters in Hai Phong and prevention measures.

The duration of project is of 3 weeks; in the first 2 weeks, students study in field works, in the final week, students present their products to classmates.

Step 5: Teachers give students oriented exercises and suggestions for references of tasks.

Step 6: Sign Learning contracts

Step 7: The groups make their plans.

Teachers guide students to discuss on topics and make a plan of implementation.

Group 1: Learn about the current status of the use of land in Hai Phong by field work methods, gather data in the environment and natural resources department of Hai An District and Hai Dang flowers village.

Group 2: Learn about other resources of Hai Phong through books, the Internet, through relatives ....

Group 3: Learn some disasters and prevention measures in Hai Phong by field work methods, collect the information in weather in Kien An Astronomy Station and learn through books at the school library.

2.4.3.5. The stage of "Implementation the Project"

- Students work according to the plan.
- Gather information: Students work in field, collect information, maps, pictures, books, the Internet.
- Process the information and synthesize research results.
- Write a report on the results of research and prepare presentations to the class.
- The group finish products: Distriubute results to classmates (by email, coppy or printed). Students read results and prepare questions.

2.4.3.6. The stage of "Presentation and evaluation products"

Activity 1: Groups introduce and promote products

Group 1*: Know the degradation of land resources, some causes of the decline and depletion of land resources. Give some measures to protect soil resources in Hai Phong.*

Group 2*: Know the current use and protection of some other resources in Hai Phong*

Group 3*: Present some negative impacts caused by natural phenomena to life and property in Hai Phong*

Activity 2: Applying *(Duration 10 ')*

Teacher give tasks for students "Based on your knowledge you studied, please discuss together to make a common message such as: a text, slogans, pictures, tapes

ozone, posters, diagrams ... about the use and protection of nature"

Activity 3: Develop *(Duration 3')*

Representatives of groups put the entire outputs on the school's website.

Activity 4: Check and review

Chapter 3. EXPERIMENTAL PEDAGOGY

3.1. Purpose and experimental Tasks

3.1.1. The purpose of the experiment

Demonstrating the effectiveness of the organizing CCE activities with the help of ICT in teaching Geography grade 12 compare with organizing tranditional CCE activities.

Comparing these results with the initial hypothesis to be adjusted to suit the objectives and the process of the designing and the organization CCE activities with the support of ICT to fullfill the conditions of teaching today.

3.1.2. Experimental Tasks

- Plan to organize the experiment;
- Organize the experiment;
- Evaluate the results of the experiment.

3.2. Organizing experiment principles

- Ensure the scientificity;
- Ensure objectivity;
- Ensure the practicality.

3.3. Participants, location and timeline for the experiment

- *Participants in the experiment*: Students grade 12 in high schools. Teachers: Select teachers directly involved in the teaching Geography grade 12 with current program. Goegraphy teachers must have the experience and skills to use ICT tools in teaching to teach the experiment and ensure exactly comment.
- Location: 03 High schools in Hai Phong, such as: Thai Phien High school; Le Quy Don High school and Hai An High school.
- Timeline: The school year 2011-2012; 2012-2014; 2014-2015; 2015-2016.

3.4. Contents for the experiment

Content 1. The experiment proves the effectiveness of application EL for CCE with modular approach compare with electric lectures in teaching Geography grade 12.

Content 2. The experiment shows that positive effects of organizational teaching innovation on CCE with WebQuest in teaching Geography grade 12.

Content 3. The experiment demonstrates the effects and effectivieness of the Project method on CC with the support of ICT in teaching Geography grade 12.

3.5. Methods of the experiment

3.5.1. Experimental Procedures

- Step 1. Design Samples of the experiments.
- Step 2. Conduct the experiments.
- Step 3. Evaluate the results to answer the hypothesis.

3.5.2. Methods of evaluating the results of the experiment

We asses Ex. Classes and Com. Classes, Students and Student groups on two aspects: quantitative assessment and qualitative assessment.

3.5.2.1. Evaluating the quantitative results

3.5.2.2. Evaluating the quatitative results

3.6. Organizing experiment

3.6.1. Experiment 1

- *The purpose, hypothesis, participants, contents and methods of the experiment:* The purpose of the experiment 1 proves if used EL on CCE according modular approach would have higher efficiency than linear electronic lectures. Held in the experimental class 12D1 (Ex. Class) and 12D6 (Com. Class) in Thai Phien High school in the academic year 2015-2016. The purpose and content of the unit in 2 Classes are the same, but the methods and tools of teaching are varies.

- Results of the experiment*:*

a) Quantitative results

- The learning outcome of students after the lesson "Nature deeply influenced by the sea" of Ex. Class is higher Com. Class. (Table 3.1)

Table 2. The parameters tested the experimental 1

Class	Parameters			
	n	$\overline{X}$	**S**	**t**
Ex.	47	8.21	1.122	1.64
Com.	47	7.74	1.224	1,79

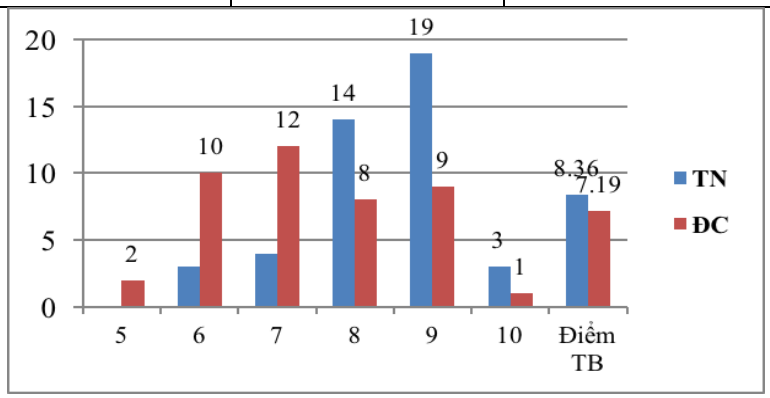


Figure 2. The frequency distribution of the experimental points of Ex. and Com. Class (Thai Phien High School).

- In terms of skills of students after the lesson in Ex. and Com. Class: In Ex. Class, students have many opportunities to practice academic skills with the use of ICT, such as information, pictures and videos search skills from the internet, analyze and process diverse information sources, implementation and product presentation skills on PowerPoint, teamwork skills (cooperation, division of work); especially self-learning skills through instruction in the lessons.

- In terms of the attitude of students after lessons and for CC: Students in Ex. Class are exctied when joining the activities of the unit. Students focus tracking, gives their opinions, and actively participate in the activities of the lesson. 87% students in Ex. Class support new methods teaching on CCE lessons.

b) Qualitative results

By analyzing the test results, we can see that that after the ability to argue and explain the problems of many students in the experiment class was better than the other claass.

- In the Com. Class, the organizing elictronic lectures with linear structure although has been promoting positive, proactive students, the students' skills in Com.

Class such as search, organize information, especially of students' self-learning ability of are not as good as students of Ex. Class.

- In the Ex. Class, the effectiveness of lesson is higher than. This is shown by the results of student test (level of mastery), the ability to actively participate in giving their opinions, building tracks, set listening attention, and attitude in new EL.

3.6.2. Experiment 2

- *The purpose, hypothesis, participants, contents and methods of the experiment:* The purpose of the experiment 2 proves the hypothesis that effective CCE lessons organized teaching with WebQuest will *generate innovation and positive effects of the renovation.* Held in the experimental class 12A3 (Ex. Class) and 12A1 (Com. Class) in Hai An High school in the academic year 2011-2012, 2015-2016. The purpose and content of the unit in 2 Classes are the same, but the methods of teaching are different (Ex. Class is applicated WebQuest, Com. Class is used traditional methods).

- Results of the experiment*:*

a) Quantitative results

- The results of students of Ex. Class (test) after the lesson "Environmental protection and disaster prevention" is higher than students' Com.Class. Knowledge about CC of students' Ex. Class: 85% students' Ex. Class are understood about time, places, process, causes and disaster prevention measures of CC in Viet Nam and Hai Phong.

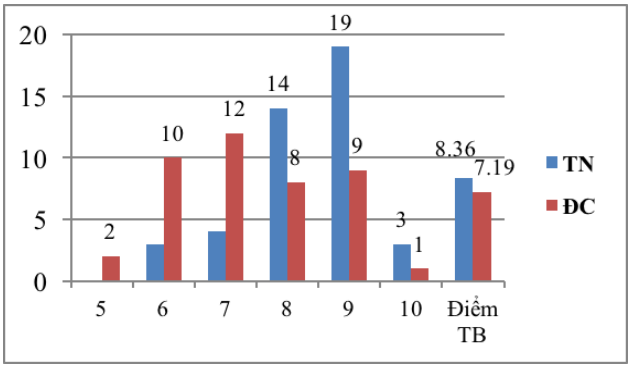


Figure 3. The frequency distribution of the experimental points of Ex. and Com. Class (Hai An High School)

Using t-test to consider and examine the effectiveness of pedagogical experiment, we have the following results:

Table 3. The parameters tested the experimental 2

Class	Parameters			
	n	$\overline{X}$	S	t
Ex.	42	8.35	0.9256	1.428
Com.	42	7.33	1.1825	1.825

By examining the data, further confirmed the results of students' of Ex. Class are outperformed compare with Com.Class's. On the Com.Class, learning outcome of students only are at the medium level. While in Ex. Class, spectral points of students are achieved in the good and excellent.

b) Qualitative results

- On the students' skills: Skills to participate in group activities of students' Ex. Class shown in the participation, listening, feedback, cooperation of members; time arrangements, conflict resolution and consensus among the groups. While of Com. Class, group skills is shown only when students complete the group handout. Teachers

focused attention to a number of students who led the presentation handout that few have time to pay attention to the other members of the group.

In the process of learning: Ex. Class: Skills for information gathering, selection, organization of information, linking information from the Internet and the ability to conclude the information, an overview of students are relatively well. In Com. Class, the organization of the teaching is done mainly in class with 1 hour, students acquire knowledge from teachers, therefore search, process and analyze information skills, mainly from the textbooks with little contact with the outside. Students have few conclusions generalize information.

Evaluating the reports: In reporting on the Webquest, teachers attention assessed in terms of contents, ideas, technical presentations and express Webquest.

Regarding the attitude of students: Students in Ex.Class are excited when solving the tasks of the lesson, they are actively perform tasks and activities of the groups. Almost students agreed to support lessons are organized according to the Webquest.

3.6.3. Experiment 3

- *The purpose, hypothesis, participants, contents and methods of the experiment:* The purpose of the experiment 3 proves the hypothesis that effective CCE lessons organized by project methods with the help of ICT will be higher than in organized CCE lessons under conventional methods. Held in the experimental class 12A5 (Ex. Class) and 12 A7 (Com. Class) in Le Quy Don High school in the academic year 2012-2013, 2013-2014, 2015-2016. The purpose and content of the unit in 2 Classes are the same, but the methods of teaching are different (Ex. Class is applicated project method, in Com. Class is used traditional methods).

- The results of the experiment:

a) Quantitative results

Learning outcomes of students in Ex. Class after the project "Study the use and nature protection in Hai Phong" are higher Com. Class's.

Table 4. The rate checkpoints in the experiment 3

School	Class	Total	Learning outcomes (%)			
			Excellent	Good	Medium	Weak
Le Quy Don High School	Ex.	43	51.1	41.9	7.0	0.0
	Com.	42	21.4	45.2	28.6	4.8

- Comparison of experimental results between Ex. Class and Com. Class by Table 4 shows that: learning outcomes between 2 classes differ. More precisely:

- Mean ($\overline{X}$) of Ex. Class (8.36) is significantly higher than the Comx. Class (7.19) to 1.2 points.

- Percentage of students scoring excellent and good (from 7 -10 points) of the Ex. Class is 93% higher the rate Excellent and Good students is 66.6%.

- Percentage of students scoring average and weak (less than 7 points) of the Ex. Class respectively is 7% and 0% lower than the Com. Class (28.6% and 4.8%).

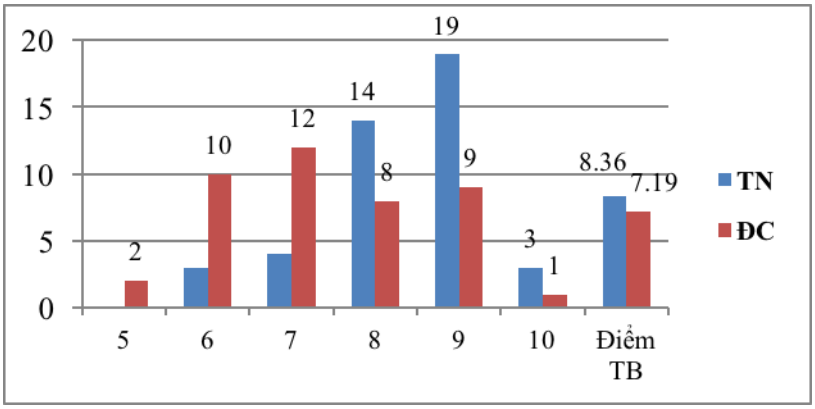


Figure 4. The frequency distribution of the experimental points of Ex. and Com. Class (Le Quy Don High School)

b) Qualitative results

By the analysis of student tests, products of the lessons, learning processes, skills and attitudes of students after lessons in both Ex. Class and Com. Class, we found difference between 2 classes:

Table 5. Grade point average for students skills after experiment

Skills	Ex. Class					Com. Class				
	Mean	1	2	3	4	**Mean**	1	2	3	4
Searching information from the internet	**3.12**	46.5	27.9	16.3	9.3	**2.62**	26.2	26.2	31.0	16.7
Processing information sources	**2.95**	37.2	32.6	18.6	11.6	**2.31**	14.3	26.2	35.7	23.8
Analyzing and synthesizing information	**2.91**	34.9	27.9	30.2	7.0	**2.14**	14.3	19.0	33.3	33.3
Charting in Excel	**3.00**	46.5	23.3	14.0	16.3	**2.62**	23.8	28.6	33.3	14.3
Writing reports	**2.70**	30.2	27.9	23.3	18.6	**2.05**	14.3	19.0	23.8	42.9
Designing ICT presentation	**2.88**	32.6	37.2	16.3	14.0	**2.21**	16.7	21.4	28.6	33.3
Collaborative work groups	**3.74**	79.1	16.3	4.7	0	**2.36**	16.7	28.6	28.6	26.2
Presentation	**2.72**	18.6	46.5	23.3	11.6	**1.83**	9.5	9.5	35.7	45.2
Studying under field	**3.77**	79.1	18.6	2.3	0	**1.62**	4.8	9.5	28.6	57.1

(Remark: 1:Excellent; 2: Good; 3: Medium; 4: Weak)

Compared to Com. Class, in Ex. Class, generally skills of students are better. In all these skills are achieved Ex. Class passable to good account for 70.5%. Group skills of Ex. Class (39 students), 90.6% of students assessed themselves reached a excellent and good level. While in Com. Class, students have few conditions to be group activities. Report presentation skills and presentation skills of Ex. Class are high outperformed by students of Com. Class because Com. Class is set the task must be to present and promote the group's products.

- The attitude of the students after the project: 88.9% students (Ex. Class) are very interesting when addressing the task of learning. Students are excitement, focus tracking, voice their opinions and actively participate in the activities of the unit. 95.6% students supports project-based learning about CCE. Through our experience in the field, students are confident in the product presentation, ask questions and comment on products of other groups. Students themselves give the message after the lesson. 80.5% students are positive commitments action for CC.

CONCLUSIONS AND RECOMMENDATIONS

1. Conclusions

By the process of theoretical research, practical research, organize and evaluate experimental results allow us to draw some important conclusions:

1. *Integrated CCE in teaching geography is an inevitable trend in geography education in secondary schools*. The key of CCE in teaching Geography in the schools is the organization CCE standpoint of modern teaching. This is the view taken students centered and ESD and Technology teaching viewpoints. The most effective path for organizations CCE in teaching geography is to integrate the use of ICT through Blended learning models.

2. *Renewing the designing and organizing on CCE according El with modular approach is one of the important solutions in organizing CCE lessons in classroom on students - centered perspective*. In view of technology teaching, the design process of El is starting from the identification of objectives, define the inputs of the teaching process, the process of compiling EL and finally tested and adjusted according EL according modular approach.

3. *Strengthening CCE with the help of Webquest is one of the most effective activities combining teaching on the classroom and learning through discovery documents on the Internet* in order to promote a positive, proactive students in the CCE. Process of designing and organizing a CCE lesson with the help of Webquest includes 5 steps in view of the technology teaching, which is: introduction; defined tasks; progress; present the results and evaluation; and conclusions.

4. *Need to promote organizational learning project on CC with the help of ICT to connect learning outside the classroom and community learning*. Process odf designing and organizing a project on CCE with the support of ICT have phases: preparation; planning project implementation; project implementation and evaluation, and presentation products.

5. *By the pedagogical experiments at 3 high schools in Hai Phong, the study confirm the high efficiency of the CCE lessons designed and organized in view of modern education* (ESD, students-centered and techonology teaching views) with the support of 3 technology tools is EL according modular approach, Webquest and CC projects with the support of ICT compare with the lesson designed and organized in view of g teacher-centered.

2. Limits of thesis

The thesis was carried out pedagogical experiment in some high schools in Hai Phong, however according to the author, if possible, should be conduct experimention in broader, more diverse to be experimental results more accurate and multidimensional.

The scope of the thesis stopped in the organization of CCE activities with the help of ICT in Geography program 12, if conditions can extend the program to track high school geography was the replacement change in perception, the attitude of students to the local CC issues as well as see the development of students' competencies (use ICT, presentations, group work) from grade 10 to grade 12 .

Organize CCE activies associated with the formation and development students’

competencies. Therefore, in the part of Experimental pedagogy of the thesis, if conditions will be conducted using measuring tools students' competencies after completing the lessons in class and outside of class. The process of analyzing experimental results requires combining multiple criteria evaluation but limited by many aspects of the author, it is not able to provide evidence, only some more convincing.

3. Proposals and recommentdations

3.1. For management

- Put contents for CCE is one of the information contents in general education program.
- CCE is a comprehensive program and is integrated, built-in levels of education from pre-school to university graduate.
- Write the documentation, thematic education about CC.
- Strengthen of workshops, training on CCE in secondary schools. From there, forming a network, community management staff, teachers have the same general concerns about CCE.

3.2. For teachers

- Recognizing the mission, role and importance of CCE in high schools.
- Enhanced integration CCE in geography lectures. Mastering the views, models and ways of organizing CCE activities with the help of ICT.
- Enhanced learning and enhancing professional qualifications and professional, especially the information technology competence.
- Department of Geography at the school need to work together and to exchange experiences and coordinate with other sports organizations develop interdisciplinary lessons on CC.