Integrating Nature Conservation and Biodiversity Education in Teaching in General schools in Vietnam

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Abstract. Conservation of nature and biodiversity is the responsibility of the whole society, of all management agencies and of individuals, each of whom needs to be aware of their roles and actions that contribute to nature and biodiversity conservation. The education of nature and biodiversity conservation for school students contributes to creating responsible citizens in the future. On the basis of analyzing a number of key concepts such as nature and biodiversity conservation; general analysis of the situation of biodiversity in Vietnam and degradation, in this article, we introduce some integrated methods, teaching methods and techniques to integrate nature and biodiversity conservation education into teaching in secondary schools in Vietnam which contributes to the development of knowledge and skills on nature and biodiversity conservation for secondary school students.

1. Introduction
Biodiversity is an abundance of genes, species and ecosystems in nature [2]. According to BPV (Biodiversity Philately Vietnam), Vietnam is located in Southeast Asia with an area of about 330,541 km² ranked 16th in terms of biological resources diversity and is one of the 10 centers with the highest level of biodiversity in the world [4]. Vietnam is highly rich in biodiversity with more than 11,500 animals, more than 21,000 plant species, and more than 3,000 species of microorganisms. Over the past two decades, more than 1,000 new species have been discovered in Vietnam, including discoveries that have surprised the global scientific community [20; p 8].

With the characteristics of geography, climate, soil, ... Vietnam has many types of forests, swamps, rivers and streams, coral reefs ... creating habitat for about 10% of wild bird and animals species all around the world. Vietnam is recognized by the Wildlife Conservation Fund (WWF) (2015) to have three of more than 200 global ecological regions [20; p 5]; International Bird Conservation Organization (BIRDLIFE) recognizes Vietnam as one of five endemic bird regions; IUCN recognized Vietnam has 6 centers of plant diversity [19; p 125].

However, the current status of biodiversity in Vietnam is rapidly declining in recent years. Many species in the Mekong Subregion are at risk of extinction in the next few years if there are no urgent measures to protect their populations and habitats [20; p 6]. The biggest threat now is that the habitat of the species is increasingly lost. Agricultural production, cattle grazing, urban development have been fragmenting and destroying the habitat of terrestrial plants and animals. The situation of over-fishing and exploitation to serve the needs of food and medicines ... also helped to undermine biodiversity. Fishing has destroyed 80% of natural aquatic stocks while deforestation and wildlife hunting in the tropics are pushing many species in the forest to the brink of extinction.
In addition, the various pollution hazards from pesticides and industrial waste are polluting rivers and accumulating in the ecosystem, thousands of dead birds and turtles die each year from eating plastic wrap. Chemical fertilizers and domestic wastewater penetrate water sources and create conditions for algae to proliferate and dead sea areas (due to the absence of oxygen). CO2 causes global warming, which is also a pollutant, causing acidification of the oceans and threatening to eradicate rich biodiversity coral reefs.

Education on nature and biodiversity conservation as well as environmental protection (EP) is an important content in schools in Vietnam, which has been implemented at all levels of education and has been considered as the educational mission of schools. However, the quality and effectiveness of education in nature conservation and biodiversity are not as expected, many issues of nature and biodiversity conservation are still being set; Environmental pollution and biodiversity degradation are happening rapidly. This result has many causes, of which the basic reason is that the competency of educating nature and biodiversity conservation of teachers is still limited, not meeting the requirements of environmental and biodiversity conservation education and sustainable development.

2. Research content and results

2.1. Definition of nature and biodiversity conservation

2.1.1. Conservation and nature Conservation. Conservation means to keep, not to be lost [4; p 39]. Nature conservation can be understood as conservation of living resources including maintaining basic ecological processes, preserving genetic diversity, sustainable use of species and ecosystems. Nature conservation is a prudent management and wisely use of natural resources, aimed at improving the quality of current life while meeting the needs of future generations of natural resources.

2.1.2. Biodiversity and biodiversity conservation. According to the Convention on Biology Diversity, introduced in 1992 at the United Nations Conference on Environment and Development in Rio de Janeiro (Brazil), biodiversity means the diversity among living organisms of all sources include contiguous, terrestrial, marine, other aquatic ecosystems and ecological assemblies that are part of them. This diversity occurs in each species, between species and biological systems [1].

According to the World Wide Fund for Nature (WWF), biodiversity is the prosperity of life on earth, which is the millions of animals, plants, microorganisms, are genes that contain in species and are extremely complex ecosystems that coexist in the environment.

The researchers study biodiversity at three aspects: genetic diversity; species diversity and ecosystem diversity.

Biodiversity conservation

According to the Biodiversity Law (2008), biodiversity conservation is the protection of the abundance of important, specific or representative natural ecosystems; Protecting regular or seasonal natural habitats of wild species, environmental landscapes, unique beauty of nature; rearing, planting and tending species on the list of endangered, precious and rare species prioritized for protection; long-term storage and preservation of genetic specimens [2].

Biodiversity conservation includes zoning for management of high biodiversity areas, developing biodiversity conservation facilities to conserve important natural, specific or representative ecosystems, environmental landscape, nature's beauty, unique, conservation of valuable species threatened with extinction, long-term preservation and preservation of genetic specimens.

2.2. Biodiversity and biodiversity conservation

Ecosystems in Vietnam are diverse, with 95 types of ecosystems belonging to 7 main types of terrestrial ecosystems, 39 types of wetland ecosystems, 20 different types of marine ecosystems. The composition of the communities in the ecosystem is also very diverse, the community structure in the
ecosystems is complex, multi-storey and there are many branches. This feature makes the diversity of ecosystems in Vietnam different from other countries in the world [19; p 125].

Species diversity includes: plants with 13,766 species, terrestrial animals with 10,300 species, microorganisms with 7,500 species, freshwater organisms with 1,438 species of microalgae, 800 species of invertebrates; 1,028 species of freshwater fish and sea creatures with 11,000 species. Genetic sources of plants and animals with 14,000 gene sources are preserved and stored [19; p 10].

However, in recent years, biodiversity conservation in Vietnam is facing huge challenges, with the number of endangered, precious and rare species being increased. The main causes of biodiversity degradation include: illegal exploitation and over-exploitation of biological resources (illegal exploitation of timber, hunting and illegal trade of wild animals, fishing by unsustainable methods), changing the purpose of using land and water surface without scientific basis (changing the method of using land, water surface, developing infrastructure); the import of new varieties and alien species; environmental pollution and climate change.

2.3. Education of nature and biodiversity conservation in Vietnam

In the National Strategy on Biodiversity, there are directing points [19]:
- Biodiversity is the foundation of green economy; Biodiversity conservation is one of the key solutions to adapting and mitigating the impacts of climate change.
- Conservation of biodiversity associated with sustainable use of biodiversity, contributing to poverty reduction and improving the quality of people’s life.
- Conservation of biodiversity is the responsibility of the whole society, of management agencies, all organizations, businesses and individuals.
- Promote socialization and strengthen international cooperation on biodiversity conservation.
- Integrating biodiversity conservation in national development policies, strategies, planning, in sectors and localities.

Thus, every citizen needs to identify nature and biodiversity conservation as his own responsibility. To do this, education and training play an important role in raising awareness and knowledge of nature and biodiversity conservation for school students. In general schools, the contents of environmental education, nature and biodiversity conservation must be considered orthodox, systematic, quality and effective. The method of inclusion in the general curriculum and training methods can be flexible, but the evaluation of the results must be set in a way that corresponds to the importance of the problem. It is necessary to help students to gain the knowledge, skills by themselves and students themselves have to determine their attitude of having to treat nature as their own home.

In Vietnam, in recent years, the Ministry of Education and Training has introduced the contents of environmental protection education into the education system by integrating into a number of subjects and some content-related lessons in the educational curriculum of different educational levels.

Early Childhood Education: Content of environmental education is implemented through specific activities of children such as play, learning, labor and daily activities.

Primary Education: The study of integrating environmental protection education content into primary school subjects has been conducted within the framework of Project VIE / 98/018. This project has developed a number of environmental protection education modules developed from Primary textbooks. The new Primary Curriculum has been designed and built in line with the contents of environmental protection education in the subjects: Mathematics, Vietnamese, Ethics, Nature and Society, Art, and Exercise....

Secondary and high school education: Although it does not organize a separate subject, the content of environmental protection education has been implemented and is integrated into a number of subjects such as Biology, Chemistry, Geography, and Education of citizens ...

In some professional schools, colleges and universities: Environmental protection education has been put into teaching in the direction of integrating into intensive modules such as: Ecotourism, Sustainable Development Education... In particular, at the departments of training Bachelor of Education in such fields as Geography, Biology, Citizenship, Chemistry,... are developed modules
close to environmental education or sustainable development education which is compulsory or elective in teacher training.

In addition, the issue of environmental protection education has been concerned by many researchers in Vietnam and implemented in a number of topics and dissertations such as: Ministry of Education and Training-level project "Environmental education through teaching subjects in Faculty of Biology-Agricultural Engineering" by Dinh Quang Bao and Duong Tien Sy in 1997 [2]; doctoral thesis "Environmental education through teaching Ecology in grade 11" by Duong Tien Sy (1998) [3]; Nguyen Thi Van Huong with a doctoral thesis "Some measures to improve the quality of environmental education for elementary students" [16]; or Nguyen Ki Loan with a doctoral thesis "Environmental education in teaching Biology 6" and many other studies on environmental education in subjects such as Biology, Geography, Chemistry, Citizen education, ... [6], [12], [14], [16], [17].

Referring to the studies on nature and biodiversity conservation, some scientists have studied in teaching in subjects such as Biology, Geography, Citizen Education [18] and within the framework of the projects, many important documents on the education of nature and biodiversity conservation have also been focused on research, typical documents by the authors: Nguyen Sy Duc (editor) and colleagues [13] that focused on education of nature and biodiversity conservation in secondary schools. In this document, the authors have studied the issues of nature and biodiversity conservation; determine objectives, content and design some lessons to integrate nature and biodiversity conservation in Biology and Geography subjects and extracurricular activities as well as guide the use of some teaching equipment. However, studies on integrating nature and biodiversity conservation in Vietnam are still not many and lack generalization.

2.4. Education of nature and biodiversity conservation in Vietnam

Objectives and contents of education in nature and biodiversity conservation in general schools

2.4.1. Some principles to select the content of education on nature and biodiversity conservation in general schools. The selection of education contents of nature and biodiversity conservation into school subjects should follow some general principles as follows:

- The selected content should be consistent with the characteristics of the mind, the physiology and the development of the students of the grade level;
- The selected content must be associated with the curriculum, textbooks of the school level, not adding new content, overloading the learning process of students;
- On the basis of common goals and contents, it is necessary to define specific objectives and contents on biodiversity for each educational level, class and subject; At the same time, it is necessary to ensure inheritance between levels of education, classes and subjects;
- The selected content must be practical and close in life and production.
- The selected content must be consistent with the socio-economic characteristics and cultural practices of regions.

2.4.2. Basic topics and goals for education in nature and biodiversity conservation in general schools. There are many contents of natural and biodiversity conservation needed to equip school students. However, due to limitations of teaching time, it is necessary to focus on some teaching topics and objectives as follows:
Table 1. Topics and objectives of education in nature and biodiversity conservation at general schools.

| Chủ đề | Mục tiêu giáo dục bảo tồn thiên nhiên và ĐDSH |
|---------|------------------------------------------|
| **1. Conservation of nature and biodiversity** | Knowledge:  
- Stating some basic concepts such as nature conservation and biodiversity; biodiversity conservation.  
- Analyzing the role of biodiversity in the environment and human life.  
- Presenting the situation of natural and biodiversity conservation in the world and in Vietnam.  
Skills - Behavior: Friendly living, in harmony with natural environmental conditions.  
Attitude: Respect, love nature. Conscious of preserving and protecting ecosystems. |
| - Concept of nature and biodiversity conservation  
- The role of nature and biodiversity conservation  
- Situation of nature and biodiversity conservation in the world and in Vietnam | |
| **2. Relationship between people and nature and biodiversity conservation** | Knowledge:  
- Identify that people are part of the living environment and people have a huge role in nature and biodiversity conservation.  
- Present the socio-economic activities of people greatly affecting ecosystems and biodiversity.  
Skills - Behavior: Detecting and fighting actions of exploiting and using natural resources, especially unreasonable biological resources.  
Attitude: Critique activities and behaviors that adversely affect ecosystems and biodiversity. |
| - People are a part of the living environment  
- The role of people in nature and biodiversity conservation  
- Human impact on natural and biodiversity conservation | |
| **3. The decline in biological diversity** | Knowledge:  
- Presenting the manifestations of biodiversity degradation, especially those at risk of losing and extinction.  
- Analyzing the causes of loss of biodiversity in the process of production development and resources exploitation of human.  
- Presenting an unreasonable population increase is one of the causes of loss of biodiversity.  
Skills - Behavior: detecting biodiversity problems in the locality and causes.  
Attitude: A sense of protection of biodiversity in the process of production and exploitation of natural resources. |
| - Decline in biodiversity  
- Species at risk of disappearance and extinction | |
| **4. Measures for nature and biodiversity conservation** | Knowledge:  
- Stating the legal provisions on nature and biodiversity conservation.  
- Analyzing a number of natural and biodiversity conservation measures.  
- Describe the Biodiversity Action Plan and the National Biodiversity Strategy to 2020 and vision to 2030  
Skills - Behavior: Take measures, take active actions to contribute to solving problems of nature and biodiversity conservation.  
Attitude: Support and implement activities and policies on natural and biodiversity conservation. |
| - The provisions of the law on nature and biodiversity conservation  
- Measures for nature and biodiversity conservation  
- National strategy on nature and biodiversity conservation  
- Students' tasks in preserving nature and biodiversity | |

2.5. Methods of integrating the contents of education of nature conservation and biodiversity in general schools

The methods of integrating subjects or integrated teaching has been used relatively popular in many countries.

Khabele (1975) defined scientific integration as an approach to teaching science, in which it presents concepts and principles that express the fundamental unity of scientific thought and avoid
emphasizing too early or excessive discrepancies between different scientific fields, not recognizing
the traditional boundaries of subjects when presenting topics [10].

According to Xavier Roegiers, “Integrated pedagogy is a concept of learning process in which all
learning processes contribute to the formation of students with clear, predictable competencies for
students, to serve future learning processes, or to integrate students into working life. Thus, integrated
pedagogy seeks to make the learning process meaningful ”[21; p 73].

In Vietnam, there have been many subjects and educational levels who interested in applying the
integrated pedagogical thought into the teaching process to improve the quality of student education
(such as Biology, Geography and Citizenship education, Literature, ...).

Integrated teaching aims to organize learning activities, in which students learn to use a
combination of knowledge and skills in meaningful and close-to-life situations. In the process of such
learning, the knowledge of students from different subjects are mobilized and coordinated with each
other, forming a unified content, based on the theoretical and practical relationships mentioned in
those subjects.

Currently, in Vietnam, integrated teaching has been used to bring the contents of education to
protect the environment, nature and biodiversity conservation into subjects in schools. Due to the
current structure of the curriculum and textbooks of school subjects, it is aimed at the rigorous system
of content, the science of the subject is relatively deep, so the inclusion of the contents of education in
nature and biodiversity conservation into subjects must also be carried out by integrated teaching,
similar to the introduction of environmental protection education content into the subjects.

The contents of education on nature and biodiversity conservation, as well as the content of
environmental protection education, can be integrated into subjects at different levels, namely:

Full integration: Full integration is done when most of the lesson's knowledge is also the
knowledge of nature and biodiversity conservation. Then the goal of the lesson is also the educational
goal of nature and biodiversity conservation. For example, lesson "Protection of plant diversity"
(Biology grade 6); lessons "Diversity of Coelenterata", "Biodiversity" (Biology grade 7); lesson
"Ecosystem" and "Protect diversity of ecosystems" (Biology grade 12); lesson "Characteristics of
Vietnamese organisms" and "Protection of Vietnamese biological resources", (Geography grade 8)...
In these lessons, teachers teach normally like other lessons, just collect additional supporting materials
to make the lesson more lively and inspiring for students.

Partial integration: Partial integration is done when a part of knowledge of the lesson has contents
about education on nature and biodiversity conservation. For example, lessons "populations of
organisms", “communities of organisms” (Biology grade 12); lesson "Hot Zone. Humid equatorial
environment" (Geography grade 7); lesson "Rivers and Asian landscapes" (Geography grade 8) ... In
these lessons, teachers can integrate the contents of education of nature and biodiversity conservation
in some parts of the lessons. However, teachers need to distribute time so that it is reasonable with the
general structure of the lesson. Avoid overestimating the content of education of nature conservation
and biodiversity without paying attention to other contents of the lessons.

Connected: When some content of the lesson is related to the issue of education of nature and
biodiversity conservation, but it is not clear in the content of the lesson. In this case, teachers must
exploit subject knowledge and relate them to the contents of nature conservation and biodiversity. For
example, the lesson "Tropical Environment", "Population and pressure of population on natural
resources, hot zone environment" (Geography 7), "Climate and landscape on Earth" articles, "Vietnam
Sea", (Geography 8) ... In these lesson, teachers need to integrate smoothly, attached to the lesson
content, avoiding forced connected.

The inclusion of the contents of education in nature and biodiversity conservation in subjects can
be carried out in two types of learning organization as follows:

- Type 1: Through lessons in class. In this case, the teacher implements methods that integrate
  with the levels mentioned above. Teacher activities in this case may include:
  1. Study subject curriculum and textbooks to build teaching goals, including objectives of nature
     and biodiversity conservation education.
2. Determine the specific contents of nature and biodiversity conservation education. Based on the relationship between the subject knowledge and the content of education in nature and biodiversity conservation, teachers select materials and integrated plans, specifically to answer the questions: Which content should be integrated? How to link knowledge of nature and biodiversity conservation with subject knowledge? Duration is how much?

3. Select appropriate teaching methods and means, consider using positive teaching methods, highly effective teaching methods to enhance the visual and excitement of learning of students (such as using pictures, videos, computers, ...).

4. Develop a specific teaching process. Here, teachers need to specify students’ activities, teachers’ support activities.

Type 2: Education of nature and biodiversity conservation can also be implemented as an independent activity but still associated with the application of knowledge of subjects. Activities can be carried out such as: sightseeing, extracurricular, organizing thematic extracurricular groups, project lessons, researching a topic (suitable for students), ... With these activities, the level of integration of knowledge and skills of subjects with the contents of nature and biodiversity conservation will be higher. Because in these activities, students learn how to apply knowledge of subjects in situations closer to life.

2.5.1. Forms of teaching in internal curricula to integrate education in nature and biodiversity conservation at schools

2.5.1.1. Teaching in class: usually conducted in three forms of teaching: individual teaching, group teaching, classroom teaching, close coordination in a lesson.

- Individual teaching: to promote the individualization of students' learning, respect each student's individual qualities, create equal opportunities for all students in the class to develop depending on one’s forte, ability. On the other hand, individual teaching also trains students to self-study. In personal teaching, teachers organize for each student to work with learning objects (pictures, diagrams, schemas, maps, ...). Students have to answer questions, do exercises, ...

- Group teaching is a form of teaching, in which members participate in activities and study together in small groups to develop understanding and awareness of certain learning content. In group teaching, students are also trained in cooperation, presentation, rehearsal of organization and control, and a record of promoting the activeness of learners, increasing the interest in learning. In group teaching, teachers divide students into groups depending on the content of the lesson, the number of teaching facilities and the location of group activities, then assign tasks and guide them to work (exchange, discuss, perform a common task, assignment, job, ...). Group teaching is often associated with individual teaching. As a result of working in a productive group, each individual student must have preparation, inquiry, contact or thought about the learning content that will be shared by the whole group.

- Class-based teaching is a form of teaching, in which members participate in activities and study together in small groups to develop understanding and awareness of certain learning content. In group teaching, students are also trained in cooperation, presentation, rehearsal of organization and control, and a record of promoting the activeness of learners, increasing the interest in learning. In group teaching, teachers divide students into groups depending on the content of the lesson, the number of teaching facilities and the location of group activities, then assign tasks and guide them to work (exchange, discuss, perform a common task, assignment, job, ...). Group teaching is often associated with individual teaching. As a result of working in a productive group, each individual student must have preparation, inquiry, contact or thought about the learning content that will be shared by the whole group.

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In classroom teaching, teachers always use a combination of these three forms of teaching to accomplish the lesson goal.

2.5.1.2. Outdoor teaching: such as sightseeing, local surveys, interviews, etc. When teaching lessons with practical knowledge, or practical experiences, teachers can organize students to study outdoors. This is a convenient opportunity for students to learn the content of the lesson in a lively way, and have the conditions to practice observation and analysis skills in the field. In order to teach this form effectively, it is necessary for teachers to arrange time and prepare carefully in the field. With these activities, the level of integration of knowledge and skills of the subjects with the contents of education and nature conservation and biodiversity will reach the highest level.
2.5.2. Organization of extracurricular teaching in nature and biodiversity conservation at schools. In the process of teaching in high school, teachers can organize a variety of extracurricular activities. It is a form of voluntary activities in the school, gathering good students who are interested in the subject to expand and supplement the knowledge prescribed in the main curriculum. For the content of education on nature and biodiversity conservation, teachers can organize some extracurricular activities within the framework of subjects on nature conservation and biodiversity associated with students' lives.

In the actual conditions and circumstances of Vietnamese students, it is possible to organize a number of extracurricular activities closely related to the task of educating nature and biodiversity conservation as follows:

2.5.2.1. Organizing club for ones who want to learn about nature and biodiversity conservation, learn how to live environmentally friendly. It is recommended to organize a club according to grade level, schedule activities periodically, once a month with the content around the issues of nature and biodiversity conservation and close to the subject. For example, exhibiting activities on biodiversity, types of plants and animals are in danger of losing and extinction; Discussing on nature and biodiversity conservation: invite experts to talk and exchange with students about nature and biodiversity conservation; Teachers help students build clubs, then assign students to organize and operate themselves. Teachers play a role of advising, supporting and supervising activities so that students are free and creative in forming ideas and in carrying out activities.

2.5.2.2. Organizing cultural festivals, performing skits with contents related to nature and biodiversity conservation.

2.5.2.3. Organize exhibitions on nature and biodiversity conservation with materials and samples collected by students according to specific topics.

2.5.2.4. Organizing tours and camping to explore the biodiversity of an ecological area; learn about the impact of industrial activities on the local biodiversity,... In particular, according to the school's education plan, every year the school organizes students to camp and visit at a certain location. Camping activities are always interesting for students and it will be more meaningful if teachers stimulate students 'attitude to respect and protect biodiversity, build students' sense of willingness to live environmentally friendly. Therefore, teachers should take this opportunity to carry out the task of educating nature conservation and biodiversity for students.

2.6. Methods and techniques for organizing education in nature and biodiversity conservation in schools

2.6.1. Apply question and answer techniques. Question and answer is a method for teachers to organize lessons through asking questions and asking students to answer, creating an exciting lesson time, everyone participating in a positive exchange, gaining knowledge, at the same time training communication skills. In teaching, the method of questioning is often combined with other methods such as using visual media, practice, experiment, ...

In order to use effective questioning methods, teachers need to clearly define the objectives of the lesson, prepare the system of appropriate questions. In the process of using the question and answer method, teachers should pay attention to exploiting students' knowledge and experience, giving them the habit of thinking, actively learning, applying what is known to new learning situations.

To encourage students to actively participate in learning activities that learn about nature conservation and biodiversity, teachers need to strengthen the use of the "open-ended question" - a type of question that will be answered by many ways.

- Open ended question for information / ideas

This type of question often uses words to ask such as: What motivation ?, What makes...? What do you think about this?; What is your opinion on that issue? Are you most interested in ...?
Example:
- It is said that: "Environmental ecological imbalance is the reason for natural disasters to occur more often." What is your opinion on this issue?
- Please state your point of view: "Protecting biodiversity is protecting our lives".
- In your opinion, what kind of global problems are humanity facing?
  - Assume question type
    This type of question helps students think beyond the context of the current situation.
    This question often uses phrases to ask like: What if ...?; what will happen if ...?; imagine ...; If ... then...?
    Example:
    - What will happen if we are not interested in the issue of greening the bare hills.
    - Imagine, what would happen if we lost the biodiversity?
    - What will happen if in an ecosystem completely lost some species?
  - Question type of action:
    This type of question helps students come up with solutions, ideas, ... to effectively use resources;
    Sustainable Development; adapting to the environment ... to conserve nature and biodiversity.
    Example:
    - What do you need to do to protect biodiversity?
    - If you are Minister of Agriculture and Rural Development, what measures will you take to protect our country's forest resources?

2.6.2. Applying methods using visual means. In teaching, to integrate education in nature conservation
and biodiversity, it is often used with typical visual teaching facilities to express such as maps, tables,
charts, diagrams, pictures, video clips,… These types of teaching facilities serve as tools or conditions
for teachers to guide students to easily discover knowledge, deepen lesson content, train and develop
thinking and manipulating skills. creating theoretical knowledge into real life.

Pictures and videos are also a source of knowledge for students. When using pictures, videos,
teachers pay attention to students to observe, describe things, the phenomena expressed in them. Next,
find the causes and consequences of phenomena and things; state students' thoughts and feelings about
pictures and videos.

Example:
To organize for students to learn about local biodiversity degradation, teachers can use images and
combine with suggestive brainstorming or conversational techniques:
- What image does your image relate to about biodiversity issues? Why? What causes that?
- In order to minimize this problem, which problems should localities pay attention to?

2.6.3. Applying problem solving teaching. To conduct problem-solving teaching, the following options
can be selected:
- Giving a paradoxical situation: requires explanation. The paradoxical situation is something
  unreasonable, contrary to common sense recognized by everyone, something unusual for a student's
  understanding, and sometimes initially heard, seemingly absurd. For example: "Why do many species
  of organisms be harmful to humans but we still have to protect?"
- Giving a difficult situation, a deadlock: This is the situation between what is known and the
  unknown and what needs to be discovered and realized; There is still a gap between the amount of
  scientific knowledge available and the practical knowledge of biodiversity. For example: "Southeast
  Asia is located in the mineral belt so there are many kinds of minerals, why is the problem of rational
  exploitation and use of natural resources still an important task for each country?"
- Situation to choose: The teacher offers a problem with many different choices, requiring students
to find the most appropriate choice. For example: In the two orientations below, which option is more
appropriate? Please state your choice.
  + Economic development with a high growth rate, high profit but environmental pollution;
  + Economic development with slow growth, but continuous and stable, no pollution and destructive
environment.
- Causal situation: This is the case to find the cause of a result, to find the nature of a phenomenon, the deep motivation of a behavior. For example: "Why does globalization put pressure on nature?"

For example: To organize students to learn about the topic "Environment and sustainable development", teachers can create problematic situations to organize for students to solve such as:

- For sustainable development, appropriate use of natural resources and environmental protection;
- Industrial development, urban problems are the fundamental causes of the current global environmental problems such as ozone layer, greenhouse effect, acid rain phenomenon, ...
- Developing countries are places where many environmental issues are concentrated;
- Environmental problems rarely occur in developed countries.

2.6.4. Applying project-based teaching. Example: To organize students to learn about the proper use of natural resources and protect the environment, teachers can use project methods to organize students to design communication posters with topics "We are with natural resources - the environment". The product of this project is the poster showing the problems that are posing to our country's natural resources and environment (depletion of forest resources, loss of biodiversity, degradation of land resources, and use of resources), unreasonable water, environmental pollution, environmental ecological imbalance, ..).

2.6.5. Applying group discussion method

- Applying Jigsaw technique

Example: To organize students to learn about the issues that are posing to our country's natural resources and environment, teachers can use this technique with specific steps such as:

Round 1 (expert group): The whole class is divided into 6 groups (group of 6 people), each group performs a task. Team members work independently and then talk to other members to learn about the issue.

- Group 1: Find out about the problem posed to land resources
- Group 2: Find out about the problem posed to forest resources
- Group 3: Find out about the problem posed to water resources
- Group 4: Learn about the problem posed to biodiversity
- Group 5: Learn about the problem posed to mineral resources
- Group 6: Learn about the problem posed to the environment

Round 2 (group of puzzle pieces):
- Form a new group from the above groups
- Tasks: Drawing a mind map showing the problems that are posing for the natural resources and environment of our country.

The teacher asked the groups to follow these steps: 1) Member in the first round, exchanging content with in-depth discussions with new team members; 2) New team members discuss the issues that are being raised for our country's natural resources; 3) Drawing a mind map showing the problems that are posing to our natural resources and the environment.

Once the teams have completed their tasks, teachers can use gallery techniques to organize student presentations, exchange and comment on your team's products. Finally, teachers summarize and correct the lesson content.

Using the technique of "Supporting - opposing"

Example: To learn about human impacts on biodiversity, teachers can use this technique to organize cognitive activities for students.

Step 1: Divide the class into 2 groups, each group can have 2-3 small groups. Each group performs a task:

- "Support" group: Prove that people have many positive impacts on the natural environment.
- Group of "Objection": Prove that people have many negative impacts on the natural environment.

Groups can collect members' opinions by taking comments by word or individuals will write their opinions on paper, then discuss and agree on their opinions.

Step 2: The group representative presented and reported their group's arguments.
Step 3: General discussion after the two groups have made all their points, teachers evaluate, summarize, and correct the cognitive content.

- Applying brainstorming technique
  Example: To understand the issue of biodiversity degradation, teachers can use brainstorming techniques to ask students to give their opinions about why biodiversity degradation is one of the global issues or what causes loss of biodiversity?

2.6.6. Applying role play method
  Example: When organizing students to learn about measures to protect the coastal mangrove ecosystem in the Mekong Delta, teachers can organize students to play the following roles:
  - Forest bandits: Deforestation for shrimp farming.
  - Farmers living in the buffer zone: Demonstrate the act of cutting down trees for firewood, hunting animals for food or selling.
  - People of good faith: Demonstrating sickness due to the consequences of indiscriminate forest exploitation and environmental pollution (natural disasters, epidemics, etc.)
  - Forest rangers: Prevent loggers and farmers from clearing forests indiscriminately.
  - Local officials represent the law: All unlicensed forest exploitation activities are illegal acts, must be strictly dealt with.
  - Local leaders: Solving and arranging jobs for loggers, allocating land to farmers to plant forests to live.

In the course of the characters playing, the whole class pays attention to monitoring situations, gathering information. After that, make additional comments to complete the script content, close to the intended target. On that basis, each student should draw on the role of forests in the environment and human life, the need and the importance of protecting mangrove ecosystems in the Mekong Delta region in particular and our country in general.

2.6.7. Applying sightseeing and survey methods
  Example: To organize students to learn about local environmental issues, teachers can use project based teaching and combine them with methods of visiting and surveying to organize for students. Or learn about biodiversity of local fish species that can be organized for students to investigate and survey.

2.7. Testing and evaluating the results of education on nature and biodiversity conservation

2.7.1. Examination and assessment of periodic learning results in integrated education of nature and biodiversity conservation. The content of the assessment is closely followed by the objectives and contents of education on nature and biodiversity conservation at schools. In particular, to achieve the goal of teaching integrated education of nature and biodiversity conservation in the process of assessment, teachers can use the following measures:
  - Observe, comment and evaluate nature and biodiversity conservation through pictures, drawings, local reality.
  - Collect, process information, write reports and present information on nature and biodiversity conservation.
  - Analyzing the relationship between human activities and nature conservation and biodiversity.
  - Teachers should pay attention to assessing the skill of applying the knowledge and skills learned about nature and biodiversity conservation into situations outside the classroom, right where they live.
  Example: Please describe and analyze a specific example in the locality where you live (province / city, district, commune / ward ...) on the issue of declining biological resources? What causes and propose solutions to resolve this situation?
  - Teachers also need to focus on checking and evaluating the expression of attitudes and behaviors of students in front of problems of losing biodiversity. In particular, we can use the rating scale for attitudes towards natural conservation and biodiversity in 5 levels of R.R. likert: Fully agree; Agree; Hesitate; Disagree; Totally disagree.
This scale can also be reduced to 3 levels: Agree; hesitated (confused); disagree. Or it can use behavioral scales for natural and biodiversity conservation at the following levels: O (Regularly); R (Rarely); N (Never).

3. Conclusion
With the methods and measures proposed above, we have applied to teaching in some general schools in Vietnam to integrate nature and biodiversity conservation into the content of subjects such as Biology, Geography, and Education of citizens. We have also organized interdisciplinary teaching lessons, or organized extracurricular activities for students. The result is that most students are excited about learning activities, students not only gain knowledge of the subject, but also develop knowledge about nature and biodiversity conservation. At the same time, students develop the skills of observation, data collection, cooperation, presentation in the learning process.

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