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TEACHING INTEGRATED TOPICS TO DEVELOP THE ABILITY TO APPLY KNOWLEDGE AND SKILLS FOR EARLY PRIMARY SCHOOL STUDENTS

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Abstract. Integrated teaching is one of the solutions that contributes to resolving the conflicts between the increasing amount of knowledge that needs to be included in teaching and the limited amount of learning time, and is also a solution to help students mobilize synthesis knowledge and skills from many different fields to solve real-life problems, thereby developing necessary competencies. This study is based on qualitative methods: analysis and synthesis of documents with research content related to integrated teaching or the ability to apply knowledge and skills; observation of groups of 3rd grade students in the process of teaching integrated topics. The article focuses on clarifying perspectives and levels of integrated teaching; concepts and expressions of the ability to apply knowledge and skills. From there, the article builds a process of teaching integrated topics to develop the ability to apply knowledge and skills for early primary school students. Finally, the article presents the application of this process through a specific illustrative example of teaching the integrated topic "Buying and selling goods" (Grade 3).

Keywords: integrated teaching**,** integrated topics, ability to apply knowledge and skills**,** early primary school students.

1. Introduction

The current international integration process requires a fundamental and comprehensive change in the education system to train a qualified workforce to meet the needs of economic - social development. The main content of the educational reform is to change learning and teaching in the direction of developing the capacity to improve the quality of human resources in the new era. According to Roegiers X (1996), the nature of teaching based on learners' abilities is an integrated teaching process, requiring teachers to set clear integrated goals to determine participating abilities, thereby setting requirements for each competency and proposing pedagogical methods and ways to evaluate students' comprehension results. Because it is necessary to synthesize many sources of knowledge and methods from different subjects to learn about an object [1], it is necessary to limit the fragmentation of single-subject knowledge which leads to the separation of the object's understanding, lacking unity and content connection.

According to Marini AE & McDougall D (1998), the ultimate goal of the teaching process is for learners to apply what they have learned in life. The reason is that the amount of knowledge

that students learn is only limited to information, explanation, and theoretical understanding. If the content of that lesson is not applied to practice, it is only the knowledge of scientists rather than mastered by individual learners [2]. Brandsford JD, et al. (2000) identified the important role of applying knowledge as it will help students expand their understanding when the learned knowledge can be applied diversely in different situations. Students will move from perceiving information to understanding and solving new situations [3]. Therefore, applying knowledge and skills is one of the abilities that need to be formed and developed for students to contribute to providing many opportunities for them to have practical experience, stimulating their intellectual capacity, creativity, and skills to detect and solve problems from different angles in life in a proactive and flexible way. The process of developing this ability requires the connection among learned knowledge, skills, and real life as well as the synthesis of knowledge and methods of many subjects through integrated teaching topics.

Integrated teaching and developing the ability to apply knowledge and skills for students were the focus of discussion in a number of research papers [3]-[12]. However, in the context of current educational curriculum innovation, how to identify, select, and organize integrated teaching topics to develop general capacity, knowledge and skills application capacity for students in particular is still a significant challenge for teachers.

The General Education Program 2018 identifies the "need to focus on practicing and applying learned knowledge and skills to solve problems in learning and life; highly integrated in lower classes, gradually differentiated in the higher classes..." to suit the psychological development of children [13]. In the early stages of primary school (grades 1, 2, and 3), students' awareness is still general; life experience and knowledge are still limited. Therefore, integrated teaching with topics close to real life is one of the teaching methods suitable for them, contributing to the development and application of their life experience, knowledge, and necessary skills. Therefore, the educational program for early grades in primary school should be highly integrated and subjects have certain content links that could facilitate teachers' choosing and organizing integrated teaching. The article focuses on clarifying issues of integrated teaching and the ability to apply knowledge and skills, thereby proposing integrated topics in the curriculum for grades 1 2, and 3, and building a process of teaching integrated topics to develop students' competence to apply knowledge and skills.

2. Content

2.1. Methods

This research is primarily based on the methods of analyzing and synthesizing documents. Documents in the analysis include the General Education Program 2018; the Curriculum of primary school subjects and textbooks aligned with the General Education Program 2018. At the same time, publications on the issues of integrated teaching topics in Vietnam and other countries, primary students, and the instructional methods to develop competencies of applying knowledge and skills were also selected as sources of analytical data. During the process of employing integrated topics, a group of 3rd-grade students at Practical Primary School (Kien An district, Hai Phong city, Vietnam) was chosen as the observation object. Based on the analysis and synthesis of documents, combined with notes during the observation process, we clarify the concept of integrated teaching as well as the capacity to apply knowledge and skills and initiate a process of teaching integrated topics to develop the ability to apply knowledge and skills for early primary school students (grade 1, grade 2, grade 3).

2.2. Results and discussion

2.2.1. The concept of integrated teaching and the ability to apply knowledge and skills

**** Integrated teaching***

The term *integration* translated as *intégration* (French) originated from Latin (integer) and means *whole* or *entire*. Integration is understood as the coordination of different activities and components of a system to ensure the harmony of functions and operational goals of that system [14]. According to Tra DH, et al. (2015), "Integration means integration and combination. It is the unification or individualization of different parts to create a new object as a unified form based on the essential features of the components and objects, not a simple addition of attributes and properties of those components". Thus, integration is the unification and combination of different object components to create a new object in unity, based on the nature rather than the properties of those components. In education, integration is combining necessary issues with the existing content of each specific subject.

Research by Berestneva O, et al. (2015) has shown that competency is an integrated characteristic, and new qualities are achieved by combining knowledge with abilities through training activities. The results of the teaching process reflect how learners will come up with solutions to learning tasks related to personal capacity development [15]. Therefore, integrated teaching is considered a solution to achieve the goals of education. The General Education Program 2018 defines "Integrated teaching as a teaching orientation that helps students develop the ability to synthesize knowledge, skills…in many different fields to effectively solve problems in learning and life, and is implemented right in the process of acquiring knowledge and practicing skills" [13]. In integrated teaching, under teachers' guidance and organization of activities, students participate in the process of solving complex problems, often associated with practice based on the coordinated application of knowledge and skills from many subjects. Accordingly, students develop the ability to mobilize and connect interdisciplinary knowledge and skills when solving problems [15].

Integrated teaching features diverse integration levels, including Intra-subject integration, multi-subject integration (integrated, related), interdisciplinary integration, and cross-subject integration [14]. In particular, the integrated teaching approach aims for teachers to connect common learning content in different subjects to identify interdisciplinary knowledge and skills, helping students to know how to develop knowledge and skills in different subjects, dynamically synthesizing knowledge from multiple subjects to solve complex tasks in real life. The article focuses on clarifying and providing suggestions for integrated teaching to develop students' capacity to apply knowledge and skills.

**** The ability to apply knowledge and skills***

In the Vietnamese dictionary, *apply* is to put knowledge into practice [16, p.1105], *knowledge* is defined as understanding gained through experience or study [16, p.523], and *skill* is the ability to apply the knowledge acquired in a certain field into practice [16, p.519]. This ability requires learners to collect and apply knowledge and skills gained from life experiences or the learning environment to address real-world situations and problems. The applied situation (problem) can be built in a similar real-life context or a new task. Through this process, students demonstrate psychological factors related to exploring and detecting problems, evaluating the feasibility of solutions, and developing appropriate adjustment plans or valuable personal perspectives.

In teaching, the students' ability to apply knowledge and skills is expressed in a wide range of ways: (1) Explaining at a simple level, phenomena, and relationships in nature and surrounding society; (2) Analyzing situations related to real-life problems; (3) Solving problems, providing

appropriate solutions in related situations (at a simple level); (4) exchanging and sharing with people; and (5) commenting on how to handle each situation [13].

2.2.2. Building the process of teaching integrated topics to develop the ability to apply knowledge and skills for early primary school students

Based on the analysis of training materials for planning an instructional program that integrates educational content in primary schools [13]; identifying the requirements to achieve knowledge and skills in the curriculum of elementary school subjects; comprehending concepts and elements of students' ability to apply knowledge and skills; referring to some research results on building integrated teaching processes by authors such as Tra DH, et al. (2015) [14], Cuong NV (2017) [11], and Hung MV, et al. (2021) [10], the article builds a process of teaching integrated topics to develop the ability to apply knowledge and skills for early primary school students with 2 stages and 8 steps as follows (Diagram 1):

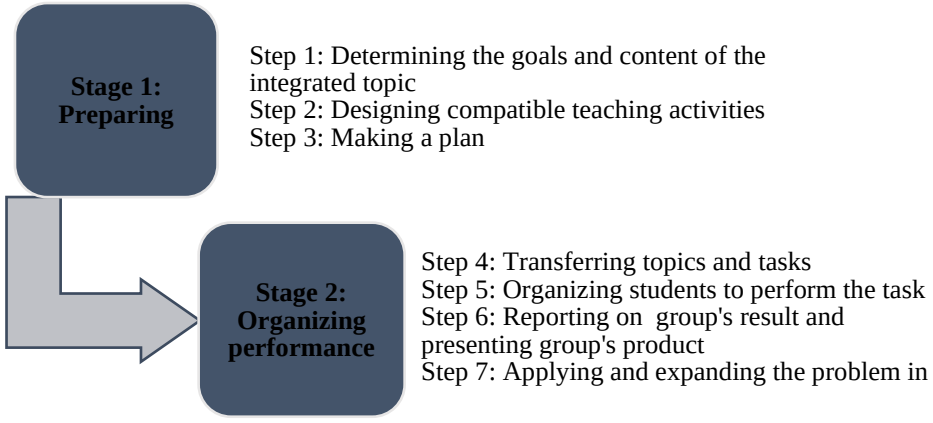

Diagram 1. Process of teaching integrated topics to develop the ability to apply knowledge and skills for early primary school students

**** Stage 1: Preparing***

- Step 1: Determining the goals and content of the integrated topic. This process should be based on: (1) Requirements for knowledge and skills in the subject program: teachers need to identify relevant contents, the connection in the curriculum of subjects, and the requirements to meet these contents; (2) Requirements for the ability to apply knowledge and skills; (3) Students' cognitive characteristics and implementation conditions. On that basis, teachers determine integrated goals and content and exploit integrated teaching addresses.

- Step 2: Designing compatible teaching activities. Designed activities need to be compatible with the goals and content of integrated teaching topics. Teachers need to determine the requirements to be met and students' ability to complete learning tasks and choose the teaching methods, teaching aids, interaction patterns, and assessment tools so that students can learn actively, proactively, and creatively. At the same time, a number of other issues should also be considered, including the teacher’s roles, the roles of each group in organized activities, anticipated time, location, equipment, supplies, support from resources inside and outside the school (if any), as well as anticipated situations and possible solutions.

- Step 3: Making a plan. In the integrated teaching plan, teachers need to do the following: (1) Determining the requirements to be achieved of the topic; (2) Estimating support facilities; (3)

Estimating topic duration; (4) Designing learning tasks (including the teaching methods, interaction patterns, supporting facilities, expected products, and time allocated for learning tasks).

**** Stage 2: Organizing performance***

- Step 4: Transferring topics and tasks. Teachers propose and introduce the topic and divide groups of students to assign tasks to members (each group records the assignment content and elects a group leader). Teachers give moderate, suitable tasks to students/groups of students, and determine the results after performing the activity. This result can be a specific product, a comment, or an evaluation from a student after performing a specific task.

- Step 5: Organizing students to perform the tasks. Groups of students collect and handle information, propose solutions, and discuss how to present the resulting product, then complete the report and products the groups have made. The teachers monitor, supervise, guide, and help student groups in performing tasks when necessary.

- Step 6: Reporting on groups' results and presenting the groups' products. Teachers organize groups of students to report on the results of their tasks/present their products. From there, teachers guide students to generalize and support them in finding and clarifying knowledge related to different subjects incorporated into the integrated topic. When organizing students to discuss and draw conclusions, teachers need to observe the class and encourage them to freely present ideas, comments, and evaluations of individuals/groups; give timely adjustments and orient students in the process of concluding; help students with difficulties through task sheets and use of suggested questions.

- Step 7: Applying and expanding the problem in practice. Teachers guide students to create associations that expand integrated problems in situations in real life and propose ways to solve problems.

- Step 8: Evaluating. For the evaluation of teaching integrated topics, teachers can base on the goals of the topic and the requirements to be met for each subject integrated into the topic to build specific evaluating criteria for the assessment of multiple aspects such as students' existing skills and experiences and their skills in participating in group activities. When conducting assessments in teaching integrated topics, teachers need to combine different assessment methods: Assessing students' final products combined with the whole process of participating in activities from planning, recording, and analyzing data to concluding organized activities; Teachers evaluate through tests combined with students' self-assessment or peer assessment through appropriately designed forms.

2.2.3. An illustrative example

The content below presents an illustrative example of implementing steps in teaching integrated topics for students in grade 3 related to the content "Buying and selling activities".

**** Stage 1: Preparing***

- Step 1: Determining the goals and content of the integrated topic.

Goals:

+ Goals of knowledge and skills: Students can identify products of some production activities (agriculture, handicrafts, industry) in practice; know how to calculate prices and exchange money between buyers and sellers; explain the reasons for choosing the goods; exhibit appropriate behaviors when buying and selling.

+ Goals of abilities and qualities: Students can communicate and cooperate, solve problems, apply knowledge and skills into practice; develop a sense of saving when using goods and protecting the environment.

Content: Studying the content of subjects in the grade 3 curriculum, teachers can determine integrated content and subjects as follows:

Table 1. Exploiting integrated subjects and content in the topic "Buying and selling activities"

Problem	Integrated subjects	Integrated content
1. Studying about the products of some manufacturing activities in practice	- Mathematics: Collecting and classifying statistical objects. - Nature and Society: Some manufacturing activities - Vietnamese: expanding vocabulary	- Name some types of goods and classify them. - Present the benefits of products (agricultural, handicraft, industrial) to real life. - Expand vocabulary for things.
2. Buying, selling and choosing products	- Nature and Society: Some manufacturing activities - Mathematics: Measuring, and computing with natural numbers. - Experiential activities: Self-training activities. - Ethics: Complying with regulations in public places.	- Explain the necessity of choosing goods before buying. - Perform calculations to calculate appropriate product prices as required; Solve a problem with two steps (multiply a number many times, decrease a number many times...) when choosing, buying, and selling goods; Recognize units of measurement for mass and capacity in some types of goods; Use some common types of scales to practice weighing, measuring and counting goods as required. - Recognize and use Vietnamese currency to buy and sell goods in hypothetical situations. - Perform appropriate actions to comply with regulations when buying and selling goods (queuing, maintaining order, and cleaning the surrounding area...)
3. Identifying different types of regional products	- Nature and Society: Some manufacturing activities - Vietnamese: Using greetings and suggestions; expanding vocabulary. - Art: Collecting and arranging paintings and photographs; decorating posters	- Introduce popular local products of some manufacturing activities. - Know how to use greetings and suggestions when exchanging goods between buyers and sellers; Expand vocabulary about various types of goods. - Collect and arrange paintings and photographs and decorate posters about some types of local popular products.

- Step 2: Designing compatible teaching activities: With the topic "Buying and selling activities", teachers can design and organize activities for student groups as follows:

+ Activities to learn about products of some manufacturing activities in practice: Students work cooperatively in groups, search for information related to some products (agricultural, handicraft, industrial) in real life, draw a mind map to classify items, or make information cards about the products that they learn about.

+ Activities of choosing, buying, and selling goods: Students practice and try buying and selling activities at markets and supermarkets, then role-play to handle the situations related to purchasing goods.

+ Activities of introducing some local products: Students collect and arrange paintings and photographs and decorate posters to introduce and promote local products.

- Step 3: Making a plan: (i) Determine the requirements to be achieved of the topic: Students can identify some products of some manufacturing activities in practice; be able to exchange, use the target language to buy and sell goods; introduce some local products and manufacturing activities; Students can apply interdisciplinary knowledge, analyze and synthesize problems to propose ways to perform tasks; Students can present their own opinions, communicate and cooperate with their members in groups to perform tasks; Students can implement the etiquettes while going shopping. (ii) Estimate supporting facilities: documents, images of goods, notebooks, cameras to take photos of the scene, practice sheets, items to simulate goods booths, and documents introducing some types of popular local products. (iii) Estimate the topic duration: Based on the time spent teaching the content of each subject in the curriculum, the teacher allocates the amount of time to introduce the topic in accordance with the number of lessons being counted. (iv) Design learning tasks:

Table 2. Tasks to be designed

Time	**Place**	**Tasks to be performed**	**Supporting facilities**	**Expected products**
Week 1	At the class	- Teacher guides students on how to build topics and the purpose of the topic. - Students divide into groups and discuss tasks to solve problems. - In each group, students assign work to members and report the results to the teacher. - Teacher guides and suggests to students how to find and use documents and some supporting facilities.		
Week 2	At the scene	Task 1: Learn and collect information about some products of some manufacturing activities in practice Research location: The school's computer room, home, library, and neighbourhood	References, notebooks, calculators.	Information cards, crossword games
		Task 2: Practice choosing, buying, and selling goods at the market or supermarket. Research location: class, home, library, neighbourhood, and commodity shopping areas	Notebooks or practice sheets about places where students experience shopping for goods, cameras, and computers; certain types of goods.	A presentation report that includes illustrations
		Task 3: Introduce some popular local products.	Notebooks, calculators, paintings, photos,	A presentation that introduces some popular local products

		Research location: home, school, libraries, and hometown.	posters of some local goods.	
	At the class	- Student groups report on the implementation of tasks, advantages, and disadvantages when participating in problem solving. Teachers can guide and give timely support when necessary.		
Week 3	At the scene	Student groups discuss adding ideas and ways to solve problems (if any); Complete report content and resulting products; Agree on process and time for presentation in the group.		
	At the class	The groups report on research results and evaluate the resulting products.		

**** Stage 2: Organizing performance***

- Step 4: Transferring topics and tasks: Teacher introduces the topic and sets up 3 groups to assign work to members (each group records the assignment content and elects a group leader to manage) according to the following tasks: Task 1: Learn and collect information about some products of some manufacturing activities in practice; Task 2: Experience how to exchange and buy goods, choose goods through practice and hypothetical situations; Task 3: Introduce some popular local products (agricultural, handicraft, industrial).

- Step 5: Organizing students to perform the task: Teachers monitor and guide groups of students on some ways to collect information and propose solutions: Group 1: Find out information about an essential commodity for humans through documents; Look up information on a computer with an internet connection in the computer room at school or at home; Draw mind maps or information cards about some types of necessary products (agricultural, handicraft, industrial). Group 2: Find out information to keep in mind when buying and selling goods and stories about cultural behavior when shopping; Interview some people about criteria when choosing goods. Group 3: Learn and propose solutions to introduce some popular local products through local educational materials, the Internet, pictures, and posters.

- Step 6: Reporting on groups' results and presenting groups' products: Student groups handle information and discuss how to present resulting products; Reports on groups' products:

+ Group 1: Students in the group take turns tagging information about the names and characteristics of some products of some manufacturing activities in practice through collected real objects, images, and documents, for example, agricultural products (food); handicraft products (products made by ceramics, brocade, rattan, and bamboo); industrial products (machines, raw materials, and equipments).

+ Group 2: Students share notes when buying goods such as how to calculate and use different denominations of money to exchange goods, how to see the expiration date when choosing products, following the rules of keeping silent and waiting in line when shopping. Next, students in each group will be given a number of money cards, and cloth bags to hold goods and participate in playing the roles of buyer and seller to go to simulated stalls, read the price list, and choose to buy some goods. Buyers are required to calculate the quantity of goods to buy as required, use a reasonable amount of money to exchange with the seller, line up neatly when shopping, and not cause disorder. Sellers are required to use scales to measure and count the weight and capacity of goods and use environmentally friendly containers.

+ Group 3: Students play the role of young reporters introducing some types of local products through collected images, pictures, and posters. In addition, the teacher guides them to make a shopping basket, educating them not to use plastic bags for shopping.

- Step 7: Applying and expanding the problem in practice:

+ Students learn about some popular local products of some manufacturing activities in Vietnam such as Bat Trang ceramics and Soc Trang rice to identify their economic benefits and the characteristics of manufacturing activities in each region.

+ Students draw pictures or write messages about the need to consume economically, protect the environment, and share with people.

- Step 8: Evaluating: Students evaluate and share their experience through the process of implementing the topic "Buying and selling activities".

+ Evaluate the attitudes and time management of groups during the task performance.

Table 3. Evaluating students' attitudes and time management form

Evaluation criteria	**Quality levels (scores)**			**Score achieved**
	Done well (9-10 points)	***Done (5-8 points)***	***Not yet done (0-4 points)***	
Determine the goals	Determine the goals that are consistent with initial requirements.	Determine the goals that are relatively consistent with initial requirements.	Determine the goals at a lower level than the initial requirements.	
Participate in suggesting ideas.	Actively speak up and give out appropriate suggestions for the group's work.	Regularly give out suggestions for the group's work	Occasionally or rarely give out suggestions for the group's work	
Cooperation	Proactively discuss and participate in cooperation with members of the group when implementing tasks.	Regularly discuss and collaborate with members in a group when implementing tasks.	Occasionally or rarely discuss and participate in collaboration with members in a group when implementing tasks.	
Work performance	Complete the set tasks well.	Complete all required tasks.	The task is not fully completed and there are still shortcomings.	
Total				

+ Evaluate students' ability to apply knowledge and skills when performing tasks (Table 4).

Table 4. Evaluating students' ability to apply knowledge and skills form

Elemental competences	**Indicators**	**Expression levels**		
		1 ***(Not yet done)***	***2*** ***(Done)***	***3*** ***(Done well)***
(1) Find out the research problem	Present the research content	The issue that needs to be researched in the topic has not been accurately presented.	Present the content that needs to be researched on the topic through the teacher's suggestions.	Proactively present the issues being researched in the topic accurately.
(2) Collect and process information	Mobilize learned knowledge and skills related to the topic	Collect a few sources of knowledge and skills related to the topic.	Collect relatively complete sources of information related to the topic.	Collect complete, diverse, and reasonable sources of information related to the topic.
	Analyze collected knowledge and skills sources and propose hypotheses	Analysis of information data is still sketchy, some information has not been scientifically arranged and scientific hypotheses have not been fully determined.	Relatively complete analysis of information data. The information has a logical connection and identifies appropriate scientific hypotheses but is not enough.	Complete analysis of information data. The information is logically and closely linked and correctly identifies all possible hypotheses.
(3) Perform problem solving	Choose and implement the solution	Choose an inappropriate solution and not clarify the problem.	Choose the appropriate solution and implement the problem relatively effectively.	Choose appropriate solutions and perform effective and creative problem solving.
(4) Evaluate and propose new application directions	Acquire new sources of knowledge and evaluate to apply the problems in other contexts	Passive, lack confidence in drawing new knowledge and not knowing how to make new proposals for practical application.	Access new sources of knowledge under the guidance of teachers and put new proposals into practice in a relatively reasonable manner.	Be ready to proactively receive newly drawn knowledge and put new proposals into practice reasonably and effectively.

+ Teacher evaluates the outcome through the groups' products in terms of forms and educational values.

In the example above, specific levels of the student's ability to apply knowledge and skills are revealed through activities such as: Explaining the reasons why the goods must be chosen; Analyzing situations related to the exchange and purchase of goods; and Performing some actions when shopping and creating products. The student's ability to apply knowledge and skills is developed through dividing tasks, collecting information from many different sources to learn the characteristics and roles of products of some manufacturing activities in real life; buying, selling, and choosing goods; developing exemplary behaviors when communicating, buying and selling. At the same time, with products created from this topic, students can apply and share with people so that everyone can understand the etiquette while going shopping. Depending on pedagogical intentions, educational plans, and implementation experience, teachers can decide to introduce this integrated topic in a subject (intra-subject integration) or an extracurricular educational activity (multi-subject integration).

3. Conclusions

The article provides some bases to determine the content of integrated topics in the curriculum of grades 1, 2, and 3 and establish a process of introducing integrated topics to develop students' ability to apply knowledge and skills. Although it is only at the initial qualitative research stage, this article can make positive contributions to developing the theoretical system and improving the effectiveness of applying integrated teaching to develop learners' capacity at the primary level. Further quantitative and experimental studies are needed to test the feasibility and effectiveness of this process. In some teaching contexts and with different pedagogical intentions, teachers can rely on the bases presented in the article to design integrated teaching topics and flexibly apply the steps in the proposed process to organize integrated teaching. At the same time, this research can be expanded at later stages of learning with different levels of integrated teaching to contribute to improving the effectiveness and quality of education in schools.

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