

Enhancing Teaching Effectiveness in Science and Social Studies Through Active Teaching Techniques: A Practical Study from Vietnam

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ABSTRACT : This paper focuses on the application of active teaching techniques in teaching Science and Social Studies at the primary level in Vietnam. Based on a survey of 63 teachers and interviews with 12 students from primary schools in Thai Nguyen and Nam Dinh, the study evaluates the current state, perceptions, and challenges teachers face in implementing active teaching techniques. The results indicate that most teachers recognize the importance of active teaching techniques in enhancing students' scientific skills, critical thinking, and collaboration abilities. However, limited classroom space, lack of resources, and large class sizes hinder effective implementation. Consequently, this paper proposes several solutions, such as strengthening professional development, flexible use of teaching techniques, diversification of methods, and fostering positive discipline to help teachers apply active teaching techniques more effectively.

Keywords: Active Teaching Techniques, Science and Social, Primary school, Competencies, Primary Students.

1. INTRODUCTION

In the context of educational innovation today, developing competencies for primary students is one of the important goals of the 2018 General Education Program in Vietnam [1]. Specifically, Science and Social Studies play a crucial role in shaping and developing scientific competencies, problem-solving skills, communication, and collaboration skills for primary students [1]. The application of active teaching techniques in primary education is increasingly valued, as it enhances students' autonomy, creativity, and self-learning abilities [2], [3], [4].

Active teaching techniques not only help students grasp knowledge but also foster essential life skills, such as critical thinking, adaptability to change, and collaboration in group settings [5]. Techniques like "Mind Mapping," "Placemat," "Flash," "Think-Pair-Share," and "See-Think-Wonder" have proven effective in engaging primary students and facilitating content comprehension [6], [7], [8], [9], [10], [11]. However, challenges remain in applying these techniques, especially in terms of infrastructure and teacher preparation in many Vietnamese primary schools.

This paper focuses on assessing the current state of active teaching technique application in teaching Science and Social Studies at the primary level in some schools in Vietnam, identifying the advantages and difficulties teachers encounter in the process. Based on the collected results, the paper proposes solutions to enhance the

effective application of active teaching techniques, thereby improving the quality of teaching and fostering students' competencies.

2. RESEARCH METHODOLOGY

This study focuses on two main groups: teachers and students. For the teacher group, we surveyed of 63 teachers from primary schools in Thai Nguyen and Nam Dinh. These teachers are currently teaching Science and Social Studies in grades 2 and 3. The teacher group is diverse in terms of educational qualifications, including both undergraduate and postgraduate levels, and is balanced in gender distribution to ensure representativeness in the sample. The sample of surveyed teachers is presented in Table 1.1.

Table 1.1. Demographics of Surveyed Teachers

Qualification				Gender				Years of Experience					
Undergraduate		Postgraduate		Male		Female		< 5 years		5-10 years		>10 years	
Quantity	%	Quantity	%	Quantity	%	Quantity	%	Quantity	%	Quantity	%	Quantity	%
46	73	17	27	9	14.3	54	85.7	5	7.9	37	58.8	21	33.3

All surveyed teachers met the qualification standards for primary teachers according to the regulations of the Ministry of Education and Training of Vietnam [12]. They were familiar with the 2018 General Education Program and were capable of conducting teaching activities that develop students' competencies.

For the student group, the research team conducted interviews with 12 students in grades 2 and 3 from Cua Nam Primary School in Nam Dinh City. The objective was to assess the students' interest and attitudes towards Science and Social Studies. These students were well-behaved, and polite, and exhibited relatively well-rounded abilities and traits, showing compassion and actively participating in school activities and competitions. However, due to the characteristics of the local community, as well as economic conditions and parents' limited awareness, there was a limited diversity in student academic abilities, and some students demonstrated lower academic performance and weak abilities to apply knowledge to practical situations.

The survey content was designed to clarify aspects related to awareness and the actual application of active teaching techniques in instruction, including:

- Teachers' awareness of the importance of applying active teaching techniques in developing students' competencies.
- The extent and frequency of active teaching techniques used by teachers in Science and Social Studies instruction.
- The advantages and challenges teachers and students face when utilizing active teaching techniques to develop student competencies in this subject.

To collect data objectively and comprehensively, we used two main tools: questionnaires and interview questions. The questionnaire included both multiple-choice and open-ended questions to gather information from teachers and students about the active teaching techniques applied. The interview questions provided deeper insights into teachers' experiences and perspectives when applying active teaching techniques, the challenges they encountered, and the support needed to improve teaching effectiveness.

The data collected from the questionnaires and interview questions were processed and analyzed using mathematical statistical methods to ensure accuracy and objectivity in the research results. The survey results were presented in tables and graphical illustrations to reflect the extent and frequency of active teaching techniques usage, along with an analysis of the advantages and challenges teachers and students face when applying active teaching techniques.

3. RESEARCH RESULTS

3.1. TEACHERS' AWARENESS OF STUDENT COMPETENCIES IN SCIENCE AND SOCIAL STUDIES

We investigated into teachers' perceptions of the most important competencies developed in students through Science and Social Studies instruction and obtained the following results:

Table 1.2. Key Competencies Developed in Students Through Science and Social Studies

Competency	Quantity	%
Language Competency	0	0
Physical Competency	0	0
Technology Competency	3	4.8
Informatics Competency	0	0
Scientific Competency	60	95.2
Aesthetic Competency	0	0

The survey results show that the majority of teachers participating in the study recognize the role and importance of Science and Social Studies in developing competencies for primary students. Specifically, 95.2% of teachers believe this subject significantly contributes to developing students' scientific competencies, including understanding nature, observation skills, and logical thinking. This high percentage indicates a consensus among teachers on the specific competencies that Science and Social Studies should aim to develop. This result also demonstrates that teachers are well aware of the achievement requirements of the Vietnamese Science and Social Studies curriculum.

3.2. EVALUATING THE ROLE OF ACTIVE TEACHING TECHNIQUES IN DEVELOPING STUDENT COMPETENCIES

The survey results on teachers' perceptions of the role of applying teaching techniques to develop student competencies in teaching Science and Social Studies are presented in Table 1.3:

Table 1.3. The Role of applying active Teaching Techniques to Develop Student Competencies in Science and Social Studies Teaching

Very Important		Important		Moderate		Less Important		Not Important	
Quantity	%	Quantity	%	Quantity	%	Quantity	%	Quantity	%
12	19.1	44	69.8	5	7.9	2	3.2	0	0

From Table 1.3, it can be observed that the majority of teachers (88.9%) rate the application of active teaching techniques as very important and important for developing student competencies. This reflects a high level of agreement in viewing active teaching techniques as an essential and effective tool that helps students take a more active role in knowledge acquisition, while also promoting the development of personal skills such as communication and teamwork. However, 7.9% of teachers consider active teaching techniques to have a "moderate" role, and 3.2% view it as "less important," which may be due to a lack of experience or an insufficiently supportive teaching environment for applying these methods. No teachers rated active teaching techniques as "not important," which generally indicates that active teaching techniques are widely acknowledged by teachers as playing a crucial role in competency development for primary students.

3.3. THE CURRENT STATE OF USING ACTIVE TEACHING TECHNIQUES IN INSTRUCTION

We identified several active teaching techniques that teachers have been trained in through professional development programs related to primary teaching methods organized by the Ministry of Education and Training of Vietnam. The results are shown in Table 1.4:

Table 1.4. Frequency of active teaching techniques used in Science and Social studies instruction

Active Teaching Technique	Frequency of Use									
	Very Frequently		Frequently		Occasionally		Rarely		Never	
	SL	%	SL	%	SL	%	SL	%	SL	%
Placemat	6	9.5	12	19.1	24	38.1	5	7.9	16	25.4
Round Robin	0	0	9	14.3	17	27	9	14.3	28	44.4
Fishbowl	0	0	0	0	4	6.3	8	12.7	51	81
Lightning Round	13	20.6	16	25.4	14	22.2	1	1.6	19	30.2
Gallery Walk	4	6.3	9	14.3	9	14.3	12	19.1	29	46
Think-Pair-Share	0	0	5	7.9	8	12.7	10	15.9	40	63.5
Mind Mapping	15	23.8	17	27	5	7.9	1	1.6	25	39.7
Positive Writing	0	0	3	4.8	1	1.6	18	28.6	41	65
Process-Based	0	0	0	0	0	0	9	14.3	54	85.7
Expert Consultation	0	0	2	3.2	3	4.8	8	12.7	50	79.3
Other Techniques	0	0	0	0	15	23.8	38	60.3	10	15.9

Table 1.4 shows the frequency of using active teaching techniques in Science and Social Studies instruction, with usage levels ranging from "Very Frequently" to "Never." The table lists 10 active teaching techniques, including Placemat, Round Robin, Fishbowl, Lightning Round, Gallery Walk, Think-Pair-Share, Mind Mapping, Positive Writing, Process-Based, and Expert Consultation. Lightning Round and Mind Mapping are the two most frequently used techniques, with "Very Frequently" and "Frequently" usage rates of 20.6% and 25.4% for Lightning Round, and 23.8% and 27% for Mind Mapping, respectively.

The frequency of using active teaching techniques varies significantly. Some techniques, like Lightning Round and Mind Mapping, have higher usage rates, possibly because they are easy to implement and effective in encouraging student interaction and critical thinking. In contrast, techniques such as Fishbowl, Process-Based, and Expert Consultation have very high "Never" rates. This could be due to these techniques requiring more preparation, or perhaps teachers have not observed clear benefits in the context of teaching Science and Social Studies.

3.4. ADVANTAGES AND CHALLENGES FOR TEACHERS AND STUDENTS IN APPLYING ACTIVE TEACHING TECHNIQUES

The survey of 63 teachers and interviews with 12 students revealed both advantages and challenges in applying active teaching techniques in teaching Science and Social Studies.

For teachers, access to training programs on active teaching techniques boosts their confidence in implementing these techniques. These programs not only provide knowledge but also equip teachers with effective classroom management and organizational skills. Students, all 12 interviewed students expressed that using active teaching techniques made learning more engaging and encouraged active participation, especially during group activities, movement-based tasks, competitions, and learning games. Five out of twelve students enjoyed being able to stand up, move around, discuss, and comment on each other's work. The classroom atmosphere was comfortable, and students felt happy when participating in learning activities involving active teaching techniques, particularly in outdoor activities exploring the natural environment.

However, the study also highlights several challenges faced by both teachers and students. One of the biggest challenges for teachers is selecting appropriate active teaching techniques for each lesson and aligning them with the abilities of each student. This requires teachers not only to master the curriculum but also to understand the needs of individual students. Additionally, limited classroom space and large class sizes hinder the effective implementation of many active teaching techniques.

Many teachers (49 out of 63) reported that in cramped classrooms, organizing group activities becomes challenging, affecting student interaction and reducing discussion quality. Managing large classes is also a significant challenge, as teachers need to ensure that all students participate in activities without causing disorder.

The analysis of the current situation shows that, although teachers are well aware of the role of active teaching techniques and apply various techniques, limitations still exist in selecting and using new teaching methods. Challenges related to classroom space, resources, and class management significantly impact teaching effectiveness. Understanding these advantages and challenges forms a foundation for proposing solutions to improve the quality of Science and Social Studies instruction, as discussed in the next section of this paper.

4. SOLUTIONS FOR ENHANCING THE USE OF ACTIVE TEACHING TECHNIQUES IN SCIENCE AND SOCIAL STUDIES INSTRUCTION

4.1. SOLUTION 1: STRENGTHENING PROFESSIONAL DEVELOPMENT FOR TEACHERS ON ACTIVE TEACHING TECHNIQUES

Professional development for teachers can be conducted through online or blended learning formats. Self-directed learning using digital resources from the Enhancing Teacher Education Program (ETEP), implemented by the Ministry of Education and Training of Vietnam from 2017 to 2022, can be an effective approach. Teachers can independently learn through the Learning Management System (LMS) in modules such as Module 2, Module 3, and Module 4. These online training modules, provided by key teacher education universities in Vietnam, support continuous professional development for teachers and school administrators.

- Additionally, primary schools should regularly organize professional meetings based on lesson study related to active teaching techniques use in various subjects, including Science and Social Studies. These professional development sessions can focus on topics such as effective classroom management skills, organizing group activities in limited spaces, and effective interaction with individual students during active teaching techniques - based instruction.

4.2. SOLUTION 2: FLEXIBLY ADAPTING TEACHING TECHNIQUES TO CLASSROOM SPACE

Teachers should flexibly select and adjust active teaching techniques to suit the classroom space and conditions. Teachers should avoid rigidly following the theoretical procedures of active teaching techniques. For example, in cramped classrooms, techniques like “Mind Mapping,” “Placemat,” or “See-Think-Wonder” can be prioritized as they do not require much space for movement. If space is limited, instead of organizing activities that involve a lot of movement, teachers can guide students to perform at-seat activities that still ensure high interaction, such as pair discussions, thinking, and sharing with a partner.

In cases where continuous pair interactions are needed, instead of following the exact “Round Robin” theory, teachers can modify students’ positions. Instead of forming two concentric circles as in the traditional Round Robin technique, students can be arranged in two parallel rows in pairs. When a change of partners is needed, students can move left or right according to the teacher’s instructions.

4.3. SOLUTION 3: DIVERSIFYING ACTIVE TEACHING TECHNIQUES AND METHODS

Each teaching activity aligns with different teaching techniques. Teachers can combine multiple active teaching techniques in a single lesson to match the objectives of each activity, creating interest and engagement for students.

For example, when teaching the lesson “Rational Use of Plants and Animals,” teachers can start with the “Lightning Round” technique to activate students’ prior knowledge and experiences with using plants and animals in daily life. After that, teachers can use the “Expert Consultation” technique to create a role-playing activity where students act as experts in protecting plants and animals. Students research rare species, and discuss, and present conservation solutions using “Mind Mapping.” Combining these techniques with group activities, discussions, and presentations not only increases practical relevance but also helps students understand the value of knowledge and how to apply it in real life.

4.4. SOLUTION 4: BUILDING POSITIVE DISCIPLINE IN THE CLASSROOM

Building positive discipline in the classroom is crucial for teachers to effectively implement active teaching techniques. Positive discipline not only helps maintain order but also creates a learning environment that encourages students' active and self-directed participation. When students feel safe, respected, and responsible in the classroom, they can easily interact, cooperate, and develop critical thinking skills in active teaching techniques - based activities.

To establish positive discipline, teachers can follow several principles, such as:

- Agreeing on classroom rules with students and using these rules as criteria to assess activities when applying active teaching techniques. Setting classroom rules together allows students to feel they have a voice and responsibility for their behavior. When rules are established from the beginning, students clearly understand the teacher's expectations and will voluntarily follow them to maintain a positive learning environment. For instance, active teaching techniques such as "Fishbowl," "Round Robin," "Think-Pair-Share," and "Lightning Round" require active group participation and sharing. Clear rules enable students to participate more responsibly in these activities, helping teachers manage the classroom effectively and focus on teaching rather than discipline issues.

- Motivating and encouraging positive behaviors: Positive discipline focuses on recognizing and encouraging positive behaviors rather than focusing on negative ones. By praising and motivating students for good attitudes or cooperation, teachers create a friendly classroom atmosphere where students feel respected and recognized. Active teaching techniques require students to be active participants and confidently share their ideas. Encouraging positive behaviors helps students become more confident in expressing opinions and actively engaging in learning activities. For example, when using the "Expert Consultation" technique, teachers can praise students who ask insightful questions or provide creative answers, encouraging class-wide participation.

- Guiding students to understand the consequences of negative behaviors when not adhering to requirements or classroom rules. Instead of immediate punishment, positive discipline helps students understand the impact of negative behaviors on the class and learning activities. When students realize that being disorderly or not following rules affects the group's progress, they are more likely to self-regulate to avoid impacting others, active teaching techniques often require students to collaborate and stay focused. Understanding the consequences of inappropriate behavior makes students more self-aware during group activities or discussions. For instance, if a student disrupts the "Lightning Round" activity, the teacher can explain how this behavior disrupts the group's thought process, helping the student recognize and improve their actions.

- Creating a friendly and safe learning environment where students feel respected and can freely express opinions without fear of criticism is essential for active teaching techniques effectiveness. Teachers need to build a classroom space where every student feels welcomed and encouraged. Active teaching techniques such as "Think-Pair-Share" or "See-Think-Wonder" require students to share personal ideas. In a safe classroom environment, students are more open to sharing and learning from peers, which also fosters communication and cooperation skills within a supportive learning space.

Building positive discipline in the classroom enables teachers to implement active teaching techniques more effectively, allowing students to express initiative, creativity, and cooperation. Positive discipline not only maintains order but also fosters a learning environment where students feel safe, responsible, and eager to learn from each other. This maximizes the effectiveness of active teaching techniques, contributing to the comprehensive development of students' skills and knowledge.

5. CONCLUSION

The application of active teaching techniques in teaching Science and Social Studies at Vietnamese primary schools brings significant benefits in developing students' critical thinking and teamwork skills. However, challenges related to facilities, classroom space, and teachers' classroom management skills need to be addressed to enhance teaching effectiveness. The solutions proposed in this paper, such as strengthening teacher professional development, flexible use of active teaching techniques, and building positive classroom discipline, can create a more friendly and effective learning environment. These measures not only support

teachers in implementing active teaching techniques but also help students fully develop competencies and knowledge, meeting the innovation requirements of Vietnam's 2018 General Education Program.

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How to cite/reference this article: **Hang Nguyen Thi Thu; Ngo Mai Oanh; Ho Thuy Ngan**, Enhancing Teaching Effectiveness in Science and Social Studies Through Active Teaching Techniques: A Practical Study from Vietnam, *Asian. Jour. Social. Scie. Mgmt. Tech.* 2024; 6(6): 115-121.