

Original Research Article

Exploring Theoretical Issues on Teaching Natural Science Subjects in Grade 6 at Secondary Schools in the Context of Vietnam

Oanh, Kieu Thi Dang^{1*}

¹Graduate Student, Tra Vinh University, Tra Vinh province, Vietnam

***Corresponding Author:** Oanh, Kieu Thi Dang
Graduate Student, Tra Vinh University, Tra Vinh province, Vietnam

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Abstract: Teaching Natural Science subjects in grade 6 at Secondary schools can be understood as the process of impact of teachers teaching Natural Science subjects on grade 6 pupils, through educational activities, to impart knowledge of Natural Science, to achieve academic objectives according to the regulations of the general education program. Studies have shown that teaching Natural Science subjects in grade 6 at Secondary schools is designed to develop the qualities and abilities of Natural Science for grade 6 pupils. This educational activity has achieved some positive results in the past but still reveals some limitations. Exploring theoretical issues in teaching Natural Science subjects in grade 6 at Secondary schools will help identify necessary content and orientation for practical activities. Based on the assessment of legal documents of the state; research selectively inherits in-depth research of several researchers; analyze, compare, synthesize, and evaluate; this study has discovered theoretical issues on teaching activities of Natural Science subjects in grade 6 at Secondary schools as position, role, objectives, content, methods, forms as well as conditions to ensure teaching activities of Natural Science subjects in grade 6 at Secondary schools. Discovering these contents has clarified and supplemented the missing content on theoretical issues; at the same time, it is the basis for applying to educational practice at Secondary schools.

Keywords: Exploring, theoretical issues, teaching activities, Natural Science subjects in grade 6, Secondary schools, context of Vietnam.

INTRODUCTION

Improving and enhancing the quality of education is an urgent need in the era of Industry 4.0. Vietnam, with its strong progress in the journey of international integration, recognizes the decisive importance of education in creating and developing quality human resources, ready to face global challenges. The focus on educational innovation is not only a strategic step but also an important part of the country's development plan.

Resolution No. 29-NQ/TW (2013) of the 11th Party Central Committee "On fundamental and comprehensive innovation of education" was passed, marking an important step in fundamental and comprehensive innovation of the education and training sector. In this process, the Education Council plays a central role in forming and developing the necessary qualities and capacities for secondary school pupils. This further highlights the importance of effectively managing educational activities to achieve high educational objectives (Central Party Committee, 2013).

The General education program in 2018 clearly identifies the change in thinking and educational methods from imparting knowledge to orienting the comprehensive development of pupils' qualities and abilities. In particular, the Natural Science subject is taught for the first time in Secondary schools (Ministry of Education and Training, 2018). Teaching Natural Science subject at the secondary school level is in line with the global educational development trend. Furthermore, the Education Law (2019) also affirms that secondary school education needs to ensure that pupils have a solid foundation in general education.

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Education of Natural Science subject is carried out in a direction that is consistent with the objectives and requirements of educational innovation. Knowledge of the subject is close and practically applied, helping pupils to be interested in learning. This not only helps pupils absorb knowledge effectively but also promotes and maximizes pupils' abilities and qualities. Although the implementation process has achieved certain results, there are still some issues that need to be considered and improved. The most notable point is whether the professional qualifications of teachers have met the requirements set by the new education program or not. In addition, the school has not been fully and synchronously equipped with facilities and teaching equipment to serve the Natural Science subject education activity.

Faced with the requirements of comprehensive education reform in the context of Vietnam, specifically the General education program in 2018; the need to clarify theoretical issues as a basis and additional orientation for practical educational activities; exploring theoretical issues on teaching Natural Science subjects in grade 6 at Secondary schools is a necessary issue and needs to be carried out. To better understand the theoretical issues of teaching Natural Science subjects in grade 6 at Secondary schools, this study focuses on answering the following questions:

- What is the position and role of teaching Natural Science subjects in grade 6 at Secondary schools?
- What are the objectives of teaching Natural Science subjects in grade 6 at Secondary schools?
- What are the contents of teaching Natural Science subjects in grade 6 at Secondary schools?
- What methods are used in teaching Natural Science subjects in grade 6 at Secondary schools?
- How many forms of teaching Natural Science subjects in grade 6 at Secondary schools?
- What conditions ensure the teaching of Natural Science subjects in grade 6 at Secondary schools?

LITERATURE REVIEW

Integrated education of Natural Science subjects is one of the new trends, specifically mentioned in the book "Trends in Integrated Science Teaching v.4". The main content presented in the book focuses on modern educational methods to integrate different fields such as physics, chemistry, biology, and Earth science. The book emphasizes the need to remove the boundaries between subjects to create cohesive learning units and a more comprehensive view of science (Cohen, 1971). In 1986, author K. Hecht published an article in the IOP Publishing Ltd magazine on the research: "Teaching natural sciences-an integrated approach". The author stated that the continuous progress of science subjects poses many great challenges to traditional education. Especially the inadequacy in teaching individual subjects and the limited transmission of specialized knowledge. The author has proposed an integrated course for Natural Science subjects; thereby, helping pupils grasp the general relationship between Natural Science disciplines and explain and solve phenomena in current life (Hecht, 1986).

In 2008, Lolita published a study "The didactical aspects of integrated natural science content model for secondary school education" in the Journal of Teacher Education for Sustainability, presenting a contextualized integrated Natural Science subject education model, aiming to meet pupils' learning needs in the trend of sustainable development. The author's research emphasizes that in addition to providing scientific knowledge, it is necessary to educate secondary school pupils to become responsible citizens, who can understand and solve common problems such as climate change and biodiversity loss. The result of applying this model is to improve pupils' awareness, thereby training citizens who are scientifically literate and capable of participating in social decisions related to science and technology (Lolita, 2008). Teachers' professional competence is a decisive factor in the quality of Natural Science subject education. The important role of Natural Science teacher training is presented by author Neusa Maria John Scheid in the study "Collective construction of knowledge in the initial professional training for natural sciences". Based on Ludwik Fleck's theory of "collective thinking" and "thinking styles", to achieve good results in Natural Science subject education and develop professional competence, teachers should share their knowledge (Scheid, 2016).

The quality of Natural Science subject's education is determined by the professional qualifications of teachers. Therefore, it is extremely necessary to foster the professional capacity of Natural Science subject teachers. The main contents such as: fostering the capacity to design Natural Science teaching objectives, fostering the capacity to design teaching content, and the capacity to design activities in Natural Science teaching have been focused on in the work "Fostering the capacity to teach Natural Science subjects for secondary school teachers" by author Hoang Thi Chien (2018). "Natural Science is one of the subjects that promote STEM education" (Ministry of Education and Training, 2018). One of the necessary conditions to improve the quality of Natural Science subject education is learning materials. The group of authors Arief Muttaqin, Murtiani Murtiani, Yulkifli Yulkifli in the study "Is Integrated Science Book with Ethno-STEM Approach Needed by Secondary School Pupils?" (Do secondary school pupils need integrated science books with the Ethno-STEM approach?) has shown the necessity of integrated science books with the Ethno-Stem method for secondary school pupils considered in this study. The study uses the ADDIE development model (analysis, design, development, implementation and evaluation) to develop integrated science education materials with the Ethno-STEM method. The research team concluded that developing integrated science books with the Ethno-STEM method is necessary and will help improve pupils' learning outcomes in both knowledge and skills (Arief Muttaqin, 2021). In the study:

“Designing a testing framework to assess scientific research capacity in teaching Natural Science subject of Secondary school pupils” by Pham Dinh Van and Le Thai Minh Long (2022). They built and proposed a testing framework to assess scientific research capacity in teaching Natural Science subjects at Secondary schools. This study is based on the practical need to innovate teaching methods according to the General education program in 2018. A survey of the current status of the scientific research capacity of pupils in Secondary schools in Ho Chi Minh City shows that the scientific research capacity of pupils is mainly at a weak and average level. Teachers use the framework for testing and assessing scientific research capacity as a basis for designing and implementing research-oriented educational activities, helping to improve the quality of teaching and learning and meet the requirements of the General education program in 2018.

The study by author Cristina Leite (2023): “Teachers of Natural Sciences: some challenges and perspectives in Brazil” took place in the context of the debate on the basic education reform in 2017 and the National General education program in 2018 in which knowledge of Natural Sciences is guided to be implemented interdisciplinary and integrated. The study clearly states that Natural Science subject education plays a fundamental role in modern education. However, focusing on specific content without linking it to the context has made it more difficult to understand events and phenomena. The study has raised several challenges and perspectives on integrating Natural Science fields, most notably proposing an interdisciplinary teacher training program to equip teachers with creative and responsible educational capabilities, in line with modern educational requirements.

The studies generally recognize that integrating Natural Science subjects is inevitable and in line with the development of the times. However, the above studies all focus on practical surveys to make regional assessments and judgments; there has been no research work that clarifies theoretical issues about teaching Natural Science subjects in grade 6 at Secondary schools. Therefore, this is a new study that has both theoretical and practical significance.

RESEARCH METHOD

Textual Research: Exploring theoretical issues on teaching Natural Science subjects in grade 6 at Secondary schools in the context of Vietnam cannot be separated from the policies and guidelines of the Communist Party of Vietnam (CPV); policies and laws of the State of Vietnam (legal documents); Decrees and Circulars of Ministries, Departments and Branches, focusing on Decrees and instructions of the Ministry of Education and Training.

Interdisciplinary and Interdisciplinary Research Methods: In the field of social sciences and humanities, the research methods used are mainly: analysis - synthesis, comparison - contrast, deduction - induction; synchronicity - diachrony, logic - history, etc. The use of these methods allows exploring the content related to the educational activities of Natural Science subjects in grade 6 at Secondary schools in the context of Vietnam from a theoretical perspective. Specifically, this method allows comparing and contrasting previous research results with the author’s research results; historical and specific assessments of the research content, etc., thereby allowing for the making of comments, assessments as well as necessary theoretical issues of the educational activities of Natural Science subjects in grade 6 at Secondary schools in the context of Vietnam.

Document Discovery Method: The study of documents of previous authors allows this study to generalize issues related to the research content such as the basis for proposing theoretical issues related to the educational activities of Natural Science subjects in grade 6 at Secondary schools in the context of Vietnam. At the same time, the interpretations of previous studies help this study to further demonstrate issues about position, role, content, methods, forms of testing and evaluation of the educational activities of Natural Science subjects in grade 6 at Secondary schools in the context of Vietnam.

RESEARCH RESULTS

Position and role of Natural Science subjects in grade 6 education activities at Secondary schools

In the process of educational innovation, the Natural Science subject is one of the subjects with a key position and role in the comprehensive development of pupils. Circular No. 32/2018/TT-Bgiaoducdaotai clearly emphasized the position and role of this subject. With a total of 140 periods per year, evenly distributed over 35 weeks from grade 6 to grade 9. Natural Science is a compulsory subject that is the foundation for other subjects related to science and technology.

Natural Science subjects in grade 6 help pupils gain a comprehensive understanding of the basic concepts and principles in the field of Natural Science. From there, help pupils perceive the unity in the field of science. Natural Science not only equips pupils with knowledge but also forms a scientific worldview for pupils, thereby arousing passion, curiosity, and desire to explore the world around them. In addition, it also helps pupils develop thinking and problem-solving skills most comprehensively.

Natural Science subjects in grade 6 ensure continuity with the Natural and Social Sciences program, Primary Science as well as Physics, Chemistry, and Biology at high school and vocational education programs. Natural Science 6

will help pupils have a more general view of the scientific world, and at the same time be a bridge, a foundation of knowledge to prepare pupils for higher education or future careers. This shows a continuous, seamless, uninterrupted flow of knowledge, helping pupils easily transition between levels of education.

Natural Science subjects in grade 6 contribute to promoting STEM (Science, Technology, Engineering and Mathematics) education through the development of scientific concepts, principles and methods right from the early years of middle school. STEM-oriented education is one of the trends of the times, aiming to equip pupils with the necessary skills in the digital age. Promoting STEM education contributes to creating conditions for pupils to have deeper access to modern technology and engineering, promoting the process of applying science to life, and contributing to the formation of important skills in the 21st century. From there, forming pupils with the mindset of daring to think, daring to do, daring to act with their ideas.

In addition, Natural Science subjects in grade 6 contribute significantly to the formation of pupils' qualities and abilities. Through lessons and practical activities, pupils are trained in skills such as critical thinking, problem-solving skills, teamwork skills and communication skills. These are the qualities and abilities needed for pupils to succeed in their studies and life. Not only providing academic knowledge, Natural Science subjects in grade 6 contribute to the development of soft skills, helping pupils to be more active and responsible, thereby aiming to become global citizens.

An important role of Natural Science subjects in grade 6 is to orient the development of scientific thinking for pupils. Educating basic concepts, and approaching problems scientifically and comprehensively helps pupils form the habit of logical thinking, analysis and reasoning. This helps them apply well to all subjects and handle problems in life more effectively. Mastering the Natural Science subjects in grade 6 program also helps pupils better prepare for vocational training programs or university programs in the field of science and technology. More simply, studying Natural Science subjects well helps pupils to be able to explain the phenomena that occur around them.

In general, Natural Science subjects in grade 6 have an extremely important position and role in the comprehensive development of pupils. Investing in Natural Science subjects is necessary and correct. With its position and role, Natural Science subjects deserve to be focused on and invested properly.

The objectives of teaching Natural Science subjects in grade 6 at Secondary schools

The objectives of educational activities are not only specific statements about the learning outcomes the program wants to aim for but also a guideline for the entire educational process.

The educational objective of Natural Science subjects in grade 6 is to equip pupils with basic knowledge of science. This includes helping pupils perceive the unity of objects, methods of cognition and general principles in the field of Natural Science. Thereby, pupils will not only understand the natural world but also form scientific thinking, know how to ask questions and find answers systematically.

The educational objectives of Natural Science subjects in grade 6 also focus on developing important skills for pupils such as critical thinking skills, teamwork skills, and communication skills. Through learning, pupils can apply these skills in daily life. Specifically, in the educational process, pupils will observe, ask questions, and conduct simple experiments to find answers themselves. This process not only helps them better understand knowledge but also trains them in problem-solving thinking. Moreover, in the process of teamwork, pupils listen to opinions, discuss, and cooperate to find optimal solutions, thereby making them more confident, more flexible, and ready to face challenges in learning and life (Duchiep, *et al.*, 2022). One of the important objectives of Natural Science subjects in grade 6 is to form and develop a positive attitude toward science. Natural Science subjects help pupils realize the value of learning and research, thereby orienting them to pursue suitable careers in the future.

Natural Science subjects in grade 6 aim to develop Natural Science competencies for pupils including Natural Science awareness, understanding nature, and applying learned knowledge and skills. Pupils are equipped with the competencies to approach and solve scientific problems effectively and creatively. These competencies not only help pupils in their studies but also prepare them with the necessary skills for their future careers and lives. Developing these competencies plays an important role in forming a generation of pupils with the ability to self-study and lifelong learning, meeting the demands of a constantly changing society. When having solid scientific competencies, pupils are confident in solving practical problems, and making wise and creative decisions in life as well as work. Natural Science subjects in grade 6 also aim to help pupils become responsible citizens. Pupils will be educated to become cultured, hard-working, and creative workers to meet the requirements of building and protecting the country. Natural Science subjects in grade 6 help pupils understand their roles and responsibilities to society. Natural Science subjects help them realize the importance of protecting the school and participating in social activities to develop a sustainable society.

Thus, Educational activities Natural Science subjects in grade 6 according to the General education program in 2018 not only contribute to the implementation of general education objectives, helping pupils develop physically and mentally but also play an important role in shaping and developing scientific thinking, life skills and a positive attitude towards natural science. Educational objectives clearly reflect the expectations of learning outcomes that pupils need to achieve, contributing to building a young generation that is not only good at knowledge but also solid in skills (Ministry of Education and Training, 2018).

Content of teaching Natural Science subjects in grade 6 at Secondary schools

The comprehensive education reform process has designed the content of Natural Science subjects in the General education program in 2018 in a detailed and systematic manner. The objectives is not only to help pupils acquire knowledge but also to develop comprehensively their skills, attitudes and abilities. Science topics are organized in a logical sequence, combined with a concentric structure and integrating related topics to form general principles and laws of the natural world.

The topic “Substance and its transformation” allows pupils to explore the fundamental aspects of matter, from physical states to the processes of separating substances from mixtures. This includes learning about the states of matter (solid, liquid, gas) and their properties, the composition of air and the role of oxygen, as well as common materials, fuels and raw materials in everyday life. Pupils will master the concept of solutions and methods of separating substances such as filtration, evaporation and distillation. Through this, they not only learn basic concepts but also practice simple experiments, develop practical skills and gain a deep understanding of chemical and physical processes.

Next, the topic “Living Things” opens the door to exploring the structure, function and diversity of the biological world. Pupils will learn about the cell - the basic unit of life, including the structure and function of cells and the process of metabolism from cells to organisms. The diversity of biological groups and the important role of biodiversity in nature are also emphasized, along with measures to protect biodiversity. Learning about organisms in nature through field research methods will help pupils practice their observation, recording and analysis skills while forming an attitude of respect and awareness of environmental protection.

The topic “Energy and physical transformation” provides pupils with basic knowledge of physical concepts, measurement and the effects of force. They will learn how to measure length, mass, time and temperature (according to the Celsius scale), understand force and its effects, contact and non-contact forces, friction, mass and weight, and spring deformation. Through practical measurement activities and experiments on the force, pupils will develop their observation, analysis and scientific conclusion-drawing skills. This is the basis for pupils to better understand the basic laws of physics and develop scientific thinking.

The topic “Earth and Sky” helps pupils broaden their vision of the universe, from basic astronomical phenomena to the structure of the Solar System and the Milky Way. They will observe and analyze the movements of the Sun and Moon from Earth, and learn about the planets in the Solar System and the position of the Solar System in the Milky Way. Through that, pupils will have a general and detailed view of the universe, while nurturing a passion for space exploration and astronomy. The educational content of Natural Science subject in grade 6 is designed scientifically, logically and integrated, aiming to give pupils a deep and comprehensive understanding of the natural world. The combination of interdisciplinary topics not only helps pupils see the connection between different fields of science but also arouses interest and passion for learning. Looking at the Natural Science subject in grade 6 educational program, we see a long-term and strategic vision to build a modern and advanced education.

The logical and scientific arrangement of the program not only ensures that pupils master knowledge but also develops thinking skills, practical ability and a positive attitude towards learning. These are the key factors in training responsible, creative and always ready-to-learn global citizens. More importantly, education does not stop at imparting knowledge, but also arouses passion, curiosity and self-learning ability, helping pupils become lifelong learners. Focusing on educational content not only ensures the quality of learning but also creates a foundation for pupils to develop comprehensively, preparing them for future challenges and opportunities. With such a scientific, systematic and integrated educational program, pupils will not only become active, confident and creative learners but also responsible citizens, contributing to building an increasingly progressive and developed society. Looking at this long-term and strategic vision, we see a bright future in education, where every pupil has the opportunity to develop their full potential.

Method of teaching Natural Science subjects in grade 6 at Secondary schools

In the context of educational innovation, the Natural Science subject education method according to the General education program in 2018 at Secondary schools is designed comprehensively and flexibly. The general guidelines of the Natural Science subject education method are specifically prescribed to “promote pupils’ positivity, proactiveness and creativity; train skills in applying Natural Science knowledge to detect and solve practical problems; apply educational methods flexibly and creatively, following educational objectives, content, pupils and specific conditions; forms of

teaching and learning are implemented diversely and flexibly. The focus of Natural Science subject education methods is to promote pupils' positivity, proactiveness and creativity" (Ministry of Education & Training, 2020). In the specific guidelines of the Ministry of Education and Training, the typical educational methods of Natural Science subject include:

Visual teaching methods, using natural specimens, pictures, diagrams, models, video clips and experimental demonstrations are effective tools for conveying knowledge in a lively and attractive way. This method not only helps pupils easily absorb and remember information but also stimulates curiosity and desire to explore. Direct observation and interaction with learning materials helps pupils better understand complex concepts, thereby developing the ability to analyze and apply knowledge in practice.

Problem-solving teaching methods with teaching techniques such as brainstorming, mind maps, KWL, tablecloths and galleries help pupils develop logical thinking and creativity. This method creates a dynamic and diverse learning environment, where pupils are encouraged to think freely, explore and present their ideas. Through this, not only knowledge is mastered but thinking skills are also applied to solving practical problems.

The method of using experiments in teaching Natural Science is typical in Natural Science subject education in grade 6. Using experiments to organize knowledge discovery activities, consolidate, review, practice and practice to develop the ability to learn about nature. Experimental learning activities will create conditions for pupils to explore, discover knowledge and practice skills such as asking questions, proposing hypotheses, building and implementing plans to test hypotheses, collecting data, analyzing and drawing conclusions. This method helps pupils grasp the nature of the learning content and also practice critical thinking and group cooperation skills.

The field teaching method in Natural Science subjects in grade 6 brings many outstanding benefits in connecting theory with practice. By taking pupils out of the classroom environment to places such as parks, botanical gardens, nature reserves, or science museums, pupils can apply their knowledge to practical observation and research. The pre-trip preparation process is designed to develop pupils' observation skills, critical thinking, and teamwork abilities. Direct interaction with the natural environment and scientific phenomena not only enriches knowledge but also promotes curiosity and passion for scientific research.

The teaching method following the STEM/STEAM education orientation is one of the methods that is suitable for the program development orientation. Teachers need to create opportunities for pupils to propose or approach and solve practical situations, propose scientific measures to protect health, protect the environment, and develop sustainably. Pupils are also encouraged to design and analyze technological models, thereby applying the knowledge and skills they have learned to practice. In general, the Natural Science subjects in grade 6 teaching method aim at teachers as guides and supporters for pupils in the process of discovery and learning. The relationship between teaching objectives, content and teaching methods is clearly shown, ensuring that each teaching activity is aimed at the comprehensive development of pupils.

Form of teaching activities Natural Science subjects in grade 6 at Secondary schools

The General education program in 2018 was implemented to improve the quality of education and develop pupils' skills and thinking. Natural Science subjects in grade 6 play an important role in helping pupils understand the world around them, stimulating their curiosity and passion for science. To achieve these objectives, modern forms of education have been applied, including online teaching, direct teaching and blended learning. Online teaching is becoming more and more popular thanks to the development of information technology (Hang, 2020; Van, 2022). This form is not only a temporary solution in the context of the COVID-19 pandemic but also a future trend in education. For Natural Science subjects, online teaching brings many opportunities and challenges. Online teaching has a great advantage in terms of flexibility in time and space. Pupils can participate in learning anytime, anywhere as long as they have an internet connection. Besides, online learning resources are very rich. Teachers can use a variety of digital materials, videos and online learning support applications to make lessons more vivid and attractive. Pupils are encouraged to learn and research by themselves through online resources, thereby developing self-learning skills and problem-solving abilities (Vu, 2023).

In the context of teaching Natural Science subjects, video lectures, virtual experiments and online materials can help pupils visualize complex scientific concepts more clearly. Online tools such as simulations and virtual experiments are especially useful when teaching abstract or dangerous concepts that cannot be implemented in a traditional classroom. However, online teaching also faces challenges. Limitations in direct interaction are one of the major problems. Lack of face-to-face communication between teachers and pupils can reduce educational effectiveness, making it difficult to grasp pupils' psychology and needs. This is especially important in building teacher-pupil relationships and creating motivation for learning. In addition, to learn online effectively, a computer and a stable internet connection are required. This can be a challenge for some families, especially in rural areas or places with difficult economic conditions. Furthermore, teachers

may have difficulty in accurately monitoring and assessing pupils' progress due to the inability to directly observe the learning process.

Direct teaching is still the most traditional and popular method in schools. This form has many outstanding advantages, especially the ability to interact directly between teachers and pupils. In traditional classrooms, pupils and teachers can easily communicate, answer questions and provide timely support. The traditional classroom environment helps pupils focus more on the lecture, minimizing external distractions. Experimental practice is an important part of Natural Science subject education. Direct teaching allows teachers to easily organize experimental practice sessions, helping pupils better understand the theory they have learned, thereby effectively consolidating their knowledge. Pupils have the opportunity to directly observe and participate in experiments, and experience real life, thereby developing practical skills and scientific thinking.

For example, conducting experiments on force and motion in Physics, chemical reactions in Chemistry, or observing cell samples under a microscope in Biology will help pupils grasp knowledge better through practical experience. Lessons such as observing specimens under a microscope, experimenting with chemical reactions, or measuring and analyzing data in Physics all require physical presence so that pupils can directly practice and feel. This helps consolidate theoretical knowledge and develop practical skills.

However, direct teaching also has limitations. Pupils can only study at a certain time and place, which may not be convenient for everyone. Especially in the context of epidemics or emergencies, maintaining traditional classrooms can be difficult. Moreover, educational effectiveness depends heavily on the methods and abilities of teachers. If teachers do not have good skills, the quality of teaching can be affected. In addition, dependence on teachers can also reduce pupils' ability to learn independently and develop independently.

Blended learning is a blend of online and face-to-face teaching, to maximize the advantages of both methods. This is considered an advanced educational model, meeting the diverse learning needs of pupils in the digital age. Blended learning allows pupils to flexibly study and access rich resources online, while still interacting directly with teachers when necessary. Pupils can interact directly with teachers, develop self-study skills and use technology, thereby becoming more flexible and autonomous in the learning process. Teachers can apply many different educational methods, suitable for each lesson content, thereby improving educational effectiveness.

Blended learning is especially useful in Natural Science subject education, where theory needs to be combined with experimental practice so that pupils can master the knowledge. For example, a lesson on motion in Physics can start with online learning through demonstration videos and simulations, after which pupils can perform real-life experiments in the classroom to verify and consolidate their knowledge. Similarly, lessons on chemical reactions can be introduced through online videos, after which pupils conduct experiments in the laboratory to better understand the reaction process.

Blended learning also requires teachers to have good management skills to effectively coordinate between the two forms, and to have a clear and flexible educational plan. Some schools may have difficulty in fully equipping equipment and technical infrastructure, especially in rural areas or schools with limited resources. Ensuring consistency and continuity in the educational process is also a significant challenge, requiring close coordination among school members. The choice of which form of education in Natural Science subjects in grade 6 according to the General education program in 2018 should be based on many factors, including the specific conditions of each school, the ability and needs of pupils, as well as the ability and teaching methods of teachers.

Conditions to ensure the teaching of Natural Science subjects in grade 6 at Secondary schools

The effectiveness of management and leadership of educational activities at schools is directly affected by the capacity and prestige of the Principal. Leithwood and Riehl (2003) believe that the Principal can promote the development of teachers by facilitating and encouraging innovation in education. In practice, the Principal needs to regularly check and support teachers in implementing the Natural Science program for grade 6 (Kenneth Leithwood and Carolyn Riehl, 2003).

The teaching staff is a key factor in the process of educating and imparting knowledge to pupils. Teachers with professional knowledge and solid pedagogical skills will improve educational effectiveness. Updating knowledge and educational methods is extremely necessary for teachers' educational activities. Exchanging experiences, learning spirit, passion and enthusiasm for the profession will inspire pupils to learn better (Darling-Hammond, 2010).

Pupils' active participation in learning activities is a decisive factor in the success of Natural Science subjects in grade 6. According to Bruner (1961), creating conditions for pupils to participate in the process of discovery and problem-solving will improve learning effectiveness. Teachers need to design diverse, interesting and challenging learning activities

to stimulate pupils' curiosity and passion for discovery. Pupil assessment needs to be flexible and comprehensive (Bruner, 1961)

Sufficient financial resources are a prerequisite to ensure the quality of education. According to OECD (2012), financial investment in education not only improves facilities but also improves the quality of education through teacher training and curriculum development. Schools need to develop a clear financial plan, including budget planning and reasonable use of resources. Calling for financial support from the community, businesses and social organizations can also help supplement resources for educational activities, especially Natural Science subjects in grade 6 (Organisation for Economic Co-operation and Development, 2012).

Teaching facilities and equipment play an important role in improving the quality of education in Natural Science subjects. Tanner (2000) shows that a good learning environment can significantly improve pupils' learning outcomes. Schools need to invest in building and upgrading laboratories and purchasing equipment and learning materials. In addition, there should be a plan for regular maintenance and updating of equipment to ensure that they are always in good working condition. Guiding views and policy mechanisms play a role in guiding and facilitating the implementation of educational programs. Evans (2001) emphasizes that consistency and clarity in educational policies help create a stable educational environment and encourage innovation. Departments, Boards and Agencies need to regularly evaluate and adjust policies based on feedback from teachers, pupils and parents to ensure that policies meet actual needs. At the same time, there should be supportive policies to facilitate schools in implementing the new educational program.

Family and community involvement plays an important role in supporting educational activities. Epstein (2001) asserts that cooperation between schools, families and communities will create a strong support network, helping to improve the quality of education and comprehensive development of pupils. Schools need to organize parent meetings, exchange activities and cooperate with the community to build close relationships and create a comprehensive learning environment for pupils. Support from families and communities also helps to create more resources and motivation for educational activities.

To ensure the quality of Natural Science subjects education in grade 6 according to the General education program in 2018, there needs to be synchronization and close coordination between the following factors: the capacity and reputation of the Principal, the quality of the teaching staff, the active participation of pupils, strong financial resources, modern facilities and teaching equipment, clear guiding views and policies, along with support from families and the community. A thorough analysis and linkage of these factors with educational practices will help improve the effectiveness and quality of education.

CONCLUSION

In the context of education undergoing fundamental changes, to meet the needs of modern and future society, the General education program in 2018 has set new and higher requirements for improving the quality of education and learning. In the documents of the 13th National Party Congress, it was emphasized that "Building a synchronous system and policies to effectively implement the policy of education and training together with science and technology is the top national policy, the key driving force for national development" (CPV, 2021). This clearly affirms the position and role of education, especially education in Natural Science subjects, in the national development strategy, considering it a solid foundation to promote scientific and technological progress, contributing to socio-economic development. The educational activities of Natural Science subjects in grade 6 according to the General education program in 2018 at Secondary schools are understood as the targeted and targeted impact of the Principal on the management object through planning, organization, implementation, direction and inspection and evaluation to achieve the educational objectives of Natural Science subjects in grade 6 according to the General education program in 2018 at the secondary school level. Therefore, it is necessary to explore theoretical issues about teaching Natural Science subjects in grade 6 at Secondary schools in the context of Vietnam, contributing to proving the correctness of the educational activities of Natural Science subjects in grade 6 according to the General education program in 2018 at the secondary school level in Vietnam.

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