

The Current Situation, Problems and Countermeasures of Interdisciplinary Teaching in Urban Primary Education in China

--Take Ningbo X Primary School as an Example

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Abstract: Interdisciplinary teaching is an integrated approach to teaching and learning to identify and solve practical problems. In recent years, as international competition intensifies and global crises lurk, interdisciplinary education has gained the attention of most countries. In addition, the introduction of the double reduction policy has increased the country's demand for well-rounded talents. As a result, primary and secondary schools in China are gradually focusing on interdisciplinary teaching. However, multidisciplinary teaching is difficult to implement, faces diverse challenges, and encounters many obstacles in its development. This paper takes X Primary School in Beilun District, Ningbo, as an example. It conducts a thorough investigation and study of the school to analyze the current situation and dilemmas of its interdisciplinary teaching and to explore corresponding solutions for the future development of interdisciplinary teaching.

Keywords: interdisciplinary teaching, primary education, dilemmas, responses

1. Introduction

1.1. Background and Significance of the Study

Due to the rapid development of international relations, the complexity of social issues, and scientific and technological innovations, the marginalization of the various types of knowledge involved in the established disciplines in primary and secondary schools as well as in higher education has become increasingly blurred, and the changing boundaries of the fields have challenged traditional sub-disciplinary teaching. In addition, developed countries such as the USA have incorporated STEM education into their national science curriculum standards [1,2].

Compulsory education in China often falls into the misconception of teaching to the test. The dual-based curriculum objectives have led to the cultivation of mechanical rote learning, question-and-answer tactics in primary and secondary school teaching, and a lack of initiative and innovation in student learning.

To meet the challenges posed by globalization and the threat of intricate international relations in the context of the new crown epidemic, it is equally necessary for China to adjust its teaching mode promptly and to properly implement interdisciplinary teaching in primary and secondary schools to

improve the teaching disadvantages brought about by compartmentalized education at this stage, to cultivate socialist successors in line with the development of the times.

1.2. Research Overview

1.2.1. Current Status of Theoretical Research on Interdisciplinary Teaching in China

From 1993 to the present, more than 1600 papers on the topic of "interdisciplinary teaching" have been searched on China's Knowledge. The author analyzed the titles, abstracts, keywords, and other items of the top 200 papers in order of the number of citations, mainly post-2008 academic papers, and learned that the current research in this field in China is primarily focused on the following areas.

In terms of interdisciplinary teacher education, Chen Xiaomin's research on STEM interdisciplinary competencies in primary schools in Shanghai has provided a concrete and well-developed summary. In the paper, Chen Xiaomin suggests that the practice of multidisciplinary teaching in China is still in the exploratory stage and many problems at the beginning of the course need to be solved, while the lack of professional interdisciplinary teaching teachers is one of the main problems in the implementation and development of interdisciplinary teaching. Through interviews and literature analysis, Chen Xiaomin concludes that interdisciplinary teachers in China have weak creative personalities, weak ability to integrate and apply multidisciplinary knowledge, poor teamwork role identity, and weak ability to use technology and innovation, among which the lack of cultivation of interdisciplinary concept awareness, lack of publicity of relevant interdisciplinary knowledge, low efficiency of interdisciplinary-related training, poor team formation, and scarce opportunities for practice are the causes of the lack of multidisciplinary teaching. The lack of interdisciplinary awareness, the lack of dissemination of interdisciplinary knowledge, the ineffectiveness of multidisciplinary training, the poor formation of teams, and the lack of practice opportunities are all factors that contribute to the lack of positive interdisciplinary teams [3].

In terms of policy research on interdisciplinary teaching, nearly all scholars agree that the implementation of multidisciplinary teaching in China is based on the consideration of international competition for talents and that it is also the first time that the Ministry of Education proposed in the Guidance on Comprehensively and Deeply Promoting Education Informatization during the Thirteenth Five-Year Plan (Draft for Comments) in 2015 to "Explore new education models such as STEM (a collective term for science, technology, engineering, art, and mathematics) education and creator education." The reason. The confusing situation that emerged at the beginning of the implementation of interdisciplinary teaching is also seen by most scholars as a manifestation of social institutions joining interdisciplinary teaching, with the vision of many primary and secondary schools and higher education to include multidisciplinary teaching in the relevant teaching features, and the reality that the community is responding positively to the implementation of interdisciplinary teaching [4].

Regarding the quality of education in interdisciplinary teaching, the history of science shows that the integration and penetration of cross-disciplinary disciplines have contributed to producing academic results and breakthroughs. For example, the Nobel Prize winner in physics, Xiao Clay, Badin and Bratton as the core and equipped with physicists, chemists, and electronic circuit experts to participate in the solid-state physics research team through the integration of each other's disciplines, side by side, the development of transistors, the same Nobel Prize in physics in 1956. In addition, American institutions of higher learning, as well as the best 985 institutions in China, have attempted to break down disciplinary boundaries by establishing "dual degrees," "cross-degrees," and "interdisciplinary research centers," for example, The PISA test is the world's leading test for education [4]. Finland, a global leader in the PISA test, introduced the principle of 'non-specific curriculum' in the 1994 curriculum reform to enhance teachers' motivation and continued this in the

2004 curriculum reform, expanding the 'decentralization' in 2014. "This was continued in the 2004 Curriculum Reform and expanded in 2014 to include 'decentralization,' encouraging teachers to study the National Curriculum standards and develop the school curriculum to provide the basis for interdisciplinary teaching. In addition, the 2004 curriculum reform introduced a 'phenomenal teaching' view of subject teaching in Finland and explicitly introduced the idea of 'interdisciplinary teaching' [5]. This shows that interdisciplinary teaching is at the forefront of Finnish teaching.

In research on attitudes toward interdisciplinary teaching and learning, only one scholar, Zheli Li, has conducted relevant research on the attitudes of pre-service secondary mathematics teachers toward multidisciplinary teaching and learning. In the paper, the author points out that secondary school pre-service mathematics teachers have a relatively high degree of recognition and enthusiasm for interdisciplinary integration teaching. Still, the power of action is open to question. This shows that teachers in China currently have optimistic attitudes toward multidisciplinary teaching and learning but lack the drive to take action [6].

Regarding research on the current state of interdisciplinary teaching, a search of the Chinese website for the keywords 'interdisciplinary' and 'current state' showed 52 academic journals and 19 dissertations. Most of these journal papers focus on the application of interdisciplinary teaching in universities, theoretical expectations of the results, and case designs of interdisciplinary teaching by teachers at primary, secondary, and higher education levels. Unfortunately, there has been a lack of research on implementing interdisciplinary teaching in primary and secondary schools since the introduction of the new curriculum.

1.3. Research Content and Research Methodology

1.3.1. Research Content

The subject of this research is the realities and challenges of interdisciplinary teaching and learning. This study aims to collect, analyze and summarise the facts and challenges of interdisciplinary teaching and learning in the schools studied through the collection and analysis of literature on multidisciplinary teaching and learning at home and abroad, as well as information on schools' practices. Specifically, the study focuses on the implementation plans of interdisciplinary teaching in the schools studied, the current status of implementation, teachers' attitudes and strategies towards multidisciplinary teaching, the attitudes and plans of the school's teaching and research team towards interdisciplinary teaching, the current situation and difficulties of the multidisciplinary teaching model in the school, and strategies to cope with them. The critical issues in this study are to outline the model of interdisciplinary teaching in Ningbo X Primary School and to explore the difficulties in its practice. The problem lies in how to grasp the effects of multidisciplinary teaching in practice and honest feedback. This is evident in three areas: firstly, the diversity of assessment methods used in interdisciplinary teaching and students' mastery of knowledge can be so varied that it is challenging to develop an appropriate assessment system to evaluate students' academic quality in a holistic manner. Secondly, the concept of interdisciplinary teaching is unfamiliar to some primary school teachers, which reduces the sample size for the interviews. Thirdly, some primary school teachers are entirely opposed to multidisciplinary teaching and may present unobjective responses in the discussions, which may affect the findings. To address these challenges and to obtain as much valid information as possible, this study adopted a direct interview method (interviewing serving primary school teachers) together with indirect induction (questioning students' attitudes towards interdisciplinary teaching through teaching and research groups to obtain an accurate picture of students' academic quality).

1.3.2. Research Methodology

Ningbo X Primary School is a typical example of a school I have encountered. Firstly, the school has set up a unique teaching and research planning team, which introduces a new teaching and research plan for each school year in response to recent national policies and analysis of the academic quality of the students in the previous year so that the school's teaching and research plan is at the forefront of the times. Secondly, the school is a model experimental primary school in Ningbo, with high-quality teachers and students. Over 90% of the teachers have various professional honors at the district level or above. Finally, the school's philosophy is based on the "goal of educating people" and is at the forefront of curriculum reform, implementing the "separation of teaching and examinations" ahead of the "double reduction policy" and exploring. The school's philosophy is based on the "goal of education" and is at the forefront of curriculum reform. In conclusion, the study represents the implementation of "interdisciplinary teaching" in this school.

This study mainly adopts the literature, interview, questionnaire, and observation methods. In terms of literature, we collected and analyzed research reports on the topic of interdisciplinary teaching and learning at home and abroad, as well as the latest teaching and research programs launched by the researched schools, in order to lay the foundation of literature for writing this paper. In terms of data and information, this study mainly obtained data and information through two types of surveys, namely interviews and daily observations, involving schoolteachers (including teachers of different ages and subjects), school leaders (those responsible for the development of teaching and research plans), and some senior students. For the questionnaire survey, 30 teachers (of different teaching ages) of language, mathematics, and English in the school were surveyed to determine the attitudes of serving front-line teachers toward interdisciplinary teachers. In the interviews, two types of interviews were conducted: firstly, interviews were conducted with the heads of the teaching and research teams in the schools to find out the current status of the implementation of "interdisciplinary teaching" in the schools studied. Secondly, interviews were conducted with students (at different levels) in Year 5 and 6 classes in primary schools to find out their evaluation and preference for interdisciplinary teaching.

2. The Reality of Interdisciplinary Teaching in Primary Schools X

Even though the concept of "interdisciplinary teaching" has been explicitly introduced in the new curriculum, there are still difficulties in practice in the schools studied. Although the school teaching and research teams have included the concept of "interdisciplinary teaching" in their subject plans for the new school year, they have not yet made specific plans (e.g., which subjects are to be taught in which way and how to assess students' academic quality). Pupils do not clearly express their attitudes toward interdisciplinary teaching. Teachers are optimistic about the significance of multidisciplinary teaching but express concerns about its implementation. This was described in the following ways.

2.1. The Teaching and Research Team Has not yet Developed a Clear and Specific Interdisciplinary Implementation Plan

Interviews with the head of the teaching and research team at the school under study revealed that, although the value and significance of interdisciplinary teaching were highly recognized, the school was still confused about implementing multidisciplinary teaching. This was evident in the subjects being taught across disciplines, the use of teaching materials for each subject, the quality of interdisciplinary teaching that teachers should have, and the allocation of teachers. The head of the teaching and research team said that since the concept of multidisciplinary teaching was introduced in the new curriculum, the school's teaching and the research team had been discussing the subject for three months. Still, opinions had been stalemated, so the integration of issues had not yet reached

the desired goal. The main problem is that teachers are divided in their views on interdisciplinary teaching, believing that it diminishes the value of their own subject and that students' absorption of the relevant knowledge is compromised. It is also difficult for teachers to agree on assessing students' academic quality and to debate whether to use closed-book tests or open-ended examinations.

2.2. The Teaching and Research Team Has Implemented Thematic Classroom Activities to Design Interdisciplinary Teaching and Learning Activities

To respond positively to the requirements of the new curriculum, such as "nurturing values" and "interdisciplinary teaching," the schools planned a series of thematic class meetings and summer and winter study activities to implement interdisciplinary teaching. For example, in the school's curriculum plan for the new academic year, I found that teachers were explicitly required to design class sessions based on an interdisciplinary focus at all school levels. In addition, the theme of the 2022 Year 3 summer study at the school was "Beijing Opera in the School," and the objectives of the curriculum included interdisciplinary knowledge in aesthetic art, music appreciation, language and literature appreciation, and physical coordination. The curriculum was also assessed through stage performances, handwritten stories, and script writing and received positive feedback from teachers and parents.

2.3. The Team Takes an Optimistic Approach to Interdisciplinary Teaching

The school was faced with several issues regarding interdisciplinary teaching with subject integration. However, interviews with the head of the school's teaching and research team revealed an optimistic attitude toward implementing cross-curricular instruction. Furthermore, the interviewees clarified that a specific and explicit interdisciplinary program would be introduced in next year's teaching and research program.

2.4. Initial Development of a Teacher Training Program and a New Teacher Intake Program by the Teaching and Research Team

To solve the existing problems, the heads of the teaching and research teams of the schools studied believe that a special interdisciplinary guidance department should be set up to give regular lectures or collaborative activities on interdisciplinary teaching to in-service teachers to solve the traditional concept of "subject-based" teaching and sub-disciplinary teaching. In addition, the school has tentatively planned for experts to visit the school to guide interdisciplinary teaching so that the implementation of multidisciplinary teaching can be scientific and systematic.

Regarding recruiting new teachers, the school has indicated that it will focus on the interdisciplinary teaching skills and literacy of new teachers in future recruitment exercises.

2.5. In-service Teachers' Attitudes Toward Interdisciplinary Teaching Vary According to Their Teaching Experience

The author's analysis of the SPASS data from the questionnaire study showed a significant difference between the age of serving teachers and their attitudes towards implementing interdisciplinary teaching. For example, more than 60% of senior teachers with more than 30 years of teaching experience were pessimistic about the future of multidisciplinary education but optimistic about its implications. Furthermore, around 40 percent believe that interdisciplinary teaching is too challenging (mainly regarding teacher quality) and will not have the desired effect on the absorption of knowledge in student learning. In contrast, 90% of teachers with less than ten years of teaching

experience were highly favorable and optimistic about the implications of interdisciplinary teaching and expressed a high level of willingness to engage in a multidisciplinary practice.

2.6. The Subjects Taught by Serving Teachers Have Different Attitudes toward Interdisciplinary Teaching

In the analysis of the questionnaire data, the author found that in-service teachers' attitudes toward interdisciplinary teaching differed from one subject to another. Combined with the study of the answers to the question "The biggest dilemma," I believe that the difficulty of the subject plays a decisive role in teachers' attitudes toward interdisciplinary teaching. For example, about 80% of teachers in the upper years of language and mathematics rejected interdisciplinary implementation in the future, believing that it would affect students' absorption of knowledge. On the other hand, English teachers thought that interdisciplinary teaching could develop students' interest in the subject and help them in their initial English learning stage.

2.7. In-service Teachers Want Professional Development from Schools

Although up to 60% of teachers expressed concern about the future of interdisciplinary teaching, the rate of interdisciplinary implementation was low (95% of teachers had not implemented specialized subject integration in their classes, and only 20% had implemented interdisciplinary teaching in their classroom activities). However, the majority of teachers still cited the need for specialization in the question 'What can schools help with, including which parts of the material can be taught across subjects, with which details of which issues, and how to incorporate knowledge from that subject to teach across subjects, and how to develop a sound academic. It also includes creating an excellent educational assessment system that can help teachers holistically assess student learning quality.

2.8. Pupils' Affirmation of Interdisciplinary Teaching

In my interviews with primary school students, I found that, although they had not received professional subject integration, they enjoyed the interdisciplinary mode of teaching during the summer, and the main reasons for this were that it was "more fun," "more enriching" and "more meaningful." Approximately 80% of primary school students expressed a vision of interdisciplinary teaching in English because the subject was 'difficult.' However, students did not comment on the extent to which teachers specialize in multidisciplinary education.

3. Dilemmas in the Implementation of Interdisciplinary Teaching

As mentioned earlier, the current situation regarding the promotion of interdisciplinary teaching and learning in China is still in a mapping phase, and complex issues need to be addressed. However, the policy push indicates that the country's talent needs are increasing and that education needs to be reformed and innovated based on 'nurturing.' The need to implement interdisciplinary teaching at the primary and secondary school level has been discussed. An analysis of the initial implementation dilemmas will provide ideas for the continued promotion and implementation of interdisciplinary teaching.

The author's initial contact with the primary schools surveyed, in-depth investigation, and follow-up reflections summarize the current problems with implementing interdisciplinary teaching in China.

3.1. Inadequate Professionalism of Teachers in Interdisciplinary Teaching

When analyzing the results of the questionnaire using SPASS software, the author found that over 60% of teachers expressed concern about not being able to teach other subjects competently. Through

literature analysis, the author believes that the main reason for this is a significant diversion of teacher training students in primary education. Zhao Dongchen and other scholars suggest that at present, China's primary education teacher-training majors still follow the three modes of training: "comprehensive without division," "division by subject," and "division between arts and science" [7]. and Knowing that the paper Almost all of the "generalist primary school teacher training" is linked to "rural teachers." This shows that there is a lack of training models for 'interdisciplinary teaching' in primary and secondary schools in China.

3.2. The Existing Textbooks Are Divided into Subjects, Making it Challenging to Implement Cross-curricular Teaching in Primary and Secondary Schools

Our current classroom materials during compulsory education are highly oriented, and the students' academic quality is assessed uniformly so that teachers are less proactive in teaching. During interviews with the heads of the teaching and research teams in the schools surveyed, the author found that the compartmentalized teaching materials were one of the factors that prevented the advancement of the implementation of interdisciplinary teaching in our country. The head of the team stated, "Our school has encountered great difficulties in studying teaching materials with an interdisciplinary perspective, and this is the biggest challenge in implementing interdisciplinary teaching in our school." Nearly 60 percent of the teachers surveyed said they were not satisfied with their student's inability to perform as well as they did on the academic quality assessment of their subject after the implementation of interdisciplinary teaching.

3.3. It Is Deeply Rooted in the Traditional Concept of Sub-disciplinary Teaching

In analyzing the questionnaire, I found that some teachers, especially those who have been teaching for a long time, believe that the traditional teaching model of cross-curricular teaching is not flawed and does not need to be corrected. In response to the question, "If you do not support it, what are your reasons" there were many responses such as "There is no need for interdisciplinary teaching to challenge traditional teaching" and "Students and teachers have their way in the traditional teaching model. The emergence of interdisciplinary teaching was not the correct response. The emergence of a multidisciplinary model of education is a challenge to the conventional model of teaching excellence, and therefore there is opposition.

3.4. Unclear Policy Direction

Our policy on cross-curricular teaching has not been implemented in detail, or a supporting policy has been introduced. In the new curriculum, shallow talk about cross-curricular for most schools is unimportant. In contrast, some schools will choose to rest on their laurels because of the difficulty of implementation.

4. Strategies for Promoting Interdisciplinary Teaching and Learning

4.1. Establishment of a Rational Curriculum Delivery Mechanism

(1) Teacher Collaboration

Under the traditional system of divided subject teaching, there are few links between subject teachers, each subject is taught in an independent manner and there is little correlation between issues. Cross-curricular teaching challenges traditional lesson planning and delivery models. Teachers should set up collaborative lesson planning groups to enhance communication between each other, integrate subject knowledge, and use subject strengths to improve student learning. In addition, interdisciplinary teaching requires a deeper integration of emotions, hopes, and values among

teachers of all subjects, the formation of study groups, and the enhancement of their comprehensive literacy and awareness of interdisciplinary teaching [8].

(2) Project Accountability

The current design of primary and secondary school textbooks is still categorized, lacking subject integration. Therefore, schools should set up "interdisciplinary project teams" and select 1-2 teachers with a clear sense of interdisciplinarity, experience, and strong subject knowledge to act as leaders to establish a paradigm for interdisciplinary teaching based on an in-depth study of the textbooks of each subject for in-service teachers to learn from.

4.2. Establishing Relevant Social Organizations to Explore Interdisciplinary Teaching and Learning

The establishment of integrated groups from the school perspective alone is not sufficient. The establishment of "interdisciplinary teaching and learning exchange groups" in the community attracts serving teachers, teaching researchers, and education officials to discuss interdisciplinary teaching and learning strategies, explore the meaning of interdisciplinary teaching and learning, discuss interdisciplinary implementation plans, and implement interdisciplinary teaching and learning in primary and secondary schools.

4.3. Improving the Teacher Training System and Implementing the Training of Generalist Teachers

To solve the problem of structural shortage of teachers in rural primary schools, the Opinions on the Implementation of the Excellence in Teacher Training Programme issued by the Ministry of Education in 2014 clearly states that "in response to the actual needs of primary education, the focus is on exploring the mode of training primary school teachers in all subjects, and training a group of teachers who love the vision of primary education, have broad knowledge and comprehensive abilities, and are capable of handling the needs of teaching multiple subjects in primary schools excellence in primary school teachers." [9] In response to the national call, China's teacher training colleges and universities have explored and innovated to develop a preliminary system for training primary school teachers in the whole subject [10].

Unlike rural primary school generalist teachers, interdisciplinary generalist teachers need to have a wide range of knowledge, innovative classroom design skills, and an awareness of multidisciplinary integration in education, so higher teacher training institutions still need to make timely adjustments to their teacher training programs to ensure that the inculcation of interdisciplinary teaching concepts is implemented in the preparation of generalist teachers.

4.4. Interdisciplinary Talent Absorption Scheme for Primary and Secondary Schools

Primary and secondary schools should focus on students with interdisciplinary skills in recruiting new teachers. The recruitment of interdisciplinary teaching personnel will help to promote and implement multidisciplinary teaching and learning, both by helping teaching materials teams to work together to explore interdisciplinary teaching models and programs that are appropriate for primary and secondary school students and across subjects and by supporting the remaining teachers in service, especially those with more than 30 years of teaching experience, to embrace the new interdisciplinary teaching model.

5. Formation of Special Textbook Study Groups to Enhance the Possibility of Cross-curricular Teaching Implementation

In response to the study's finding that 'divided textbooks make interdisciplinary teaching more difficult,' the author suggests that special textbook study groups could be set up in schools to study the content of each subject's textbook for possible interdisciplinary teaching and to design education. The textbook study group could be composed of teacher-training students, in-service teachers, textbook editors, and social educators.

6. Introducing Supporting Policies to Help Smooth the Implementation of Cross-curricular Teaching

In response to the Ministry of Education's introduction of 'interdisciplinary' content in the new curriculum, the state should introduce appropriate supporting policies to assist in its implementation, such as funding to support the training of interdisciplinary practitioners, policies to guide the examination of interdisciplinary teaching, and changes to the existing traditional test-taking methods of sub-disciplinary teaching.

7. Summary

Innovative, integrated, and developmental, interdisciplinary teaching can help improve teaching efficiency, deepen the extent of education, sublimate teaching concepts and help develop social talent that meets the country's needs in the new era. In addition, interdisciplinary teaching has a low implementation rate at this stage, faces diverse challenges, and requires the joint efforts of the state and teaching staff. Nevertheless, it cannot be denied that the implementation of interdisciplinary teaching has received fruitful front-line teaching results and repeated praise from most parents at the beginning of its performance and has been recognized by teachers and affirmed by parents, showing hope for the implementation of interdisciplinary teaching in China.

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Appendix 1

Survey of in-service teachers' attitudes towards interdisciplinary teaching implementation

Hello teachers, I am a teacher trainee coming to your school before the summer holidays. I am writing an academic paper on "Analysis of the current situation of interdisciplinary teaching in urban primary education in China and suggestions for its implementation" and I would appreciate your help in filling in this anonymous questionnaire. Thank you for taking a few minutes of your time to participate in this questionnaire!

1. Gender (multiple choice* mandatory)
 - Male
 - Female
2. Length of teaching experience (multiple choice* mandatory)
 - Less than 10 years
 - 10-20 years
 - 20-30 years
 - Over 30 years
3. Subjects taught (multiple choice* compulsory)
 - Languages
 - Mathematics
 - English
4. Year in which you are studying (multiple choice* mandatory)
 - Upper Section (Years 5-6)
 - Intermediate (Years 3-4)
 - Lower Division (Years 1-2)
5. Are you aware of interdisciplinary teaching (multiple choice* compulsory)
 - No knowledge at all (hardly heard or only know the term)
 - A little understanding (explicit knowledge of noun concepts)
 - Better understanding (specific knowledge of implementation points)
 - Very knowledgeable (with specific implementation plans)
6. Do you teach interdisciplinary teaching in your classes in the form of class meetings or studies (single choice* mandatory)
 - Yes
 - No
7. whether you have implemented interdisciplinary teaching in your class (specifically, subject integration teaching) (multiple choice* mandatory)
 - Yes
 - No
8. Do you have plans to implement or continue to implement interdisciplinary teaching in the future (single answer* mandatory)
 - Yes
 - No
9. What do you see as the dilemma of interdisciplinary teaching (fill-in-the-blank* mandatory)

10. What help would you like to receive from the school for this dilemma (fill in the blank* required)

11. Do you support the implementation of cross-curricular teaching and learning (single question* mandatory)

- Support
 - Support interdisciplinary teaching in the form of research and classroom activities only
 - Not supported
12. if not supported, what are the reasons (fill in the blank)
-

Appendix 2

An outline of the interview with the head of the teaching and research team of the school under study on the implementation of interdisciplinary teaching

1. Has the school introduced cross-curricular teaching? If so, is it subject-integrated teaching or does it point to classroom activity sessions or extra-curricular research activities? Will it continue to be promoted and implemented in depth in the future?
2. Does the school have a specific plan for the implementation of interdisciplinary teaching? (Period? Curriculum content? Curriculum implementation? Academic quality assessment? Educational objectives?)
3. What is the school's attitude toward the implementation of interdisciplinary teaching? Why do you hold this attitude?
4. How effectively do schools find the implementation of interdisciplinary teaching to be? What difficulties have been encountered?
5. What does the school consider to be the qualifications of teachers for interdisciplinary teaching implementation (mainly for subject-integrated teaching)? What are the requirements for in-service teachers? What are the requirements? What is the orientation of the future recruitment of new teachers?
6. Have schools introduced or are they preparing to introduce teacher training on professional subject-integrated interdisciplinary teaching? What difficulties are expected to be encountered?

Appendix 3

An outline of interviews with primary school students in the studied schools on the implementation of interdisciplinary teaching

1. Do you understand interdisciplinary teaching (if you don't understand the concept, explain briefly)
2. Do you receive interdisciplinary teaching during your school years? If so, what form was it?
3. Do you enjoy the interdisciplinary approach to teaching and learning? Will you continue to be taught interdisciplinarily in the future?
4. How professional do you feel the teacher is in teaching across subjects? Did you enjoy it?
5. Does interdisciplinary teaching help you to reduce your academic load? Does it help you to solve problems in your life better?
6. What do you like most about interdisciplinary teaching?