

Exploration and Reflection on the Practice of Interdisciplinary Thematic Teaching of Morality and Rule of Law in Junior High School

-- Take "Yu Gong built Taihang Mountain Tunnel" as an example

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Abstract

With the deepening of the curriculum reform of basic education, interdisciplinary theme teaching is showing more and more important value and role in promoting the cultivation of students' core literacy. This paper focuses on the cultivation of green development concept in the moral and rule of law course of junior high school, and explores a new way of interdisciplinary teaching through the design of the theme activity "Yu Gong built Taihang Mountain Tunnel". In teaching design, the practice pattern and theme conception path of interdisciplinary theme teaching are deeply analyzed, a comprehensive teaching goal system is formulated, and a multi-dimensional and three-dimensional learning system is constructed by integrating the knowledge and methods of geography, biology, history, mathematics and other disciplines.

Keywords

Morality and Rule of Law; Interdisciplinary; Thematic Teaching; Practical Exploration.

1. Introduction

The Curriculum Standards for Compulsory Education (2022 edition) stipulate that interdisciplinary theme learning should be set up in compulsory education courses and the proportion of class hours should not be less than 10% of the total class hours. The promulgation and implementation of the new curriculum standards have prompted front-line teachers to actively explore how to guide students to participate in this new learning mode in the classroom and effectively implement interdisciplinary thematic teaching. Based on the teaching content of ethics and rule of law courses in junior middle school, this paper explores and reflects on interdisciplinary teaching practice by creating the theme situation of "Yu Gong built a tunnel in Taihang Mountain", aiming to help students learn ethics and rule of law courses better with a novel teaching path and form the core quality and comprehensive practical ability of the subject.

2. Interdisciplinary Theme Teaching Design

This lesson takes "Yu Gong built Taihang Mountain Tunnel" as the theme of teaching design, teaching content is divided into four links: First, Understand the reason why Yu Gong moved mountains from the story "Yu Gong moved mountains"; second, analyze the essence of Yugong not moving from the perspective of historical development; third, perceive the harm caused by moving mountains from the integration of resource and environmental data; and finally, persuade Yugong to give up moving mountains and instead build tunnels from the perspective of ideological and political education. To present the above content better, the design of

interdisciplinary themed teaching activities is centered around the setting of objectives, the planning of stages, and the arrangement of materials.

2.1. Design of teaching objectives

The interdisciplinary thematic teaching objectives are both similar and different from traditional teaching objectives. Both require a clear and concise expression of the guiding role of the objectives.^[1] Interdisciplinary thematic teaching emphasizes the horizontal connections and integration between different subjects, and the lead teacher in the main subject should design the teaching objectives not only considering the core competencies of the main subject, but also actively seeking the convergence points with the auxiliary subject competencies, aiming to promote the development of students' comprehensive qualities through cross-disciplinary themes or projects. This lesson takes the vision of Yu Gong "smoothing the road" as its core task, covering geography, biology, mathematics, history, moral and legal studies, and other major subjects. Based on the subject competencies, the following teaching objectives can be set (See Table 1).

Table 1. Shows the teaching objectives

Participating discipline	Teaching objective presentation
History	Objective 1: To understand the background conditions of the story of "Yu Gong moving mountains", to analyze people's dependence on the environment at that time from the perspective of historical development, so as to deeply understand the reasons why Yu Gong chose to move mountains instead of moving.
Geography, Mathematics	Objective 2: To analyze the resource and environmental characteristics of Taihang Mountain and recognize the possible adverse environmental impact of the "mountain removal" project; Evaluate the cost of moving mountains and scientifically understand the infeasibility of "moving mountains".
Geography, Biology	Objective 3: To integrate and analyze the data of all kinds of resources in Taihang Mountain, correctly understand the relationship between human and nature, understand the importance of protecting the ecological environment, and then form the values of harmonious coexistence between human and nature, and identify and practice the green development concept of our country.
Ethics and the rule of law, Chinese, Art	Objective 4: Use political thinking and decision-making skills to come up with a reasonable solution to the problem of "Yu Gong moving mountains".

2.2. Planning of teaching links

Specific and precise teaching links are the basis to achieve the teaching objectives. The design of teaching links should not only consider the course content, but also fully consider the individual differences and learning needs of students^[2]. The core goal of this lesson is to guide students to deeply understand and establish the concept of green development. For junior high school students, in order to achieve the cultivation of this core quality, educators need to decompose the macro and abstract concept of green development into a series of concrete and operable teaching activities to gradually show and explain. This lesson focuses on the topic of

Yu Gong's construction of Taihang Mountain tunnel, takes Taihang Mountain as the object of discussion, and sets up the total-sub-total teaching link (See Figure 1).

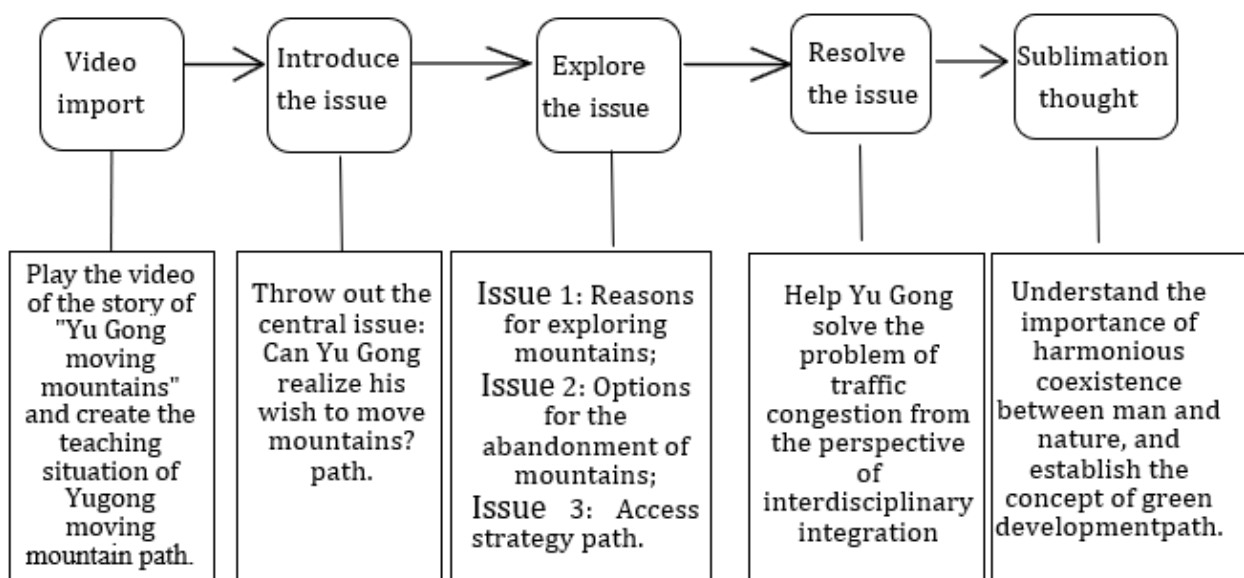


Figure 1. Flowchart of teaching process

2.3. Arrangement of Teaching Materials

The course of morality and rule of law in junior middle school is comprehensive as well as theoretical summary and abstract. By presenting highly condensed moral core concepts in the classroom, it cultivates students' core qualities. For junior high school students who are young and have a relatively simple life experience, this is a knowledge climb and a challenge for ideological advancement. In the teaching process, only by simplifying the complexity and abstracting the concrete can educators design a moral and rule of law course that is easier for students to accept. In order to enable students to transform the abstract concept of green development into concrete and vivid perception, this paper selects the story of "Yu Gong moving mountains" as the core material in the arrangement of materials, and constructs a multi-dimensional and three-dimensional learning framework through innovative interpretation and adaptation, integrating multi-disciplinary elements.

3. Implementation of Interdisciplinary Theme Teaching Activities

This lesson takes "Yu Gong built Taihang Mountain Tunnel" as the theme. Centering on this theme, the grand task of dredging Taihang Mountain road is designed. On the basis of stimulating students' learning interest, learning situations are constructed. Specific teaching activities around "Yu Gong built Taihang Mountain Tunnel" are as follows:

3.1. Video import and ask questions

Teacher activities: Play the video of Yugong moving mountain story, create the teaching situation of Yugong moving mountain path. The teacher asked the question: Yu Gong wants to move the mountain path, can this wish be realized?

Student activities: Watch the video carefully, get into the learning situation and think about the problem.

Design intention: To create a situation to stimulate students' interest in learning and arouse students' thinking about the problem of Yu Gong moving mountains.

3.2. Split issues and explore activities

Issue 1: Face the situation, explore the reasons why Yu Gong did not move

(1) Teacher activities: The teacher presented two materials respectively and asked the students questions: Analyze the reasons of Yu Gong moving mountains by combining the video content; Moving house is easier than moving a mountain, so why didn't the Yu Gong move his house?

Material 1: As early as the Neolithic Age, there were human activities in Heyang. Heyang is located in the middle and lower reaches of the Yellow River plain, flat terrain, fertile soil, suitable climate, very suitable for agricultural production. With the rise of agricultural production, people began to settle down here, forming early settlements and villages. Here, people not only learned how to grow wheat, rice and other food crops, but also learned how to make pottery, weaving cloth and other handicrafts. These technologies and knowledge not only met the needs of People's Daily life, but also laid a solid foundation for the later development of Chinese civilization.

Student activities: Students use group cooperation to explore problems, and send representatives to express their opinions after integrating answers in the group.

Design intention: Guide students to explore the reasons why Yu Gong did not move mountains from the historical development perspective of agricultural production and cultural system, and examine students' integrated thinking and analytical ability.

Issue 2: Explain the reason and persuade Yu Gong to give up moving the mountain to repair the tunnel

(1) Teachers and students cooperate to calculate the possibility of moving mountains

Teacher activity: Summarize and evaluate the behavior of students in the previous activity, and put forward the question: Based on the fact that Yu Gong is impossible to move, try to analyze whether Yu Gong can achieve the goal of moving mountains? The teacher shows the relevant data of Taihang Mountain.

Material 2: Taihang Mountain is high in the north and low in the south, with an average elevation of 1200-1500 meters, and the total area of the mountain is 30,100 square meters. Assuming that Taihang Mountain is 1500 meters above sea level, with a floor area of 30,100 square meters, and the volume of Taihang Mountain is the volume of the earth and rock transported, please calculate how much earth and rock Yu Gong needs to move? According to the myth, there are four people in the Yu Gong family who can work, assuming that each person can carry 50 kilograms of earth and rock, each person can carry 20 times a day, and the density of earth and rock is 2.5 tons/cubic meter, how long will it take to remove the Taihang Mountain?

Student activities: calculated the time required for Yu Gong to move mountains through group cooperation, and concluded that Yu Gong to move mountains is not feasible.

Design intention: From the perspective of mathematics, to train students to look at problems scientifically and solve problems.

(2) Analyze the data to understand the geographical environment and species resources of Taihang Mountain

Teacher activities: Guide the students to present and analyze the collected data, and ask the question: What impact would Yu Gong's removal of Taihang Mountain have on human life?

Student activities: Members of the group exchanged and integrated the data they collected. After discussion, the group sent representatives to present the data and express their opinions on the impact of the removal of Taihang Mountain.

Group 1: Report on the Geographical Environment of the Taihang Mountains

The Taihang Mountains are an important mountain range and geographical boundary in eastern China, stretching for more than 400 kilometers[3]. From the perspective of the integrity of the natural environment, the Taihang Mountains have an important impact on the North

China Plain: the mountain blocks the winter monsoon, making the North China Plain relatively warm in winter, and the eastern slope is the windward slope of the summer monsoon, increasing the summer precipitation; There are many rivers in the Taihang Mountain area, forming a number of alluvial fans in the eastern slope foothills, improving the soil fertility of the plain area, and the Loess Plateau to the west of the mountain area.

Summary: Taihang Mountain plays an important role in regulating climate, precipitation and improving soil, which provides good conditions for agricultural production activities.

Group 2: Report on Mineral Resources in the Taihang Mountains

As early as the 1960s and 1970s, geological exploration teams actively carried out extensive mineral exploration activities in the southern section of the Taihang Mountains. The coal resources in the northern section of the Taihang Mountains are extremely rich, mainly in the Carboniferous, Permian and Jurassic strata, and a small amount of lignite exists in the Tertiary strata, all belonging to sedimentary deposits [4]. By the end of 2008, the cumulative proven coal reserves in the northern section of Taihang Mountain reached 2.035 billion tons. In addition, the molybdenum mineral resources in this area are not only large in scale and diverse in type, often associated with copper, zinc, iron, silver, cadmium and other minerals, and its accumulated proven resource reserves account for 3.83% of the total reserves in the country.

Summary: Taihang Mountain is rich in mineral resources, which can provide sufficient energy supply for people's production and life, and provide raw material support for the future development of science and technology.

Group 3: Report on vegetation resources in Taihang Mountain

According to statistics, there are 668 species of seed plants in Taihang Mountain plant community. Among them, there were 11 gymnosperms and 657 angiosperms. According to the statistics of life types, there were 443 species of herbs, 125 species of shrubs and 100 species of trees, accounting for 66.3%, 18.7% and 15.0% of the total plants, respectively.

Summary: The plant community in Taihang Mountain has a complex ecological structure, including herbs, shrubs and trees, which contributes to the formation of diverse habitats and provides suitable habitat and food sources for various organisms.

Group 4: Report on animal resources in Taihang Mountain

According to the survey of wildlife resources in Taihang Mountains from 1996 to 2000 and the results of previous investigations, 520 species of terrestrial vertebrates were recorded in Taihang Mountains, including 20 amphibians, 38 reptiles, 382 birds and 80 mammals. There are 15 species of white storks and black storks under national primary protection, 79 species of wild animals under national secondary protection and 35 species of wild animals under provincial protection.

Summary: Taihang Mountain is rich in animal resources, and Taihang Mountain is the home of many animals.

Design intention: To perceive the importance of the geographical location of Taihang Mountain and the abundance of natural resources from geography and biology, and to cultivate students' comprehensive thinking of collecting data and analyzing problems.

(3) Explain the views and persuade Yu Gong to modify the mountain removal plan

Teachers' activities: Lead students to discuss whether Yu Gong should be persuaded to give up the original plan to move the mountain, and ask questions: As a small defender of environmental protection, how do you want to persuade Yu Gong to give up the plan?

Student activities: According to the above exploration activities, explain viewpoints from different aspects, persuade Yu Gong to give up moving mountains and repair tunnels.

Design intention: Students are required to explain their views systematically from multiple perspectives, and examine their interdisciplinary thinking integration ability and the generation of subject core literacy.

Issue 3: Formulate a blueprint to help Yu Gong plan the tunnel scheme and design the renderings.

Teachers' activities: Guide students to plan the Taihang Mountain Tunnel from an environmental perspective and draw a rendering of the tunnel.

Student activities: Assign planning tasks and drawing tasks in groups, and show the finished products after completing the tasks.

Design intention: To examine students' problem-solving ability and innovative consciousness

3.3. Review the knowledge and summarize the lesson

Teacher activity: The teacher summarizes the teaching content of this lesson and leads the students to think, why should China promote the construction of ecological civilization?

Student activities: Follow the teacher to summarize and review the knowledge learned in this lesson, and realize the improvement of ideological consciousness.

Design intention: to promote students' emotional sublimation, cultivate students' sense of responsibility and political identity.

4. Reflection on Interdisciplinary Theme Teaching

This teaching activity combines objective reality with historical context to construct a task inquiry learning scene with myth and legend as the background. When solving problems in activity exploration, students can switch disciplinary perspectives in a timely manner and make comprehensive use of the core knowledge, disciplinary ability and thinking mode of multiple disciplines. For example, some students consider the time required to remove Taihang Mountain from a mathematical point of view and conclude that the plan is not feasible; Some students analyze the environmental advantages of Taihang Mountain from the perspective of geography, and summarize the views that Taihang Mountain brings many benefits to people's life and work; Some students also combined biology with the analysis of animal and plant resource data, and felt that Taihang Mountain not only serves human beings, but also is the home of other creatures, and produced the experience of harmonious coexistence between human and nature.

5. Conclusion

Interdisciplinary thematic teaching is effective in training students to observe and think from multiple perspectives and apply subject knowledge comprehensively. The interdisciplinary thematic teaching model has many advantages, but it also puts more stringent requirements on frontline educators: In the key links such as conception and determination of teaching themes, planning and organizing teaching activities, evaluation and feedback of students' learning results, teachers need to really improve their awareness, strengthen the grasp and understanding of curriculum standards, deeply understand students' learning background, be the developer and innovator of teaching resources, and constantly improve their professional ability and professional quality.

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