Research on Sustainable Science Development Education of Chinese Geography Textbook Based on GIS Visualization System

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Abstract. With the development of the times, the education of geographic information system (GIS) in the basic education stage has been paid more and more attention. The entry of GIS into high school geography education is the inevitable development of basic geography education and the requirement of the times. In view of the important position of GIS in geography teaching, the cultivation of geography curriculum learning ability by normal students has become a problem that should be paid attention to. The rapid development of information technology and the in-depth advancement of the new curriculum reform have brought severe challenges to the sustainable scientific development of Chinese geography textbooks. At this time, the advantages of GIS technology in geography teaching are reflected. This paper analyzes the important educational functions of GIS in geography teaching and the current status of geography teacher's map ability, and puts forward the optimization strategy of GIS geography teaching sustainable development: First, to clarify the teaching objectives of GIS geography teaching, and second, to optimize GIS geography The teaching content, the third is to strengthen the construction of professional faculty, the fourth is to adopt a variety of teaching methods, the fifth is to set up GIS geography teaching around the professional direction, and the sixth is to take the examination method. The innovative teaching thought has made useful attempts and explorations in accordance with the requirements of curriculum standards and case teaching. Combined with the basic requirements of Chinese teachers' GIS level and software and hardware environment configuration, several countermeasures and suggestions are proposed to improve GIS. The status quo in high school geography education.

1. Introduction

In April 2003, the Ministry of Education promulgated the "General High School Geography Curriculum Standards (Experiment)". GIS entered geography education relatively late in China, and is currently in the exploratory stage. The new "Geography Curriculum Standards" has incorporated GIS into basic geography education. In the content. In this geography curriculum standard, the basic concepts, curriculum objectives, curriculum structure, curriculum content, and curriculum evaluation of the high

school geography curriculum have changed significantly from the past. In recent years, case teaching has increasingly entered the teaching of middle school, especially high school geography. This change is accompanied by the requirements of case teaching proposed by the syllabus and curriculum standards. The earliest document on the teaching requirements of the case in geography teaching in China is the revised version of the "Full-time General Senior High School Geography Syllabus" promulgated by the State Education Commission in 1996. It is stipulated in this syllabus that the third year of the third year is limited. Elective courses, including the content of "Renovation and Development of China's Land". Explain that GIS technology assists high school geography teaching is the basic requirement for the modern development of information education. China not only incorporates GIS into geography teaching content, but also effectively uses GIS to assist geography teaching in middle schools.

2. Advantages of 2 GIS technology in high school geography teaching

The advantages of GIS technology-assisted teaching over traditional teaching methods are mainly reflected in the following aspects:

2.1. GIS visualization aided teaching

In the process of teaching traditional teaching charts and map books, teachers often encounter inconveniences such as outdated maps, cumbersome use, and large space occupation [1]. Therefore, traditional paper maps can no longer meet the needs of modern middle school geography teaching. GIS-assisted instruction can make up for these shortcomings [2]. The stepless zooming and roaming function of GIS allows students to view the full picture, the medium scale view part, and the large scale view detail at a small scale [3], so that the students' understanding of the real world space relationship is more intuitive and specific.As shown in Figure 1.

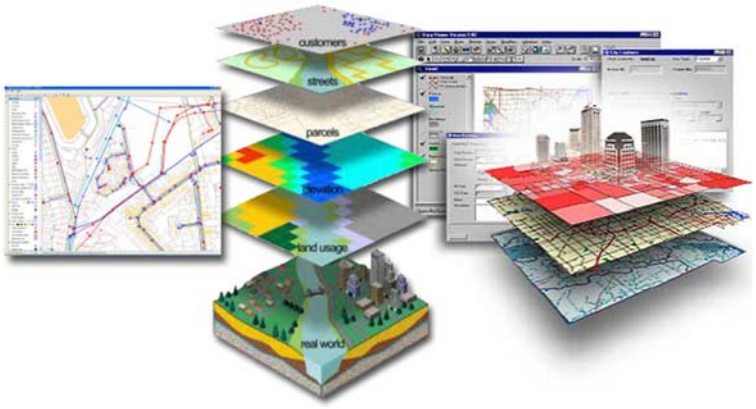

Figure 1. GIS technology assisted teaching system

2.2. GIS spatial analysis assisted instruction

GIS has a powerful database that uses GIS's data analysis capabilities to study geographic issues. The analysis functions provided by GIS software include query analysis, overlay analysis and so on [4]. These functions can assist geography teaching and resolve the difficulties of teaching. For example, using the query function of GIS, you can directly display the query target in the theme map for intuitive teaching. Overlay analysis can stack several layers into a comprehensive map for multi-factor comprehensive analysis and flexible dynamic display. Geographical distribution characteristics and laws [5].

2.3. GIS three-dimensional terrain analysis

GIS 3D terrain analysis function can realize 3D display in geography teaching, provide some information that can't be directly obtained on the plan, and make the terrain features such as valleys, mountains, ridges and saddles realistically represent [6]. The interpretation of topographic maps has

always been the confusion of traditional geography teaching in high school [7]. The application of GIS technology to topographic maps not only makes classroom teaching simple and image, but also enables students to deepen their understanding of topographical features and motivate students to learn enthusiasm and initiative. Improve the teaching effect, and cultivate students' spatial thinking ability.As shown in Figure 2.

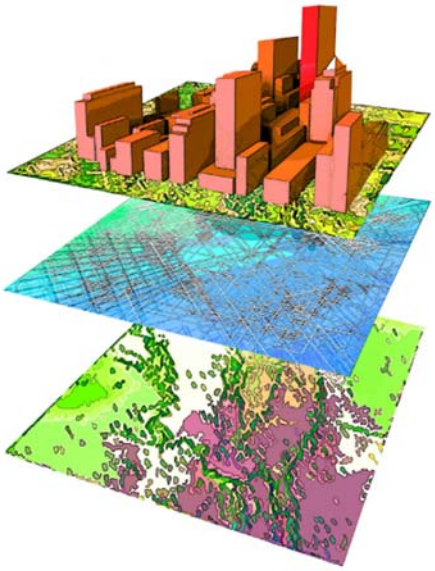

Figure 2. GIS three-dimensional terrain teaching system

2.4. Sustainable development concept

As a brand-new theoretical system, sustainable development involves many disciplines and fields such as economics, ecology, and sociology. Different disciplines have different expressions of their connotations (see Table 1).

Table 1. Definition of sustainable development in different disciplines

Subject	Research perspective	Definition
economics	Focus on economic attributes	Economic development that does not degrade environmental quality and does not undermine the world's natural resource base. (World Resources Institute, 1992-1993)
sociology	Focus on social attributes	Improve human quality of life while living beyond the ability to maintain ecosystem tolerance. (Protection of the Earth - Sustainable Survival Strategy, 1991)
Ecology	Focus on ecological attributes	Improve the quality of human life without exceeding the load capacity of ecosystems that support development. (World Conservation Union, 1991) Protect and enhance the production and renewal capabilities of environmental systems. (International Federation of Ecology and International Union of Biological Sciences, 1991)
Technical science	Focus on technical attributes	Establish processes or technical systems that produce little waste and pollution. (World Resources Institute, 1992-1993)

In geography, the more cited is the definition in the Brundtland report. In April 1987, the United Nations World Commission on Environment and Development (WCED) published the report "Sustainable Development in Schools", which defined "sustainable development" as: meeting the needs of the present generation without the ability of future generations to meet their needs. The development of harm. The teaching context of GIS visualization is oriented to the wrong visualization object. The core problem of GIS visualization can be divided into two-dimensional data (latitude and longitude) visualization, three-dimensional data (latitude and longitude and third dimension <elevation/time/topic attribute>) visualization and multidimensional data. Visualization of the three levels, in the teaching,

should also follow this context, from simple to complex, layer by layer. However, this definition only emphasizes the time dimension of sustainable development, but does not mention the spatial dimension [8]. According to this, Professor Yang Kaizhong of Peking University, a famous scholar, believes that sustainable development refers to the development that meets the needs of the present generation without jeopardizing the ability of future generations to meet their needs [9], and is in line with the interests of local population and the interests of the global population [10]. This paper considers the definition to be more comprehensive and scientific. The essence of sustainable development is the coordinated development of the PRED system, namely the system consisting of P (population), R (resources), E (environment) and D (development) [11-14]. As shown in Figure 3.

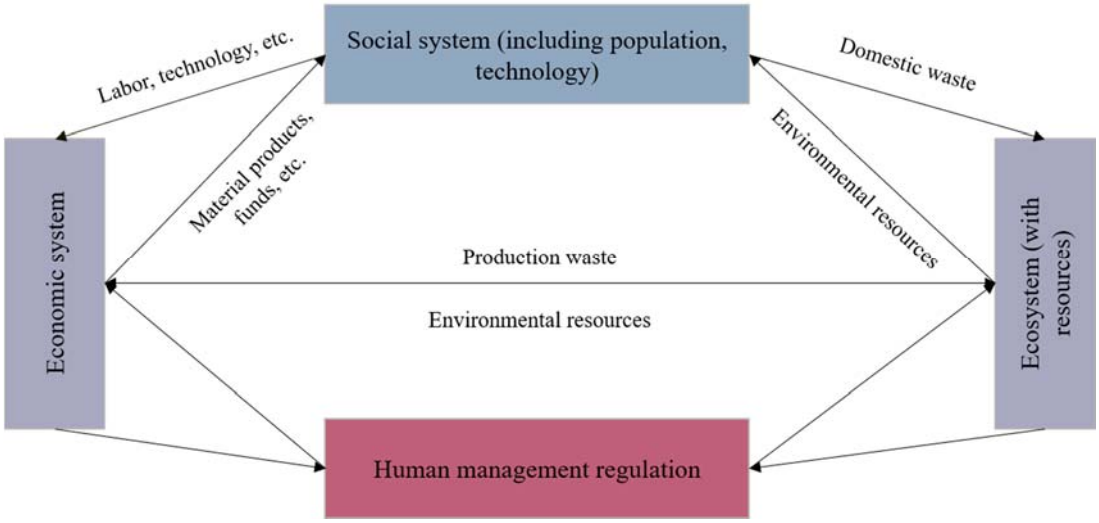

Figure 3. Schematic diagram of the sustainable development system

The foundation of sustainable development is ecologically sustainable development. The natural environment is the guarantee for the survival and development of human beings [15]. The limited nature of natural resources makes it impossible for people to arrogate for their own development. Sustainable development emphasizes that human beings must recognize that natural resources are limited and that human development must be based on the premise of maintaining ecological sustainability [16-19].

Sustainable economic development is a condition for sustainable development. Sustainable development does not negate the development of the economy, but denies the development of economic growth in the traditional way [20-26]. The economic development in the path of sustainable development should pay attention to the innovation of science and technology and the protection of the environment. The purpose of sustainable development is social sustainable development. The ultimate goal of sustainable development is to shape the school's society into an equal, free and sustainable human society [27]. Therefore, sustainable development requires schools to correctly handle the relationship between economic development and population, resources and environment, continuously improve and beautify the living environment, improve the level of social welfare, and jointly create a sustainable ecological development path [28-31].

3. "Geography" regional sustainable development overall framework comparison

The geography curriculum is always based on the relationship between human and land. In the high school stage, students are required to understand the evolution of the relationship between human and land, and finally realize that the path of sustainable development is an inevitable choice for human beings [32]. Thus, the concept of sustainable development is closely related to it. Textbooks often put together when they arrange content.

3.1. Two-dimensional data visualization

Two-dimensional data visualization is the expression of two-dimensional spatial information in a specific space-time environment, focusing on the location and geometry of geographic objects, and the spatial relationship with adjacent objects [33-35]. Traditional cartography maps surface objects to two-dimensional planes through map projection, and then integrates map symbols, color rendering, annotation and other techniques to express the position, geometry and topological relations of objects. These techniques have laid a solid foundation for GIS visualization. It also supports the expansion of GIS visualization to a higher dimension. In the teaching of two-dimensional visualization technology, it is necessary to coordinate with the knowledge of cartography. Firstly, help students systematically review the visualization points and logical relationships of cartography, and then gradually introduce the extended expression method of two-dimensional visualization to let students gradually understand how to Use thematic layer overlay, text annotation, color rendering, flow graph, heat map, spatial chart (pie chart, histogram, graph, etc.), spatial interpolation map (Tyson polygon interpolation, Kriging interpolation, spline Different technical methods such as interpolation, time series animation, etc., break through the limitations of two-dimensional visualization and effectively express more useful information on the two-dimensional plane [36-41]. These two-dimensional visualization and its extended expression method are not only the key to the breakthrough of two-dimensional visualization technology and one of the teaching priorities, but also the transition from two-dimensional visualization to three-dimensional visualization.

3.2. 3D data visualization

The expansion from 2D to 3D visualization is an inevitable requirement for the close integration of GIS and domain applications. 3D visualization is not only the focus of GIS visualization teaching, but also a difficult teaching point. The latitude, longitude and elevation of 3D GIS technology is the combination of GIS and computer vision, virtual reality and other technologies [42]. It is also one of the most widely used and fastest-developed fields in GIS 3D visualization.

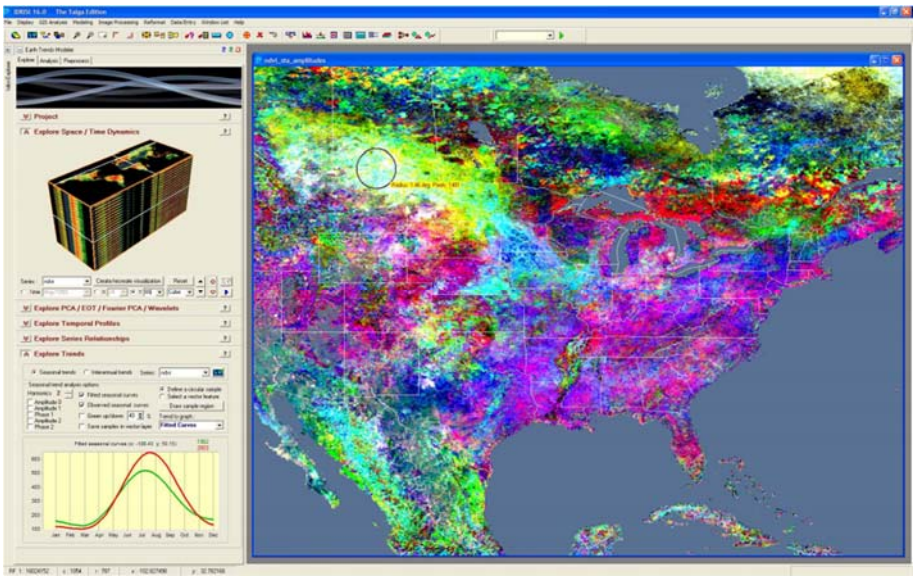

Figure 4. 3D modeling geography teaching system

3D GIS extends the expression of geospatial location information from 2D space to 3D space, which greatly enhances the ability of GIS to express and restore the real 3D world. It also enables GIS to be effectively applied to a large number of required elevation information for position determination and auxiliary analysis [42-46]. Applications such as disaster mitigation and disaster mitigation, building analysis, underground pipe network management, and tourism planning.As shown in Figure 4.

The four editions of the textbooks firstly discuss the sustainable development from the ideological evolution of human-land relationship in compulsory 1 or compulsory 2, so that students have a systematic understanding of the concept of sustainable development, and then use a large number of regional developments in compulsory 3 The case allows students to understand how to be sustainable from a regional perspective [47]. Here, the school only compares the content of the concept part, that is, the theoretical part of compulsory 1 or 2 (see Table 2).

Table 2. Arrangements for different concepts related to sustainable development in different editions

Version	Position	Chapter (unit) name
People,s Education Edition Compulsory 2	Chapter Six	Coordinated development of human and geographical environment
Lu Education Edition	Compulsory 1 fourth unit, compulsory 3 second unit	Looking at resources and the environment from the relationship between people and land,
Hunan Education Edition	Compulsory 2 Chapter 4	Take the road to sustainable development
Chinese version Edition	Compulsory 2 Chapter 4	Coordinated development of human and geographical environment

It can be seen from the table that the People's Education Edition, the Hunan Education Edition and the Chinese Graphic Edition have placed this part of the last chapter of Compulsory 2, and the chapter name also directly adopts the "coordinated development of human and geographical environment" in the curriculum standard [48-51]. This kind of arrangement is still very reasonable. Students learn the relationship between the "land" and the compulsory 2 "person" after learning the complete content of the "land" and learning the relationship between people and the land. It is a summary of the previous learning. And promotion. In terms of knowledge structure, the arrangements of these three versions are also very similar. They are all discussed by the historical evolution of human-land relations. To achieve the coordinated development of human and land, we must take the road of sustainable development and develop sustainable development. The interpretation of the connotation, principles and other knowledge. The two versions of the Chinese version and the Hunan version also use a section to first describe the environmental problems that humans are currently facing. They adopt a "presentation problem--exploration reasons-solutions" approach to arrange the textbook content of this lesson [42].

3.3. Development of 3D Visualization Technology Teaching Materials

At the same time, the 3D visualization technology of time dimension and thematic information dimension is also booming, injecting unlimited vitality and application potential into 3D GIS. Taking the time dimension as an example, the traditional map drawing focuses on the expression of static spatial information, and the expressed information has obvious time static characteristics. With the wide application of GIS in the fields of transportation, meteorology, hydrology, etc., the importance of spatial information latitude is increasing, especially for the expression of objects whose positions change with time, the simple two-dimensional visualization technology has great limitations. The introduction of 3D visualization technology can visually describe the dynamic process of an object through the extension of the time dimension. The field of GIS is widely used, and different topics of interest are different in different application areas, such as temperature, humidity, population density, road patency, etc. in different cities. Thematic information is closely related to spatial location, although traditional two-dimensional GIS can pass the topic. Layer superposition, spatial statistical graph, spatial interpolation map, etc. achieve the purpose of information expression to a certain extent, but its flattening characteristics bring about insufficient intuitiveness of information expression, limited means, unsatisfactory results, and unfavorable for visual analysis. Breaking through the two-dimensional plane to establish a three-dimensional visualization based on three-dimensional space is more in line with human visual cognition, can express more abundant and image information, and is an urgent need for GIS visualization. In the teaching, starting from the traditional 3D GIS technology, let students gradually understand the visual expression of elevation information, and based on the expression of elevation

information, combined with statistical 3D statistical graphs, 3D object rendering and other technologies, how to pay attention to users' time Information such as thematic information is expressed through the third dimension and is the focus of three-dimensional visualization teaching.

3.4. Multidimensional data visualization GIS teaching material development

The sustainable science development of Chinese geography textbooks not only has the characteristics of time and space, but also has the characteristics of the application field, which is the characteristic of most spatio-temporal data. This information transcends the scope of three-dimensional that is, multi-dimensional data. How to express more dimensional information on the basis of 3D visualization is the focus of multidimensional data visualization. The real geospatial space is a three-dimensional space. In the visual teaching of multidimensional data, students should first establish this concept. Based on three-dimensional space, schools can express higher-dimensional information in the form of color, brightness, height and density of objects, but more, human visual perception and image thinking are also bound by three-dimensional space. Therefore, there is rarely a data visualization method that can completely establish the mapping mechanism of data multi-dimensional information. It is necessary to use a certain view conversion technology to establish the association of some dimensional information, and discard a part of relatively unimportant information. This includes two levels of problems: dimensionality reduction of data; multidimensional information association and expression. With regard to data dimensionality reduction, students should first be clear that they are too pursuing the high dimension of data expression, and they are very likely to be inconsistent with the original intention of visual expression. It is necessary for students to understand the importance of data dimensionality reduction and systematically introduce technical methods for dimensionality reduction, such as quadtree mapping method, voxelization method, HyperSlice method, etc., which are widely used in geospatial data visualization. The dimension reduction method is one of the main points of teaching.

Finally, in the teaching, students must understand that the two-dimensional, three-dimensional and multi-dimensional data visualization methods are not separated from each other. In the actual GIS visualization application, it is often a comprehensive application of multiple technologies. For example, maps, 2D charts, and multidimensional charts are used as hotspots for GIS visualization. Various forms of graphs, tables, etc. are related to each other through association update technology to better serve GIS users.

4. Analysis of the current situation of GIS technology in high school geography education

4.1. Survey of GIS technical teaching materials

In order to clearly understand some of the situation of GIS technology in high school geography teaching, a questionnaire survey was conducted among Chinese high school geography teachers. The teachers participating in the survey were located in provincial capital cities, prefecture-level cities and county-level cities. From the level of the school, 30% of the teachers teach in the provincial key middle schools, 33.56% of the teachers teach in the city and district key middle schools, 57.69% of the teachers teach in ordinary middle schools; from the teaching time, 26.59% of the teachers teach the age -3 years, 36.29% of teachers teach 4-10 years, 56.69% of teachers teach more than 10 years; 82% of teachers are undergraduate. It can be seen that the teachers selected in this questionnaire can basically represent the opinions of Chinese high school teachers. The questionnaires they fill in can basically reflect the true status of the survey content.

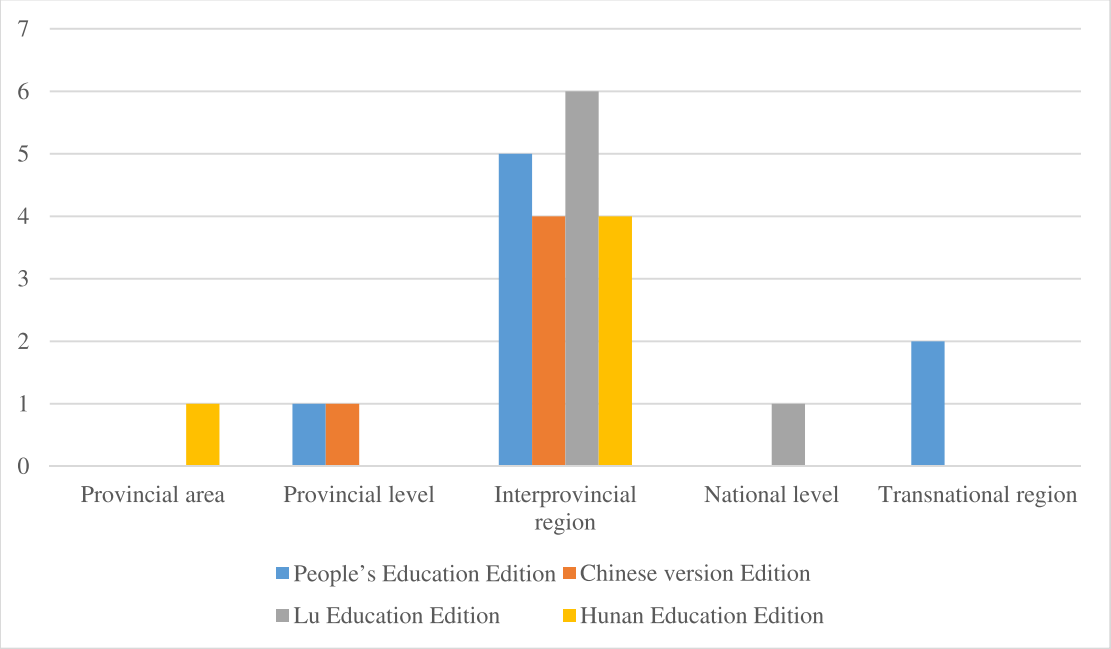

Figure 5. Comparison of regional scales of some cases of "regional sustainable development"

4.2. Current high school geography teaching methods

The results can be obtained through the analysis of the questionnaire. Currently, maps and multimedia courseware are used most in the auxiliary teaching tools used in middle school geography teaching, followed by slides, self-made teaching aids and models, GIS software or teaching software with GIS functions. Less used. First of all, although the current middle school geography teaching method has improved, it is still based on traditional teaching, and the teaching methods are still relatively simple. The students' learning enthusiasm cannot be mobilized well, and the teaching methods need to be diversified to improve the teaching environment. To improve students' self-learning ability and innovative ability. Most of the areas selected in the four textbooks of Geography 3 are hotspots in the field of geography for many years. The results of geography in these areas provide a rich resource for the preparation of cases. Adequacy of information may also be one of the reasons why case writers select these areas as case areas.

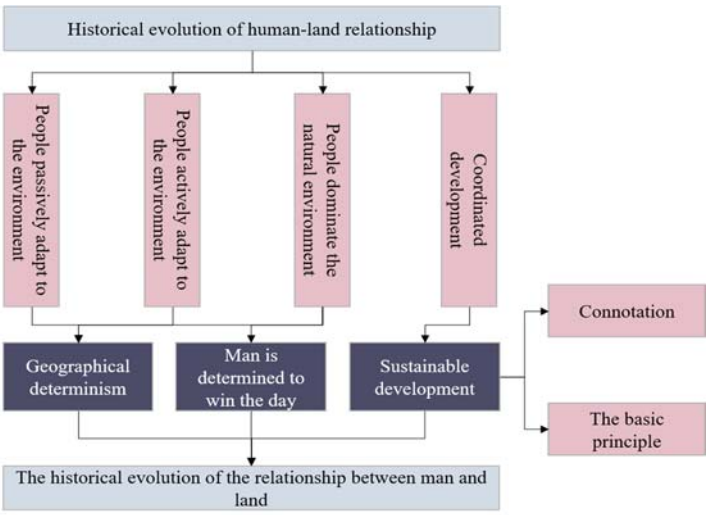

Figure 6. People's Education Edition Knowledge Structure

The selected cases are all larger scale areas. In geography, a region refers to a certain range of geospatial spaces, and the regional scale is large and small. In the curriculum standards, there is no requirement for the size of the area selected for the case in the "Regional Sustainability" section. Here, in order to analyze the tendency of the four versions of textbooks on the case-area scale, the school divides the area into five scales: provincial, provincial, inter-provincial, national, and transnational.

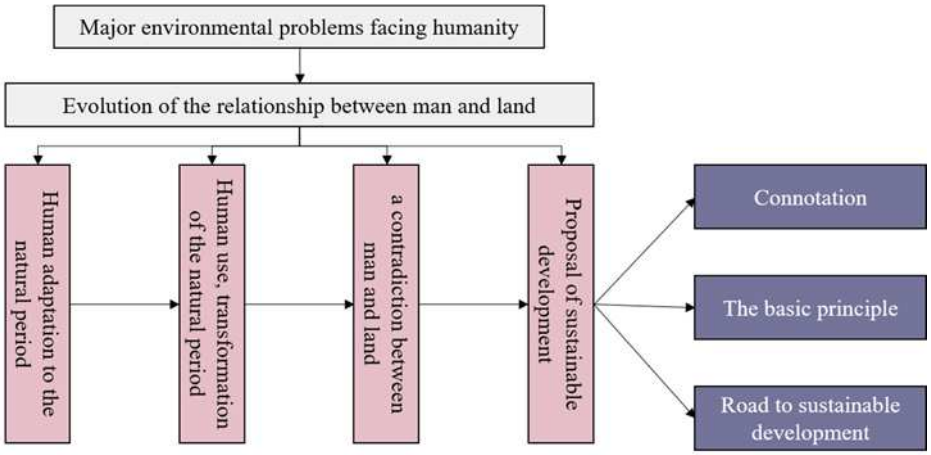

Figure 7. Chinese version of the knowledge structure diagram

As can be seen from the above picture, the medium-scale area accounts for a large proportion in all versions of textbooks. The cases in the four versions of the textbooks are mainly in the inter-provincial areas, and the six cases of the Lu Jiao version are inter-provincial areas. In the small-scale area, only the Hunan version chose Dongting Lake in the theme of "wetland".

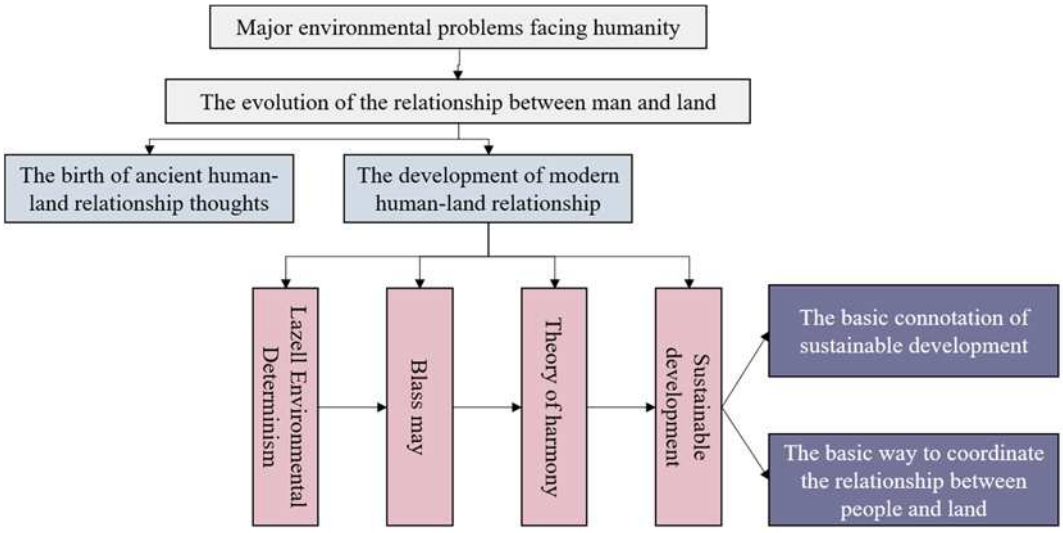

Figure 8. Hunan Education Edition Knowledge Structure

For the issue of sustainable development, a country, a continent, a city, a county, or even a certain part of the city can be used to discuss sustainable development, but the preparation of four textbooks. In the same way, the focus of the case is on the large and medium-scale area. It is hoped that students can acquire the knowledge of regional geography while learning the principles of these areas. This practice is beneficial to students' geography learning.

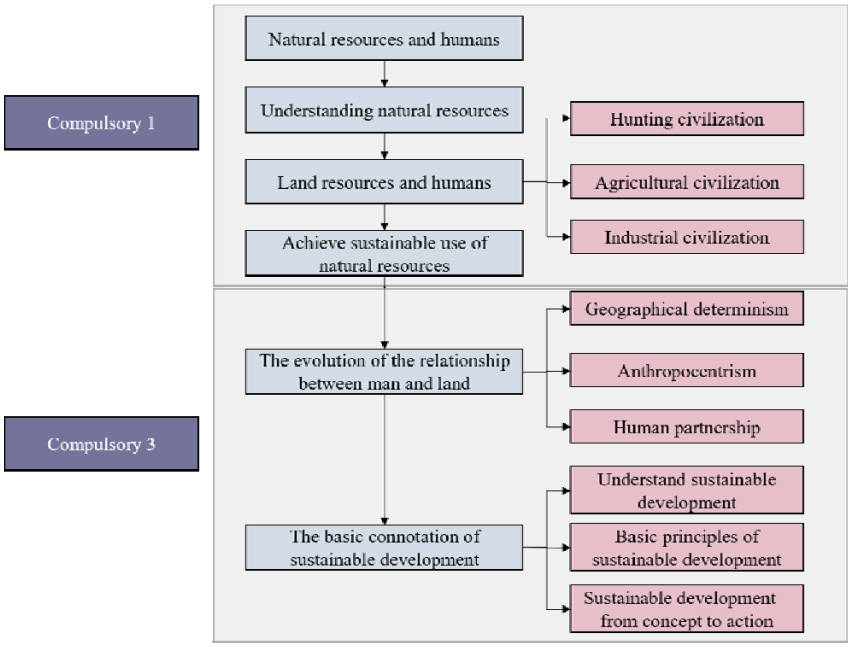

Figure 9. Lu Education Edition knowledge structure diagram

However, the school also saw that in the middle school geography teaching, because the teacher's understanding of the case teaching is not in place, and the inertia of the learning area knowledge in geography learning, it is easy to pay too much attention to the case study when dealing with the regional case of geography 3. The region, while ignoring the geographical principles behind the case - these large and medium-scale regions are overwhelming. Therefore, it is not unhelpful to increase the proportion of small-scale areas in the selection of case areas.

4.3. Case Structure Complete

Four sets of experimental textbooks provide a more complete case in the subject of sustainable agricultural development. The development of agricultural production in a region is closely related to the conditions of agricultural production in the region, such as land resources, climate, and water resources. Therefore, the "course standard" requires to understand the methods and ways of sustainable development of regional agriculture on the basis of analyzing the agricultural production conditions, layout characteristics and problems in the region. From the structure of the textbooks in this section, the four sets of books have achieved this. As shown in Table 3.

Table 3. Case structure of the section "Sustainable Development of Regional Agriculture" in the four textbooks

Version	People,s Education Edition	Chinese version Edition	Lu Education Edition	Hunan Education Edition
Case structure	Geographical condition	Agricultural production conditions and layout characteristics in Northeast China	Natural environment	US agricultural production conditions
	Agricultural layout characteristics	Problems in Agricultural Development in Northeast China	Land resources and their development	Specialization of agricultural production areas in the United States
	Large-scale specialization		Agricultural production and layout	
	Production - construction of commodity grain base	Sustainable Development of Agriculture in Northeast China	Agriculture and regional sustainable development	Countermeasures for the Sustainable Development of American Agriculture
	Agricultural development direction			

4.4. Optimizing the sustainable development of GIS textbooks

A very important content of modern remote sensing technology is "digital image processing". However, some schools cannot provide training for normal students because of the inability to keep up with hardware facilities. Some schools have such hardware facilities, but the textbooks can be sustainable. The development content is not enough to meet the actual needs of normal students. It is not enough for the systematic knowledge teaching materials of geographic information technology. It only teaches the students the operation steps, and does not explain the actual meaning of each step. The students cannot understand on the basis of understanding. The use of geographic information technology. In these cases, the school proposed the following countermeasures:

(1) Theoretical textbooks for optimizing geographic information technology

The geography science majors (teachers) of many higher normal colleges should educate geography teachers about geoinformatics when they can systematically and completely teach theoretical knowledge to normal students, and apply GIS technology to middle schools. The sustainable development of textbooks related to the sustainable development of geography textbooks enhances the fit of geography textbooks and the practicality of textbooks.

(2) Improve the sustainable development level of GIS textbooks for geospatial teachers in higher normal colleges

If the level of sustainable development of GIS textbooks for college teachers is improved, it will undoubtedly have a considerable role in promoting the learning of geographic information technology for geography teachers. In addition, some GIS research projects that allow teachers to participate in teachers are also a good way to improve the enthusiasm of normal students, because this can improve the interest of geography teachers in learning GIS technology, and also have a deeper understanding of GIS technology. In the future sustainable development of textbooks, GIS technology can be used more flexibly to assist the sustainable development of middle school map textbooks.

Increasing the proportion of assessments in the practice of GIS textbooks, and strengthening the practice of GIS tools for normal students. The most basic part of GIS tools is to allow teachers to use GIS tools, and to practice basic GIS software on a down-to-earth basis. On the basis of earnestly studying and understanding theoretical knowledge, we will earnestly carry out the practice of GIS technology, master the essentials, and strive to master the operation of relevant GIS tool software.

In the assessment of geographic information technology textbooks, many colleges and universities still stay at the stage of written examinations, and do not pay much attention to practice. This kind of assessment method that simply values the theory and does not pay attention to practice must be changed. The assessment should take into account both theoretical and practical aspects, and the proportion of practice scores in the total score should be increased to about 50%. In this way, the importance of geography teacher students to the practice of geographic information technology can be improved, and the actual operation of GIS technology can be better promoted by geography teachers.

4.5. Strengthen GIS map skills training

In the geographic information technology knowledge system, the most practical content is "the collection and editing of spatial data" and the "transformation between spatial data structures". In the sustainable development of middle school geography textbooks after geography teachers, students, the application skills of both play a very important role. If geoscientists can combine modern educational technology with GIS technology, and produce multimedia courseware based on the actual sustainable development of textbooks, it can improve the sustainable development of classroom textbooks. The "establishing a database, querying and utilizing spatial data" is a comprehensive and strong textbook sustainable development content. In the process of teaching, attention should be paid to the gradual progress. After the master students have mastered some basic geographic information technology, the degree will be higher. Get on.

While providing the map database to the teachers, it is also necessary to strengthen the training intensity of its comprehensive experiments. It is necessary to carry out comprehensive training on map skills for GIS technology, so that the normal students have strong GIS technology and application

capabilities. Not only will we need to use the map database, but we will also be able to add appropriate data maps to expand and improve the database to adapt to the sustainable development of geography textbooks, and to better teach students in accordance with their aptitude. This requires that normal students can master GIS technology, deeply understand the characteristics of geography teaching materials and maps, and can organically combine the two to better serve the sustainable development of textbooks.

4.6. Using GIS to carry out educational internships

The geography teacher's student will be organized by the school to go to the middle school to carry out the internship of education textbook sustainable development. Undergraduate internship time is generally six to eight weeks. After deducting the time of organizing work and listening to classes, the time for actually teaching students will not be long. Normal school students are less likely to teach GIS-related content during the internship process. In addition, GIS has not entered the high school textbooks for a long time. Therefore, most of the in-service high school geography teachers have not systematically studied geographic information technology, which limits the guidance and depth of the teachers. In view of the above situation, higher normal colleges should actively organize activities that combine the content of high school teaching with the application content of GIS technology, such as the GIS mapping technology applied to the sustainable development of textbooks, the micro-textbook sustainable development exercises, etc. In order to make up for the shortage of geography information technology for geography teachers in the internship process.

5. Conclusion

Since the sustainable development of education textbooks is generally in the fourth stage, geography teachers have already mastered some basic GIS technologies. Therefore, geography teachers should take the initiative in the process of sustainable development of education textbooks. Using GIS technology, VideoStudio and other software to create courseware, in this novel and more effective way to explain some of the more abstract and complex geographical difficulties. In this process, the school should provide the necessary equipment for the normal students, such as computers, GIS software, GPS handhelds, etc., to ensure that the GIS application education internship can be carried out smoothly. According to the characteristics of the framework of the various textbooks, it can be seen that the content arrangement of the Lu Education Edition is very innovative. The content of the "human-land relationship" is divided into two parts: compulsory 1 and compulsory 3 points, which reflects the consistency of the teaching materials. It is academically strong in language expression, and has a rich picture and text, which is conducive to student learning. The textbook of the PEP has a clear understanding of this part of the content, and it also uses the schematic diagram, but the part about the connotation of sustainable development is easy to be ignored in the annotation below the figure. The Chinese version of the language is flat, and the subtitles are accurate and appropriate. They contain both the time period and the central idea of the relationship between people and land in each period, which is convenient for teaching and learning. The Hunan Education Edition lists many representative conclusions in the textual description of the "historical evolution of human-land relationship thoughts", and the description of sustainable development content is somewhat simple and should be supplemented. In view of the above characteristics, this paper believes that the textbook can be further optimized.

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