
Jize Wang
Chemistry and Life Science School, Chifeng University, Chifeng, Inner Mongolia 024000, China

Abstract: In March 2022, the Ministry of Education released the latest edition of Biology Curriculum Standard for Compulsory Education, which will come into force since September 2022. This paper makes a comparative analysis of the curriculum standards of 2022 edition and 2011 edition and summarizes new requirements, so as to provide front-line Biology teachers with reference during teaching practices.

Keywords: Biology, Curriculum standard, Comparative analysis.

1. Combining with the Background of the New Era and Enhancing Ideological Guidance

The curriculum standard of 2022 edition fully reflects the education will of the Party and the state at the level of curriculums, which makes our curriculum standards authoritative. Under the background of the 18th CPC National Congress and guided by the main mission of strengthening moral education and cultivating people, Biology Curriculum Standard for Compulsory Education is revised to actively implement General Secretary Xi Jinping’s spirit of important speech on education reform and development, cultivate ambitious, talented and responsible Socialist builders and successors, bring the functions of moral education, intellectual education, physical education, labor education and aesthetic education into full play and promote the physical and mental development of students.

2. Taking Core Qualities as the Purpose

The curriculum standard of 2011 edition constructed the three-dimensional curriculum goals with knowledge, ability, emotional attitudes and values are the framework. On the premise of developing Chinese students’ core qualities, the curriculum standard of 2022 edition focuses on the continuity and progression in the stages of compulsory education and high school. Through extracting the Party’s educational policies and the educational value of Biology, four core qualities of Biology in the stage of compulsory education are proposed: Life Outlook, Scientific Thinking, Inquiry Practice, Attitude and Responsibility. Curriculum goals which transform from three dimension to qualities more follow the educational development trend.

2.1 Values of Core Qualities

Core qualities are unique contributions to students by varied disciplines. Six modules of the curriculum standard are quality-oriented and run through the preparation and execution of the curriculum. Besides, cooperative awareness, communication ability, patriotism and other interdisciplinary qualities are implied, extending the effect of comprehensive education.

2.2 Connotation of Core Qualities

2.2.1 Life outlook

From the perspective of Biology, students can know the world of life scientifically and form basic perceptions and opinions.

2.2.2 Scientific thinking

Students shall flexibly apply various methods of thinking, independently think and judge, treat problems dialectically and propose creative insights.

2.2.3 Inquiry practice

It includes scientific inquiry, interdisciplinary practice and other activities as an important method to cultivate innovative talents.

2.2.4 Attitude and responsibility

Self-request and social responsibility relate to the correct application of knowledge and abilities.

Figure 1: Core qualities of Chinese student
3. Coexistence of Simplified and Refined Curriculum Content

3.1 Simplified Learning Themes

Through comparison, it can be observed that the curriculum standard of 2011 edition sets 10 learning themes around humans and biosphere. Based on the standard of 2011 edition, the standard of 2022 edition makes an integration. While considering the development demands of students, the society and Biology, the standard of 2022 edition presents curriculum content from different perspectives and divides the content into seven themes. The first six themes are around Biology, and the seventh theme is an interdisciplinary theme.

The standard of 2011 edition puts emphasis on the theme of Scientific Inquiry, which caused attention as a separate theme. It is significant to popularize this study form because great popular support has been won. The standard of 2022 edition no longer sets Scientific Inquiry as a separate theme but integrates inquiry-based learning activities into various learning themes and runs them through the whole teaching process. The theme of Biological Technology combines with concept learning and integrates with various theme activities and interdisciplinary practice themes. Life of Plants is similar to green plants in biosphere. “Healthy Life” and “Human Physiology” are partially combined into the theme of “Human Physiology and Health”, focusing on the integration of health education. The theme of “Animal Movement and Behavior” are integrated and canceled partially, and animal movement is combined into the theme of “Human Physiology and Health” while canceling the content of Animal Behavior. “Human Origins and Evolution” in the theme of “Humans in Biosphere”, “Origin of Life and Biological Evolution” in the theme of “Biodiversity” and genetic content are merged into the theme of “Genetics and Evolution”.

Through the above arrangements, the content of various themes is more practical and closely associated logically.

3.2 Refined Curriculum Content

Every learning theme in the standard of 2022 edition includes content requirements, academic requirements and teaching prompts. Content requirements present great concepts, important concepts and secondary concepts and show the importance of solidifying basic knowledge and avoiding indistinct knowledge.

Combining with the teaching requirements of various themes, the part of academic requirements proposes specific development goal requirements in terms of core qualities. The part of teaching prompts includes the suggestions on teaching strategies, suggestions on situational materials and suggestions on learning activities and pays attention to situational and activity-based teaching.

**Table 1: Comparison of the theme settings of two editions**

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Scientific Inquiry</td>
<td>1. Structural Level of Organism</td>
</tr>
<tr>
<td>2. Structural Level of Organism</td>
<td>2. Biodiversity</td>
</tr>
<tr>
<td>4. Green Plants in Biosphere</td>
<td>4. Life of Plants</td>
</tr>
<tr>
<td>5. Humans in Biosphere</td>
<td>5. Human Physiology and Health</td>
</tr>
<tr>
<td>8. Biodiversity</td>
<td></td>
</tr>
<tr>
<td>9. Biotechnology</td>
<td></td>
</tr>
<tr>
<td>10. Healthy Life</td>
<td></td>
</tr>
</tbody>
</table>

3.3 Forming Conceptual System

There are 50 important concepts in the standard of 2011 edition, and the link of content requirements in the standard of 2022 edition includes 9 great concepts, 22 important concepts and 88 secondary concepts, which are refined layer by layer and further form a system and structure.

It can be observed that with learning themes as the framework and core qualities as the orientation, the standard of 2022 edition constructs a structural conceptual system and strengthens the internal relationship among knowledge. The reform of Biology curriculum shows the trend of structured content, situational teaching, activity-based learning and fewer but better curriculum content. While leaving more time for students to make inquiry-based learning, the innovative spirit of students can be cultivated, and the policy of easing the burden of excessive homework and off-campus tutoring for students undergoing compulsory education is carried.

4. Focusing on Education in Practice

Discipline without practice will inevitably result in the fixed and rigid discipline education, and the shortage of discipline connotation will inevitably lead to the generalized and superficial practices.

4.1 Changes in Curriculum Property

In terms of curriculum property, the standard of 2022 edition...
attaches importance to inquiry and practice. Biology knowledge changes from the object to the carrier, advocates the presentation of inquiry process through various teaching activities, reflects natural phenomena and rules, helps students form rational thinking, cultivates scientific attitudes and healthy lifestyles and highlights the educational value of practices.

4.2 Setting the Theme of Interdisciplinary Practices Separately

During the revision of curriculum standard, all disciplines for compulsory education set the theme of Interdisciplinary Practices, permeate the relationship among varied disciplines and associate with the study of other themes. Biology and Society-Interdisciplinary Practice occupies one tenth of the total class hours, which enhances the combination of Biology, productive labor and social activities, reflects the central role of practices, makes students learn in practice, application and creation. In this theme, practical activities can be summarized as the types of model production, plant cultivation and animal feeding, fermented food production, and corresponding projects are illustrated for teaching practices.

5. Highlighting the Importance of Actual Situations

5.1 Key and Difficult Points of Reform

Combining with the researches on international assessment theories and the development of domestic academic quality assessment, the standard of 2022 edition summarizes four types of question situations: question situations related to health and diseases, the development and utilization of biological resources, Biology and environment and biotechnology.

It is required that academic quality assessment shall specify the academic proficiency test into what students can do in a situation and lead the situational and behavioral assessment based on actual question situations of Biology.

5.2 Enlightening Examination Question Assignment

It is necessary to reduce the knowledge-based examinations, make assessment in the knowledge-generated or knowledge-applied situations, enhance the assessment of inquiry and practice progresses, pay attention to students’ ability to propose questions, seek solutions and draw conclusion, insist on the openness and comprehensiveness of questions, attach importance to the investigation into advanced thinking and change the fragmented test into the integrated test.

Fund Project

University-level First-class Discipline Construction Project of Chifeng University (CFXYYLXKB202102).

References


Author Profile

Jize Wang (1997-), female, a postgraduate studying in Chifeng University, specialized in Subject Teaching of Biology, E-mail: 793785389@qq.com.