

Research on Curriculum Aesthetics Education Pointing to the Ideological and Political Path of Curriculum—Taking the Mathematics Course of Advanced Algebra and Analytic Geometry as an Example

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Abstract: The ideological and political education model of higher education curriculum in the new era, especially the effective path of students willing to listen and teachers willing to teach, is an urgent issue to be solved. If the goal of curriculum aesthetic education can be directed towards curriculum ideological and political education, it will inevitably resonate with the five educations. The research on professional curriculum aesthetic education that points to the ideological and political path of curriculum is guided by the socialist ideology with Chinese characteristics in the new era, and based on the curriculum goals, it systematically excavates the beautiful elements and cases in professional courses. By using analogies and associations to introduce cases of ideological and political education in courses, a curriculum education model of "aesthetic education" and "ideological and political education" is formed, which integrates knowledge transmission, ability cultivation, and value shaping.

1. Introduction

In May 2020, the Ministry of Education of China issued the "Guiding Outline for Ideological and Political Construction of Higher Education Curriculum", which pointed out that professional education courses should conduct in-depth research on the educational goals of different disciplines based on their characteristics and advantages, deeply explore and extract the ideological value and spiritual connotation contained in the professional knowledge system, and scientifically and reasonably expand the breadth, depth, and temperature of professional courses. In October 2020, the General Office of the Central Committee of the Communist Party of China the General Office of

the State Council issued the "Opinions on Comprehensively Strengthening and Improving the Aesthetic Education Work in Schools in the New Era", which pointed out that the concept of disciplinary integration should be established. The integration of aesthetic education with moral education, intellectual education, physical education, and labor education should be strengthened, and various aesthetic education resources that reflect the spirit of Chinese aesthetic education and national aesthetic characteristics contained in various disciplines should be fully explored and utilized. This indicates that, promoting the construction of ideological and political education through curriculum aesthetic education is a requirement for university professional courses in the new era. In the context of the gradual integration of "five educations", how can professional courses in universities implement the coordinated development of aesthetic education, moral education, intellectual education, and labor education?

Compared to art courses, the aesthetic education of professional courses in higher education institutions is a deep aesthetic education. What is aesthetic education? Aesthetic education refers to the cultivation of students' abilities to recognize, understand, appreciate, and create beauty, in order to equip them with beautiful ideals, sentiments, character, and qualities. It is an important focus for cultivating socialist builders and successors with comprehensive development of morality, intelligence, physical fitness, aesthetics, and labor in the new era. It plays a unique and irreplaceable role in "cultivating virtue and nurturing people". The content of aesthetic education mainly includes artistic beauty, natural beauty, social beauty and scientific beauty. It is not difficult to see that the aesthetic education of science and engineering courses is indispensable in cultivating students' social and scientific beauty, and also provides a global perspective for curriculum construction and educational concepts. The beauty of mathematics is considered the ultimate beauty of artistic and natural beauty, and is a profound beauty. In many papers discussing the aesthetic education of mathematics courses, people have discussed and discovered the beauty of mathematics. However, there is little talk about how to promote the value guidance of ideological and political education in the curriculum; In a large number of papers on mathematics curriculum ideological and political education, people rarely touch on the essential connection between mathematics aesthetic education and curriculum ideological and political education. Mr. Xu Lizhi [1] said, "Generally speaking, the higher the level of human aesthetic consciousness, the higher their moral character and understanding." The reasonable explanation for this sentence is: "Aesthetic consciousness is rooted in the deepest part of people's soul, and thus partially dominates people's sentiment, moral values, and spiritual realm." [1] Taking the course "Advanced Algebra and Analytic Geometry" in the major of Mathematics and Applied Mathematics (Normal University) as an example, we adhere to the concept of cultivating students' comprehensive development, and integrate knowledge transmission, ability cultivation, and value shaping through softening steel and aesthetic education. We propose a curriculum education model that combines "aesthetic education" with "ideological and political education", which is of great significance for the construction of new era courses under the background of professional certification and first-class professional construction.

2. Curriculum Education Design Ideas

Based on the educational philosophy of "student-centered, output oriented, and continuous improvement", combined with the graduation requirements of mathematics and applied mathematics (teacher training) majors, the author has designed the knowledge and skills, processes and methods, as well as subject literacy indicators, to support the graduation requirements of the course "Advanced Algebra and Analytic Geometry" Emotional Attitude and Values 3D Course Objective. We set the course objective 1 to master the basic knowledge, principles, and skills of advanced algebra and analytical geometry, understand their basic ideas and methods, possess important thinking qualities and key abilities in mathematical abstraction, logical reasoning, intuitive imagination, mathematical operations, etc. We set the course objective 2. That is to

understand the dialectical thinking methods of mathematics, reflect the combination of algebra and geometry and enable students to understand the use of algebraic methods to study space and plane geometry problems, as well as the use of geometric language to intuitively explain algebraic concepts. Finally, we set the course objective 3 is to understand the emergence and development history of the course, cultivate students' patriotism, teacher ethics and education, scientific spirit, and innovative consciousness, Having emotional values such as cultivating mathematical culture and beauty. The above three curriculum goals all contain mathematical aesthetic education and ideological and political education goals, which are crucial for achieving the overall goal of curriculum education. Based on the curriculum goals, the author has formulated the teaching content, teaching methods, teaching methods, and assessment and evaluation methods of the curriculum, organically integrating curriculum aesthetic education and ideological and political education (see Figure 1).

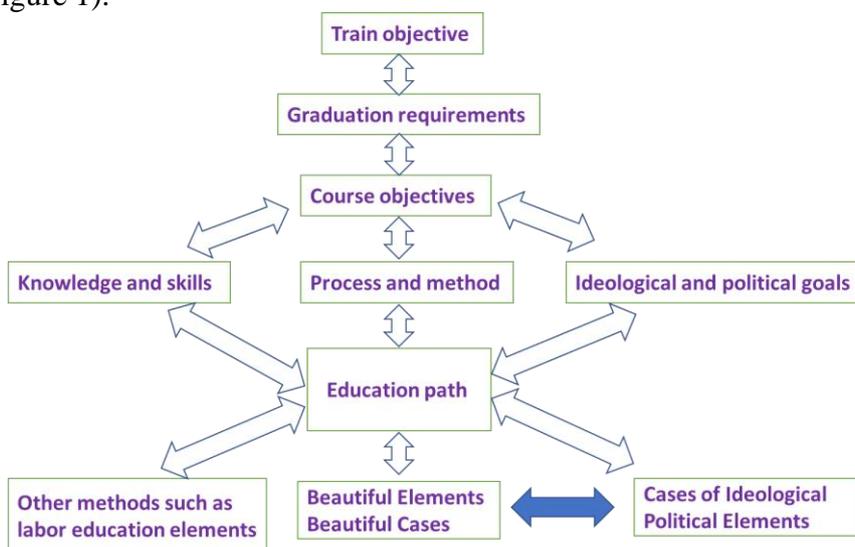


Figure 1: Design ideas for curriculum education mode

3. The Curriculum Education Model of "Aesthetic Education" and "Ideological and Political Education"

Everyone has a love for beauty. Through the path of aesthetic education, the construction of ideological and political courses, such as sugar in water and salt in taste, can truly achieve the effect of "diving into the night with the wind, moistening things silently". It is feasible to consciously promote the comprehensive and coordinated development of moral education, intellectual education, and labor education through aesthetic education. In recent years, under the background of professional certification and first-class professional construction, in addition to teaching mathematics courses, the author constantly ponders and studies the integration of mathematical aesthetic education and curriculum ideological and political education. Through exploring the ideological and political elements and cases contained in mathematical aesthetics in the curriculum, of course, what is beauty? Zhuangzi [2] said, "Each beauty has its own beauty," which means that there is no universally recognized absolute standard of beauty. The ancient Greek mathematician Pythagoras [3] said, "Beauty is harmony, and the entire celestial body is a harmony. The harmony of the universe is composed of numbers, thus constituting the beauty of the entire universe." When carrying out aesthetic education, we should reveal more about the essence of mathematical beauty in the curriculum.

What are the contents of mathematical beauty? It is generally believed that mathematics has the beauty of symmetry, simplicity, unity, and strangeness [4]. In order to facilitate the development of

aesthetic education and curriculum ideology, the author believes that mathematical aesthetic education can be explained from two aspects: formal aesthetic education and content aesthetic education. The formal beauty of mathematics mainly refers to the beauty of expression, simplicity, unity, harmony, and strangeness, while content beauty mainly refers to the beauty of mathematical ideas, methods, and culture. Mathematical aesthetic education first teaches students to discover, feeling and understanding the beauty of these different types of mathematics is the key to cultivating students' love and creativity for beauty, and ultimately achieving the value of integrating knowledge and action to cultivate students' spiritual and behavioral beauty, thus achieving the ideological and political goals of the course. The author divides the ideological and political goals of this course into five dimensions of ideological and political elements (see Table 1).

Table 1: Five dimensional ideological and political elements and objectives

Ideological and political elements	Ideological and political goals
1. Patriotic sentiment	Have good ideological and political quality, love socialism, support the leadership of the CPC, love the motherland, love the people, abide by discipline and law, shoulder social responsibility bravely, and serve the country.
2. Teacher's moral sentiment	Love the cause of education, implement the Party's educational policy, take moral education as our responsibility, abide by the professional ethics standards of primary and secondary school teachers, and have the lofty ideal of serving the country through education.
3. Scientific spirit	The passion for perseverance, hard work, and never giving up, the scientific and rigorous style, and the creativity to forge ahead.
4. Thinking quality	Utilize Marxist materialist dialectics, view problems from a perspective of connection, development, dialectics, and comprehensiveness, and cultivate the habit of analyzing and reflecting on problems from different perspectives.
5. Cultural Confidence	Proud and confident in advanced socialist culture and excellent Chinese mathematical culture.

Table 2: Correlation Matrix between Beautiful Elements and Ideological and Political Elements

Ideological and political elements	Beautiful elements						
	Symmetrical beauty	Simple and clean beauty	Unified Beauty	Harmonious beauty	Strange Beauty	Ideological beauty	Cultural Beauty
1. Patriotic sentiment		√	√	√		√	√
2. Teacher's moral sentiment	√	√	√			√	
3. Scientific spirit		√			√	√	√
4. Thinking quality	√		√	√	√	√	
5. Cultural Confidence	√	√				√	√

The author combines the relationship between ideological and political elements in the curriculum and the beauty elements in the curriculum, excavates beautiful cases through the beauty elements, and then uses analogy and association methods to explore corresponding ideological and political cases for teaching. The author implements a curriculum education model that promotes the

achievement of ideological and political goals in the curriculum through mathematical aesthetic education, integrating knowledge transmission, ability cultivation, and value shaping. The author calls it the curriculum education model of "aesthetic education" and "ideological and political" (see Table 2)

Firstly, from the perspective of external formal beauty, let's explore the connection between mathematical aesthetic education and ideological and political education.

(1) Symmetry beauty: The most easily perceived mathematical beauty in mathematics is the symmetry beauty of geometric shapes. In geometry, straight lines, circles, squares, balls, cubes, and so on are all beautiful. These are all axisymmetric, central, or mirror symmetrical shapes. The symmetry beauty of square and circular shapes reminds people of a poem by Tang Dynasty poet Lu Zhaolin: "The square pool opens with dawn, and the full moon falls in autumn shade. It has already taken a thousand miles to rise, and it also touches a string of qin Reunion embodies the genes of Chinese culture that have existed for thousands of years. If graphics lose symmetry, they will not be as beautiful. Just as the symmetry of human facial features meets people's aesthetic standards, the squareness of graphics means that people's behavior and character are upright and upright. Symmetry also manifests as a state of balance. Here, the case of ideological and political education is as follows. Education equity is an important foundation of social equity, and we should continuously promote the development of education to achieve more and more equitable benefits for all people, and promote social equity and justice through education equity [5]. There are many examples of symmetrical beauty in this course, such as the exchange law of addition $a + b = b + a$, the exchange law of vector quantity product, and $\vec{a} \cdot \vec{b} = \vec{b} \cdot \vec{a}$ so on. The story of the idiom "morning three and evening four" in Zhuangzi's "Qi Wu Lun" can be used to illustrate the guiding significance of the symmetry here for our work methods. In the story, the monkeys obtained fruits from 3+4 to 4+3, and the total number did not change. However, the monkeys changed from being dissatisfied with eating 3 fruits in the morning to being satisfied with eating 4 fruits.

(2) Beauty of conciseness: Beauty of conciseness refers to the concise and concise description of complex things in the most concise way. Mathematical concepts, formulas, theorems, proofs, methods, conclusions, etc., all reveal the laws of the objective world to us. For example, through simple formulas $y = Cx$, $Ax = \beta$, complex linear equations and linear substitutions can be represented separately. Using elementary transformations of matrices to solve equations is more concise than directly transforming equations into identical solutions. The beauty of simplicity is also manifested in a high degree of mathematical abstraction. For example, the concept of vector space is a paradigm of mathematical abstraction, seeking common laws from various sets. After axiomatization, it is abstracted into a simple vector space and extended to a series of theories. The beauty presented by simplicity, It is the freehand beauty that painters create with the least amount of ink and the greatest amount of blank space. In their work, when considering simplifying complexity, we should focus on the big and the small, and do things differently. Simplicity is the soul of all beauty. Laozi also proposed the idea of "simplicity in the Tao Te Ching", which is like Tai Chi having only two colors, but it is in harmony with the principles of heaven and earth. The beauty of simplicity is like the blooming lotus flowers in summer, but it is fresh and refined. As teachers, we should advocate a simple and effective authentic classroom, which requires us to practice our internal skills, create a profound cultural heritage and professional literacy. We should educate students to learn the scientific and rigorous scientific spirit by learning the concise expression of mathematical language.

(3) Unification beauty: Unification is a beauty in mathematics. Although seemingly unrelated, it can be unified through one concept, one formula, or one theorem. For example, elements in linear space can be arrays, matrices, polynomials, functions... We use the concept of vectors to refer to them uniformly. For example, all vectors in a plane can be represented by two non collinear vectors, all vectors in space can be represented by three non coplanar vectors, which can be unified into the

concept of linear space basis. The unified beauty of mathematics is also reflected in the organic unity of mathematical content itself in structure. Most concepts and methods in higher algebra have strong geometric backgrounds. Conversely, analytic geometry is a mathematical discipline that uses algebraic methods to study geometric shapes. It is a bridge connecting geometric forms and mathematical relationships. Therefore, the unity of advanced algebra and analytical geometry in one course is a reflection e, p of the beauty of unity $(1 - e^2)x^2 + y^2 - 2e^2 px - e^2 p^2 = 0$. The unity of formulas, such as in analytical geometry, in Cartesian coordinates, the three types of conic equations can have a unified form of $ax^2 + bxy + cy^2 + dx + ey + f = 0$ [6]. In 1745, Euler proposed in his "Introduction to Analysis" that starting from the general quadratic equation, after appropriate coordinate transformations, nine types of standard equations for conic curves can be obtained [6]. Dialectical materialism believes that the unity of the world lies in its materiality. Humans are constantly exploring the complex world and using a unified perspective to understand the world, inspiring people to learn to grasp the essence of things or problems as a whole. Establishing a strong sense of overall situation is a fundamental quality that leaders must possess. In addition, the important significance of life lies in the pursuit of truth, goodness, and beauty. Ideological and political education is the unity of "truth, goodness, and beauty". As educators, we should have broad sentiments. Talent cultivation must be a process of integrating education and talent cultivation, and education is the foundation. There are also corresponding cases of ideological and political education; Humanity is a community with a shared future that benefits all and damages all; We should adhere to combining the basic principles of Marxism with the specific reality of China and the excellent traditional Chinese culture; The leadership of the Party is comprehensive, systematic, and holistic, and must be implemented comprehensively, systematically, and holistically; Efforts should be made to build an education system that comprehensively cultivates morality, intelligence, physical fitness, aesthetics, and labor, and to form a higher level talent training system; We should adhere to comprehensively deepening reform, adhere to comprehensive rule of law, adhere to and improve the principle of "one country, two systems" and promote the reunification of the motherland; We should promote the unity of not daring to corrupt, not wanting to corrupt, and not wanting to corrupt; We dare not corrupt, cannot corrupt, and do not want to corrupt.

(4) Harmony beauty: Harmony beauty refers to the order and coordination between parts and parts of the objective world, as well as between parts and the whole. Harmony often manifests as the result of unity of opposites. Pythagoras once said, "The most basic element of all things is numbers, and the harmony of numbers - this is beauty." For example, the harmonious coexistence of irrational and rational numbers in the real number field; In the definition of linear space, the axiom of the associative law of vectors with respect to addition and multiplication $\vec{a} \cdot (\vec{b} + \vec{c}) = \vec{a} \cdot \vec{b} + \vec{a} \cdot \vec{c}$ becomes a bridge of friendship between vector addition and multiplication; The dimensionality V_2 formulas of the sum of linear subspaces $\dim V_1 + \dim V_2 = \dim(V_1 + V_2) + \dim(V_1 \cap V_2)$, as well as the σ dimensionality formulas V of the kernel and range of linear transformations in linear spaces, $\dim(\text{Ker}\sigma) + \dim(\text{Im}\sigma) = \dim V$ depict the harmonious coexistence of different linear subspaces. The ideological and political cases contained here, the unity of the country, and the rejuvenation of the nation, are the key to a harmonious and beautiful society; The socialist core values unify the country, society, and individuals as a whole, ensuring a balanced and harmonious state between different levels of the socialist core values, which itself reflects the beauty of harmony; Chinese path to modernization is the modernization of material civilization and spiritual civilization; We should adhere to ensuring and improving people's livelihoods in development; The fifth is to adhere to the harmonious coexistence between humans and nature. [7]

(5) Strange beauty: The singularity of mathematics refers to the destruction of a certain harmony in mathematics under certain conditions, often showing novelty or novelty in results and methods.

The singularity beauty of mathematics often gives people an unexpected or surprising feeling. For example, in courses, a unary n degree algebraic formula may not have a root in a general number field, but Gauss proved that it has at least one root in a complex number field, this is the novel and unique beauty of the so-called fundamental theorem of algebra. For example, when we introduced the calculation method of the third-order determinant, we did not feel anything strange. However, when we learned about the mixed product of vectors, the starting point of three non coplanar vectors in space was moved to the coordinate origin, and the volume of a parallelepiped with these three vectors as its edges was actually equal to the third-order determinant with the coordinates of the endpoint of these three vectors as its elements. The geometric explanation of this determinant is making people applaud and unify seemingly unrelated things is a strange beauty. Revealing and pursuing strange beauty is one of the effective ways to cultivate creative thinking. The corresponding ideological and political cases here are: cultivating students' comprehensive perspectives to see problems, for example, our party's democratic centralism principle reflects the need to adopt a method of liberating the mind and brainstorming; Stimulating students' scientific spirit and educating them on the great potential of technological innovation, which is the primary productive force.

Mr. Xu Lizhi believes that "many ideas, methods, achievements, and applications in mathematics are beautiful." Mathematics has inherent rational beauty, such as the depth of thought, the dexterity of methods, the brilliance of stories, and the wide range of applications, all of which reflect the essence of the inherent beauty of mathematics.

(6) Beauty of Thought: The beauty of mathematical thought can also be described as the beauty of mathematical thinking. Mathematical thinking includes logical thinking, visual thinking, intuitive thinking, etc. Logical thinking mainly refers to abstraction and overview, analysis and synthesis, induction and deduction. Based on the characteristics of this course, we will list the main beauty of mathematical ideas (manifested as vastness, profundity, flexibility, originality, and critical beauty) to demonstrate our support for the ideological and political aspects of the course.

(1) Quantitative change causes qualitative change: Quantitative change refers to the change in quantity of things within a certain range; Qualitative change refers to the change in the essence of things when quantities accumulate to a certain extent. In this course, when the closely related values of certain research objects $R(A)$ change, the essence of the research object undergoes a significant change. For example, if the $Ax = \beta$ rank of the coefficient matrix in the discrimination theorem for the solution of a system of n non homogeneous linear equations changes $R(A) < R(A, \beta)$, the solution of the system of equations will have a fundamental change: at that time, the system of equations has no solution; At that $R(A) = R(A, \beta) = n$ time, the system of equations had a unique solution; At that $R(A) = R(A, \beta) < n$ time, the system of equations had infinite solutions. For example, an equation $x + y + 1 = 0$ represented a straight line in two-dimensional space and a plane parallel to an axis in three-dimensional space; Equations $x^2 + y^2 = 1$ represent a circle in two-dimensional space and cylindrical surfaces with generatrix parallel to the an axis in three-dimensional space. These cases reveal the dialectical materialism of "quantitative change, qualitative change". Everything has both qualitative and quantitative aspects, and is a unity of quality and quantity. Quantitative change is a necessary preparation for qualitative change, and qualitative change is an inevitable result of quantitative change. Mathematical research needs to explore the quality and its changing laws of mathematical problems from a quantitative perspective, we should be good at discovering the qualitative differences contained in mathematical problems and how to achieve changes from quantitative to qualitative. Corresponding ideological and political cases include: in life and work, on the one hand, we should know that "a journey of a thousand miles begins with a single step", and we should learn to combine lofty ideals and lofty goals with a down-to-earth and hardworking spirit. We should also remember that "Rome was not built in a day", Don't do anything that violates

discipline.

(2) Metamorphosis remains unchanged: Many hostages suspect that quantitative change cannot cause qualitative change. Yes, not everything in this world undergoes a process of transitioning from quantitative change to qualitative change. In the movement and change of objective things, most of their properties also change, but some properties are relatively stable and do not change. This relative stability reflects a certain essence of things and is worthy of our attention. For example, in matrix theory, the rank of a matrix is an essential characteristic of the matrix itself. We can use three elementary row transformations to transform the matrix into a row stepped matrix, and obtain the rank of the matrix by counting non zero rows. During this process, the matrix constantly changes while the rank remains constant. For example, if there is a maximum independent group in a vector group, all vectors in the vector group can be linearly expressed by the maximum independent group, and the maximum irrelevant group is not unique and can be changed, but the number of vectors in the maximum irrelevant group, that is, the rank of the vector group, is uniquely determined. The ideological and political cases contained here include: exploring mathematical problems in detail, deepening the understanding of "seeing the essence through phenomena", educating students to analyze problems from a dialectical perspective, viewing research objects from a relational perspective, cultivating students' scientific and rigorous exploration spirit, and making mathematical courses thoughtful Having emotions.

(3) Abstract and concrete transformation: While learning to highly abstract different objects, we can also concretize some abstract concepts and turn them into concrete, helping people understand abstract concepts. For example, the concept of a finite dimensional linear space base is to study infinite elements in space through its finite base elements. Conversely, the mathematical induction method involved in multiple parts of this course. From a methodological perspective, the process of transforming concrete into abstract or from special to general is called induction; On the contrary, it is called deduction. The ideological and political case contained here is that achieving the great rejuvenation of the Chinese nation is a magnificent process that requires generations of young people to strive for. During the teaching process, students should be led to understand the beauty of mathematical wisdom contained therein, Enhance students' Marxist dialectical materialism

(4) Transformation: We should pay attention to the sufficient and necessary conditions, such as the sufficient and necessary conditions for invertible matrices A is the existence of a reversible matrix B so that $AB = E$, or the determinant of A is not 0, or the rank of A is n , or a homogeneous equation system $AX=0$ with only zero solution,... These transformational ideas can also be referred to as reductive thinking: refers to the idea that people categorize the problem to be solved into a type of problem that can already be solved or is relatively easy to solve or familiar with through a certain transformation process, in order to obtain a solution to the original problem. The ideological and political cases contained in it, such as the innovative spirit of scientific spirit, innovation driving productivity. The rapid rise of China's domestic automobile industry, new energy vehicles changing the track, using battery technology to convert electrical energy into chemical energy and then into mechanical energy, saving gasoline, Reducing environmental pollution. For example, China's major aerospace projects have spent much less research funding than Western countries, but have given birth to a large number of new technologies and materials, greatly promoting social progress and technological development; China's large aircraft and aviation engine industry has made significant progress and is waiting to soar; China's technologies such as Loongson and supercomputing chips have made great progress from scratch, but the manufacturing equipment of lithography machines is still stuck in the neck of Western countries and requires long-term efforts by Chinese people; We should encourage young students to have a sense of crisis, not to lie flat, and to be down-to-earth and study hard; We can also talk about transforming our thinking in cultivating the professional ethics of normal school students. For example, we should adhere to the Party's leadership over universities, adhere to the socialist direction of education, and effectively transform our characteristics and advantages into the ability to cultivate socialist builders and successors.

(5) Analogy: It also belongs to the idea of reduction: Analogy is a type of reasoning that infers that two or two types of things are the same in certain attributes, and that they are also the same in other attributes. For example, in the chapter on learning polynomials, we first review the basic theorems of arithmetic, and then compare irreducible polynomials to prime numbers in natural numbers. The polynomial factorization theorem with similar conclusions can be obtained. At the same time, the above mathematical ideas also reveal the philosophical viewpoint of "universal connection". The world is a universally connected organic whole. In the learning process of mathematics professional courses, it is necessary to be good at discovering the connections between knowledge points and discovering their inherent regularity. The knowledge points of mathematics do not exist in isolation, but are mutually contained and interconnected. The idea of geometric analogy can also extend the properties of low dimensional geometry to higher dimensional spaces, which is innovative. The ideological and political cases contained here not only have materialist dialectics, but also patriotic education, that is, when we talk about the relationship between people and the state, we can compare the relationship between people and the country to the relationship between people and families. Loving the country is like loving family, in order to cultivate students' sense of kinship and responsibility towards the country.

(6) Negation of negation: The ancient Greek mathematician Euclid used the method of proof to prove the conclusion that "there are infinite primes". This unconventional thinking went against the trend, and the core idea of a new path was the philosophy of "negation of negation". The application of proof of negation is not very common in courses. The ideological and political case contained here is: to make students understand that nothing can be smooth sailing, it is a spiral upward process, it is the unity of progressiveness and tortuosity. For example, the tortuous development of the first, second, and third generations of China's Beidou navigation system; The tortuous development process of China's high-speed railway from green cars to the Harmony high-speed train, and then to the Fuxing high-speed railway has enabled China to achieve a transition from following and running to leading in related technologies; China's aerospace industry has developed from backwardness and being stuck in the neck, with twists and turns all the way to the present day. With the world's leading Tiangong Space Station, Chang'e Lunar Exploration Project, and Tianwen 1 Fire Exploration Project... China's aerospace industry is flying into the sea of stars and has achieved remarkable achievements. Through ideological and political cases, it has stimulated students' hard work, patriotic spirit, and pride in national self-reliance and self-improvement.

(7) Cultural beauty: Mathematical culture is also beautiful. Currently, the term "mathematical culture" refers to not only the ideas, spirit, methods, viewpoints, language, and their formation and development of mathematics, but also the history of mathematics, mathematical beauty, mathematical education, the intersection of mathematics and humanities, the relationship between mathematics and various cultures, and its widespread application. When explaining the theory of polynomial factorization, introduce the conclusion that "polynomial equations of degree 5 and higher do not have a formula for finding roots", as well as the tortuous discovery process of mathematicians such as Abel and Galois. We should explain to students that the discovery of a major conclusion is not always smooth sailing. It is the result of generations of mathematicians racking their brains, studying hard, and constantly exploring. Therefore, educate students to have self-improvement. The enterprising and indomitable scientific spirit. The mathematical culture of the course also reflects the confidence of Chinese culture in many aspects. For example, although the matrix concept and the Gaussian elimination method for linear equations in this course come from Western mathematics, in Chapter Nine Arithmetic, the separation coefficient method is used to represent the linear equation system and obtain its augmented matrix. In the elimination process, a certain line is multiplied by a non-zero real number, subtracting another row from a certain row is equivalent to the elementary transformation of a matrix; The Euclidean algorithm for the division of the greatest common factor of two positive integers originated from Pythagorean subtraction, but the first chapter of "Nine Chapters of Arithmetic", "Fangtian", records a similar method of

subtraction, which is similar in nature; For the solution of multiple linear equations, Yuan Dynasty mathematician Zhu Shijie's famous work "Four Element Jade Mirror" can solve the four element equation system, which is more than 500 years earlier than the West. Mathematical culture contains innovative consciousness and spirit [10]. There are also many modern and contemporary Chinese mathematicians related to the curriculum, such as Hua Luogeng, Chen Jingrun, and others [9], Introducing their patriotism and scientific spirit of overcoming difficulties is of great educational significance. Educating normal school students should have the educational sentiment of "insisting on serving the great rejuvenation of the Chinese nation as an important part of education".

In addition, explaining the beauty of application in mathematical culture has become a window to showcase the beauty of mathematical culture. For example, when explaining matrix theory, we introduce the application of matrix decomposition in computer image processing; When explaining polynomials, linear equations, and linear space theory, we introduce their applications in communication and cryptography, including China's leading Beidou navigation system, 5G communication, and quantum communication; When explaining feature values and eigenvectors, we introduce their applications in search engines [10]. When explaining, we also combine some important ideological and political cases, such as explaining graphics such as planes, cylinders, and cones, to introduce their applications in precision machining of mechanical parts, aerospace fields, and mechanics; When explaining quadric surfaces, we introduce their applications in designing precision lenses, and introduce the great achievements and the spirit of scientists of the FAST spherical radio telescope located in Guizhou, China.

4. The Direction Path of Curriculum Aesthetic Education

Curriculum aesthetic education is an important component of curriculum education. The aesthetic function of curriculum cannot be limited to aesthetics, nor can aesthetics be limited to external beauty. Grasping the directionality of curriculum aesthetic education is the manifestation of teacher classroom art. Through the ideological and political path of curriculum aesthetic education, it can achieve the mutual integration of beauty and other "five education" factors such as morality, intelligence, physical fitness, and labor.

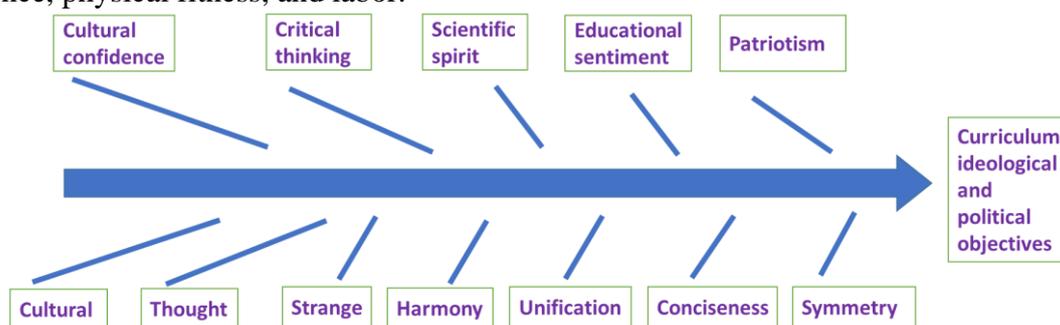


Figure 2: Integration of Ideological and Political Elements with Beautiful Elements in the Course of Advanced Algebra and Analytic Geometry

The ideological and political elements and beautiful elements of the curriculum are like two sides of a thin sheet of paper. We often see the figure of beauty through the ideological and political elements, but we rarely exchange perspectives and point to the value of ideological and political education through the beautiful side (see Figure 2). In the curriculum teaching, based on the curriculum objectives, by fully showcasing the content and form of beauty, aesthetic education, moral education, and intellectual education are coordinated and developed to educate people and return to their original aspirations. No matter when, Education should always adhere to the original intention of educating people for the Party and the position of educating talents for the country [8] Teachers should help students deepen their understanding and mastery of the knowledge they have

learned in aesthetic education, so that students can not only experience beauty, but also stimulate their interest in learning, cultivate correct thinking qualities and good ideological and political literacy.

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