

# Exploration of the Application of Aesthetics in Transportation Teaching

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**Abstract:** Transportation is the foundation and prerequisite for the development of human society and economy, and also has aesthetic significance in beautifying human life. The development of transportation is a shift from extensive resource consumption to coordinated resource intensive use, and it is also a development in aesthetics. Guiding students to discover the beauty of transportation vehicles, the harmonious integration of transportation infrastructure and nature, the beauty of transportation data, and the beauty of the behavior and soul of transportation participants, igniting more students' curiosity for transportation majors, and inspiring their enthusiasm for the transportation industry, is the central goal of the construction of the Beauty of Transportation course.

**Keywords:** The Beauty of Transportation; Aesthetics; Curriculum Construction.

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## 1. Introduction

The development of transportation has accompanied the entire process of human social development and is also a decisive factor in the development of human civilization. The earliest mode of transportation was human walking without the use of tools. This method of transportation has low efficiency and cannot accelerate economic and social development. Afterwards, humans learned to domesticate animals to help transport goods, greatly improving transportation efficiency and promoting economic development. The invention of the wheel was a decisive progress in the development of transportation, determining the height of civilization. The Inca civilization in the Americas, due to the lack of invention of the wheel and limited communication with other ancient civilizations, never reached a higher stage of civilization development. Since ancient times, people have invented canoes to migrate across water surfaces. Facilitate access to water sources and try to live along the river as much as possible. Therefore, the emergence of water transportation became the earliest efficient mode of transportation. In 480 BC, China opened the Hangou Canal, and by the Qin Dynasty, the Lingqu Canal, which connected the Yangtze River and the Pearl River water systems for grain transportation, became an innovation of waterway transportation. The Grand Canal, built during the Sui Dynasty, became the economic lifeline of later feudal dynasties.

In modern times, the invention of the steam engine in the 18th century led to the Industrial Revolution and also changed the transportation industry. In 1807, Fulton, an American, first used the steam engine on the *Clemente*. In 1825, the steam locomotive manufactured by the Englishman Stephenson ran successfully on the Darlington Railway in Stockton, England. In 1885, German Benz made a car powered by an internal combustion engine, and in 1903, American Wright brothers made the first biplane powered by an internal combustion engine. To this day, ocean freight through giant cargo ships is currently the most important mode of transportation in international trade.

As transportation is an indispensable and important link in

economic activities, it must follow the laws of economic development, that is, from extensive consumption of resources to intensive use of resources, from high consumption and low efficiency to low cost and high efficiency, thus promoting the development of social civilization and beautifying human life. At present, research on transportation aesthetics mainly focuses on the aesthetics of highway systems, green landscapes, and local road structures [1-4], while there is a lack of systematic analysis and discussion on the overall aesthetics of transportation. In the process of studying the beauty of transportation, students are able to master the concepts of transportation, transportation, and transportation, and understand the emergence and development stages of the transportation industry. Understand the economic and social functions of transportation. Understand the composition of the transportation system. Understand the forefront and trends of transportation development. Through the study of concepts, students can appreciate the beauty of transportation concepts, understand the rational operation of transportation systems to achieve a better life for people, and guide the establishment of the spirit of craftsmanship and the ambition of serving the country in the industry.

## 2. The Beauty of Transportation Routes

Transportation routes generally refer to land transportation routes, namely railways and highways. Although shipping and air freight also have established transportation routes, the routes themselves do not have physical entities. The planning and construction of transportation routes are important links in social and economic activities. China has a vast territory and complex terrain, spanning 9.6 million square kilometers through north-south and east-west highways and railways, forming a unique transportation network in China. In this vast and magnificent transportation network, there is a high-altitude snowy area where one can see the ever-changing plateau sky, and Tibetan antelopes living in groups of three or five on grasslands in uninhabited areas, with a total length of nearly 2000 kilometers known as the Tianlu Qinghai Tibet Railway; There is Chengdu Kunming Railway, which runs

from Sichuan Basin through Hengduan Mountains to the Yunnan-Guizhou Plateau. The natural scenery along the way is like a picture scroll; From Lanzhou in the east to Urumqi in the west, along the railway line, there are both the Hexi Corridor with abundant water and grass, as well as the barren Gobi Desert; There are both emerging industrial cities and ancient towns with brilliant cultures; The 1903 kilometer Lanxin Railway is a blend of fields filled with the fragrance of fruits and melons, as well as illusions of mirages; The Duku Highway, which starts from the Dushanzi Grand Canyon in Xinjiang and splits through the Tianshan Mountains like a giant axe falling from the sky, connects northern and southern Xinjiang, and finally reaches Kuche in Xinjiang, is known as the most beautiful highway; There is a magnificent forest and sea stretching for thousands of miles, covered by brilliant golden larch trees, winding and extending through the north and south of the Greater Khingan Range, with a total length of 574 kilometers, the Jiamao Highway (Jiagedaqi Mohe); In such a short distance of 10.77 kilometers, the altitude has sharply increased from 200 meters to 1300 meters. The cliffs on both sides of the road are steep, the valleys are deep, and the 180 degree sharp turns are constantly changing. It is known as the 99 bends of Tianmen Mountain, all of which are ghost gates. The Tianmen Mountain winding road can be called a world wonder. The rugged natural environment and the incredible craftsmanship of Chinese transportation builders not only create a sharp contrast, but also complement each other, highlighting the magnificence of China's transportation routes, which are unique in the world. Through the above case studies, we will discuss the beauty of railways and highways, and guide students to appreciate the great historical achievements of the Chinese government's leadership in transportation development, as well as its strategic wisdom and successful practices in transportation. Revitalize students' patriotic enthusiasm and cultivate builders with correct values.

### 3. The Beauty of Transportation Stations

Transportation stations are nodes on transportation routes, gathering places for passengers and goods, connection points for various transportation vehicles, places for handling passenger and freight transportation business and transportation vehicles (including vehicles, ships, machines, and loading and unloading equipment) operations. They are the technical basis for transportation enterprises to maintain and repair transportation vehicles, and are an important component of transportation networks, including highway station hubs, railway station hubs, aviation hubs, ports, etc. Transportation stations are generally located in cities, and due to their large size, they become important landmarks in the city. When you arrive in a city, the first thing that catches your eye is the city's train station, bus station, airport, or dock. Stations, airports, and docks are the image cards of a city. Therefore, enhancing and beautifying the urban image is an essential function of transportation stations. By explaining to students the beauty of buildings such as stations, airports, and docks, guide them to understand the functional beauty of these buildings. Simultaneously experiencing the speed of China's transportation construction. Revitalize students' patriotic enthusiasm and cultivate builders with correct values.

## 4. The Beauty of Mobile Transportation Vehicles

Transportation vehicles generally refer to cars, trains, ships, and airplanes. If we look back at the development history of these transportation vehicles, we will find that their exterior design initially focused on functional requirements, but with the improvement of technological level, aesthetic requirements will become increasingly important in exterior design.

As the most closely integrated transportation and mobile tool with people's daily lives, the aesthetic requirements of the appearance design of cars are particularly important. Since its birth, cars have undergone significant changes in their external design. The first internal combustion engine car was modeled after a four wheeled carriage, so people at that time called the car a horseless carriage. With the advancement of technology and further improvement of automobile performance, the carriage shape originally designed for easy control of horses has become unsuitable, and the automobile shape has also continuously evolved from carriage type body to box type body. In 1915, the Ford Motor Company's T-type car was the first to adopt a box body, which looked like an enlarged box, hence the name "box car". It laid the foundation for the basic design of future cars and completely rid them of the influence of carriage shapes. In the 1930s, with the improvement of road traffic conditions in Europe and America, car speeds also increased. In order to achieve higher vehicle speeds, car designers began to reduce drag coefficients based on principles of aerodynamics. The height of the sedan gradually decreases to 1.4 meters, and the width gradually increases. The longitudinal section of the vehicle has changed from a square to an elliptical shape, thereby reducing the windward area. In the 1950s, the focus of vehicle design gradually shifted from driving performance to passenger comfort. In order to achieve comfortable and spacious seating space, the V8 sedan of Ford Motor Company first pioneered the ship shaped body shape in 1949. Its characteristic was the application of ergonomics to design the body, placing the driver and passengers in the middle of the car with minimal vibration. In order to overcome the disadvantage of strong air turbulence caused by the high-speed driving of ship shaped cars, people have developed fish shaped cars with fish like backs. Although the fish shaped car reduces some of the air lift during high-speed driving, it does not fundamentally solve the problem of body lift. After extensive experimental research, the designer finally found a new car model - the wedge [5]. Every transformation of a car, although originally intended for better driving performance, is also constantly evolving according to aesthetic requirements, and is a beautiful creation of the designer. This development trend also conforms to the characteristics of technological progress. Generally speaking, the advancement of mechanical technology will drive revolutionary changes in the appearance of automobiles, but technological progress is not an endless constant progress, but rather a wave shaped one. When technological progress slows down, improvements in car exterior design can only focus on aesthetics. Therefore, every generation of classic car models develops towards increasingly gorgeous directions after their birth.

The transportation vehicles such as trains, ships, and airplanes are closely integrated with people's daily lives, and their development process is similar to that of automobiles. These transportation vehicles have undergone several sudden

changes in appearance brought about by technological advancements during their development process. Trains have evolved from steam locomotives to diesel locomotives and then to electric locomotives; Ships evolved from sailboats to oil tankers and then to electric propulsion; Aircraft have evolved from propellers to jet propulsion. In the process of these changes in appearance, the shape of transportation vehicles always develops from rough to coordinated and exquisite, reflecting the designer's unchanged aesthetic pursuit.

When teaching the beauty of transportation and mobile tools, the main focus is on the development history, classification, and trends of automobiles, as well as the Chinese automotive industry; The development history, classification, and trends of trains, China's railway locomotive industry; The development history, classification, and trends of ships, China's shipbuilding industry; The development history, classification, and trends of aircraft in China's aviation industry. Guide students to appreciate the beauty of form, function, and essence of mobile tools. Through video teaching, experience the development and growth process of China's automobile industry, shipbuilding industry, aviation industry, and railway industry, inspire students' patriotic enthusiasm, and cultivate builders with correct values.

## 5. The Beauty of Transportation Technology

Throughout the development of human society, the advancement of science and technology is the direct driving force behind the development of the transportation industry, and the progress of the transportation industry will promote economic development and provide material basis for technological progress. Transportation has developed into a complex system engineering in modern times, requiring the comprehensive use of natural science and technology for planning and construction, and social science knowledge for management and regulation. The development of transportation science and technology to modern times includes transportation engineering technology, transportation economics, transportation organization and management, transportation enterprise management, and other aspects. After entering the 21st century, the main development direction of transportation technology has focused on intelligent transportation systems based on transportation big data, such as ETC, intelligent travel apps, satellite navigation, and so on.

The service areas of intelligent transportation systems include real-time feedback traffic management systems, travel information service systems, commercial vehicle operation systems, electronic toll collection systems, public transportation operation systems, emergency management systems, and advanced vehicle control systems. The essence of an "intelligent transportation system" is to integrate advanced information technology into transportation, service control, and vehicle manufacturing, strengthening information exchange and intelligent regulation between vehicles, roads, and users at both macro and micro levels, thereby forming an accurate and efficient new comprehensive transportation system.

Through examples of traffic data analysis, showcase the beauty of transportation technology, observe the world from an aesthetic perspective, transform the world with

transportation technology, and enable students to intuitively experience the beauty of traffic data forms, and comprehend the dedication and craftsmanship of scientific researchers. The beauty of transportation big data lies in its ability to create beautiful living conditions and environments, and maintain a good life.

## 6. The Beauty of Transportation People

After experiencing more than a hundred years of backwardness and humiliation, China's modern transportation industry has struggled to develop on the basis of poverty and backwardness. Nowadays, China has the world's largest, most automated, and technologically advanced modern transportation system. The achievement of these achievements cannot be separated from the selfless dedication of generations of transportation personnel with noble and beautiful qualities.

Zhan Tianyou, known as the "Father of Chinese Railways" and "Father of Modern Chinese Engineering", presided over the construction of China's first independently designed and built railway, the Beijing Zhangjiakou Railway; Creating the "vertical shaft excavation method" and the "human" shaped route, shocking both domestic and foreign audiences; He has written books such as "Railway Terminology Table" and "Brief History of Beijing Zhangjiakou Railway Engineering". After the Revolution of 1911, Zhan Tianyou set up the Chinese Association of Engineers with his peers to promote the railway industry. He devoted a lot of effort to the training of young engineers and technicians. In addition to setting an example by his own behavior, he also encouraged young people to "study academia carefully and invent with capital", and asked them to "not bend themselves to others for favouritism, not to sell their reputation for fame. He took things as an example by being honest, not threatening partiality, and Gui Bi tied himself up as an example. The establishment of the Chinese Association of Engineers played a prominent role in the exhibition of academic exchanges and the promotion of the development of science and technology, which created a positive atmosphere of academic research at that time. Premier Zhou Enlai praised: "Zhan Tianyou is the glory of the Chinese people."

Feng Ru, who combines the development and piloting of airplanes, is known as China's first aviator in the field of aviation history. He heroically dedicated himself to China's aviation industry. On May 25, 2009, Air Force Commander General Xu Qiliang rightfully referred to Feng Ru, a great patriot and pioneer of China's aviation industry, as the "father of Chinese aviation".

Guo Li, the founder of China's automobile industry, and Sun Ziyu, a selfless transportation worker who witnessed and participated in the construction of China's ports and its internationalization. By teaching students about the deeds of their predecessors, we can lead them to experience the noble national spirit of Zhan Tianyou's perseverance and unyielding spirit; Experience the spirit of Feng Ru's lifelong struggle for the rise of China and her dedication to the aviation industry of our country; Learn from Guo Li's work style of emphasizing science and seeking truth from facts, and his entrepreneurial spirit of daring to explore and not fearing difficulties, constantly making contributions to the great cause of building China's modernization; Feel the spirit of Sun Ziyu, the leader of the leading enterprise in the "the Belt

and Road" connectivity project, who is not afraid of difficulties and dare to be the first. Revitalize students' patriotic enthusiasm and passion for industry construction, and cultivate builders and successors with correct values.

## 7. Conclusion

The focus of the construction of the "Beauty of Transportation" course is not to impart advanced knowledge in the field, nor to impart advanced aesthetic knowledge. Rather, it aims to cultivate students' critical thinking skills in the field of transportation, and to establish correct evaluation criteria for Chinese and American things in this area. Thus implementing the principles and policies of aesthetic education. At the same time, the Beauty of Transportation course aims to cultivate students' sound personalities, guide them to shape positive values, and clarify their life and professional development goals. Transportation is closely related to people's production and life, and is an integral part of production and life. Transportation is a fundamental industry of the country, and the transportation industry serves

the public. Workers in the transportation industry should establish a sense of responsibility and mission to serve the public, and seek a sense of happiness in working in the transportation industry.

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