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Exploration on the Introduction of Educational Elements into the Professional Course Single-Chip Microcomputer Technology and Application

LI Hongyan

School of Intelligent Manufacturing, Zibo Vocational Institute, Zibo City, Shandong Province, China, 255000

Abstract: Strengthening the ideological education of young students and guiding them to establish a correct world view and values is an important task of higher education. Talent cultivation in colleges and universities should integrate education throughout the entire talent cultivation system, give full play to the educational role of each professional course, and guide correct values in the imparting of professional knowledge and skill training, integrating value shaping, knowledge imparting and ability training. This article discusses some useful explorations in the education of the professional course Microcontroller Technology and Application of electrical automation.

Keywords: Course Ideology; Educate people; Educational elements

1. THE NECESSITY OF INTEGRATING NURTURING EDUCATION INTO PROFESSIONAL COURSES

Ideological education for young students has always been an important part of talent training in our universities. There are special ideological and political courses in the talent training system. This method of ideological education is separated from the professional courses studied by students. Students often pay more attention to the study of professional courses and neglect the study of ideological and political courses. They have low enthusiasm and creativity in learning. Especially with the development of Internet technology, various self-media have continued to emerge, and students have a wide range of sources for obtaining information and knowledge. Many forces also use the Internet to infiltrate ideology and ideologies to confuse and paralyze young people. Therefore, we must strengthen the ideological education of young students, firmly occupy the high ground of ideological education, and actively help young students establish a correct world outlook, outlook on life, and values[1]. Only in this way we can strengthen Long-term peace and stability in the country, and realize the Chinese dream of national rejuvenation.

In August 2019, the General Office of the Communist Party of China Central Committee and the General Office of the State Council issued "Several Opinions

on Deepening Reform and Innovation of Ideological and Political Theory Courses in Schools in the New Era", which pointed out the direction for how to strengthen and improve ideological education in colleges and universities[2]. Several opinions on deepening the reform and innovation of ideological theory courses in schools in the new era proposed that ideological education should be integrated into the entire talent training system, and the fundamental problems of what kind of people colleges and universities should train, how to train them, and for whom to train them should be solved. The construction of ideological and political courses in colleges and universities should be promoted comprehensively, and the educational role of each course should be brought into play. Value guidance should be incorporated into the imparting of knowledge and the cultivation of abilities, and the three elements of value shaping, knowledge imparting, and ability cultivation should be integrated and inseparable. We must firmly grasp the "main force" of the teaching staff, the "main battlefield" of curriculum construction, and the "main channel" of classroom teaching, so that all teachers and all courses can assume the responsibility of educating people, make all kinds of courses and ideological and political courses move in the same direction, unify explicit education and implicit education, form a synergistic effect, and build a pattern of educating all people in all aspects throughout the entire process[3]. General Secretary Xi Jinping emphasized at the symposium for teachers of ideological and political theory courses in schools held in January 2019 that in order to promote the reform and innovation of ideological and political theory courses, we must continuously enhance the ideological, theoretical, affinity and pertinence of ideological and political theory courses. Therefore, as a professional course teacher, we must clarify the laws of curriculum ideological education and teaching reform, further strengthen the innovative research of teaching methods, continuously improve the quality and effectiveness of classroom teaching, further integrate ideological education on the basis of professional courses, comprehensively improve students quality, and strive to achieve the fundamental task of

cultivating morality and cultivating people.

2. DISCUSSION ON INTEGRATING IDEOLOGICAL EDUCATION ELEMENTS INTO THE COURSE OF SINGLE CHIP MICROCOMPUTER TECHNOLOGY AND APPLICATION

The course of single-chip microcomputer technology and application is a compulsory course for the major of electrical automation technology. Through the study of this course, students can master the basic structure, instruction system, storage system, input and output interface circuit, interrupt system, system expansion and other aspects of single-chip microcomputers mainly based on the MCS-51 series, and master the control principles of single-chip microcomputers. With the continuous emergence of new concepts and technologies such as industrial information, smart cities, and 5G networks, the single-chip microcomputer principle and application course has brought rich ideological and political materials. In recent years, the application of single-chip microcomputers has appeared in all aspects of peoples daily lives, including smart instruments, industrial intelligent control, household appliances, computer network communications, and medical equipment manufacturing.

Microcontroller chips are high-tech chip products. There is still a big gap between our country manufacturing level and that of Western developed countries. The ideological and political content of this course also emphasizes the importance of scientific and technological research and development and cutting-edge production and manufacturing from the perspective of chip development, stimulates students patriotism, and encourages students to become craftsmen of a great country.

The course of single-chip microcomputer principles and applications contains the history of chip generation, development and application evolution. Teachers can fully combine ideological and political elements with professional knowledge points in teaching to improve students comprehensive quality. For example, when introducing the background of the birth of single-chip microcomputer chips, we can start from the deeds of scientific and technological workers who have made important contributions to the development of the motherland, emphasize that the rapid development of science and technology in recent years is inseparable from their hard work, and cultivate students patriotic dedication awareness; In the explanation of knowledge points of single-chip microcomputer program development, we can introduce the deeds of great craftsmen of great countries, emphasize hard work, and details determine success or failure, cultivate students rigorous professional qualities, and encourage students to become craftsmen of the country in the future. Therefore, ideological education in the course has an important value orientation in the

course of single-chip microcomputer principles and applications. In order to achieve the fundamental task of cultivating morality and educating people, it is feasible and necessary to add ideological and political elements to the course design.

3. INTEGRATION OF THE COURSE OF SINGLE CHIP MICROCOMPUTER TECHNOLOGY AND APPLICATION AND IDEOLOGICAL AND POLITICAL ELEMENTS

Starting from the traditional MCU teaching, the mining of integrated elements should cover the basic knowledge points of teaching and mine the ideological and political elements. Therefore, the combination of MCU technology and ideological and political elements can be carried out from the following key elements:

In the LED (light-emitting diode) control link, change the previous "flowing light" teaching mode and set up a "rotating LED" project to display text and pictures with ideological and political elements in a three-dimensional way. In this part, you can learn and expand knowledge points such as LED principles, C language loop control, timing and interrupt principles, etc.

In the digital tube control link, the previous teaching mode of static display and dynamic display is changed, combined with the dot matrix screen, and the "Winter Olympics Countdown" project is set to display the five-ring graphic of the Olympics and the countdown time. In this section, the knowledge points of digital tube display, dot matrix and expansion can be explained.

In the LCD (character liquid crystal display) control link, the display content is regulated, such as making Mao Zedong poems a required content. This section can explain the knowledge points related to LCD control.

In the key control link, the previous teaching project of "pressing a button to trigger" is changed, combined with "buzzer or small speaker", and the "red song play" project is set. Different buttons can play different red songs. This part can explain the knowledge points related to buttons, buzzers, etc.

In the motor control link, set up the "Map of the Motherland Tracking Car" project to let the car track along the border line of the map of the motherland. This section can explain the relevant knowledge points such as DC motor control, PWM, and tracking principle.

The correspondence between course knowledge points and ideological education content is shown in Table 1.

Table 1 Correspondence between course knowledge points and ideological education content

Knowledge Points	Ideological and political elements of the course
MCU Hardware System	Emphasize the importance of basic accumulation and cultivate students sense of

	professionalism and the spirit of hard work and craftsmanship
MCU Development System	Learn advanced single-chip microcomputer application software theory and operation, stimulate students interest in learning international advanced technology, encourage students to love life, love learning, and accumulate vigorous life power
MCS-51 Command system	The instruction system is the key and difficulty of the design and application of single-chip microcomputers. It mainly cultivates students ability to go against the current and analyze and solve problems
C programming language	Based on the instruction system learning, students are guided to learn step by step from the basics to the advanced. They should do things within their capabilities and not aim too high.
Timer and interrupt system	Introducing timers and interrupt systems into programming, applying a variety of methods to implement program functions, and cultivating students; habit of thinking about problems from multiple perspectives and angles
Display and keyboard interface	Guide students to design and display patriotic slogans on LED screens, subtly inspiring students patriotic enthusiasm
A/D and D/A Conversion interface	Learning the conversion method between digital signals and analog signals makes students realize that learning is endless and any knowledge can be deeply explored and learned more detailed, broader and deeper
Serial port communication technology	Involving communication, guide students to learn relevant knowledge, seek truth from facts, inspire students to acquire knowledge and information in many aspects, do not be one-sided and extreme, and have a comprehensive understanding of things
MCU system expansion	Learning is endless, guiding students to think positively, and organically integrating

	innovation and practice
Single chip microcomputer design and application examples	Practice is the only criterion for testing truth. With the help of practice, student innovation ability and craftsmanship spirit are cultivated.

The content of ideological education was introduced into the teaching of the MCU Technology and Application course. After several levels of teaching practice, the overall teaching effect was excellent. Students said that in addition to paying more attention to the learning of professional knowledge, they also showed great enthusiasm for the ideological education elements integrated with professional knowledge, which played an important leading role in shaping students world outlook, outlook on life, and values.

4. SUMMARY AND EXPERIENCE

Students said that this method of ideological education is subtle and integrated into the learning of professional knowledge. It is not rigid and didactic, but a historical summary of the development of the discipline. In the process of focusing on learning professional knowledge, they naturally accept the shaping of their world view. In ideological and political courses, students receive specialized and more far-reaching education. In the ideological and political courses of professional courses, students are educated on ideological and political issues from the perspective of professional knowledge. This is more specific and closer to reality, and is a useful supplement to ideological and political courses.

Introducing ideological education into professional courses can educate students with facts and examples based on reality, enhance their sense of national pride and cultural identity, stimulate their enthusiasm for learning, and enable them to study more consciously. Teachers also conduct ideological education independently in the process of teaching and preparing lessons, and are better able to grasp the general direction of who education serves and how to cultivate people. They are also able to teach in a classroom atmosphere full of positive energy and are more passionate in lecturing, thus allowing teaching to enter a virtuous circle of interaction.

Introducing ideological education into professional courses also places higher demands on professional course teachers. Not only do teachers need to have a deep professional foundation, but they also need to have a keen awareness, extensive humanities knowledge, be good at digging out and refining the ideological values and spiritual connotations contained in professional knowledge, and have a thorough understanding of the country current political hot spots and economic policies. In course practice, it is also of great help to improve teachers professional knowledge and moral cultivation.

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Gut Dysbiosis in Nonalcoholic Fatty Liver Disease: Pathogenesis, Diagnosis, and Therapeutic Implications

Liu Yinglian

Zibo Vocational Institute, Zibo 255000, Shandong, China

Abstract: Nonalcoholic fatty liver disease (NAFLD) has become a prevalent global health issue with a complex and multifactorial pathogenesis. Gut dysbiosis, the imbalance and perturbation of the gut microbial community, has emerged as a significant contributor and underlying mechanism in the development and progression of NAFLD. This review comprehensively examines the intricate relationship between gut dysbiosis and NAFLD. It delves into the detailed pathogenic mechanisms, encompassing alterations in the composition and functionality of the gut microbiota due to dietary patterns, lifestyle factors, and metabolic disruptions. Additionally, it explores the role of intestinal barrier dysfunction and the dysregulation of bile acid metabolism in the context of gut dysbiosis and NAFLD pathogenesis. Current diagnostic approaches and tools aimed at identifying and characterizing gut dysbiosis in NAFLD patients are thoroughly discussed, along with their strengths and limitations. Furthermore, the review highlights the potential therapeutic implications and strategies based on modulating the gut microbiota and restoring microbial balance, including dietary modifications, the use of probiotics and prebiotics, fecal microbiota transplantation, and pharmacological interventions targeting the gut-liver axis. Understanding these aspects is crucial for advancing our knowledge in this field and developing more effective diagnostic and therapeutic modalities for NAFLD management in the future.

Keywords: Nonalcoholic fatty liver disease, Gut dysbiosis Pathogenesis, Gut-liver axis, Intestinal barrier dysfunction, Bile acid metabolism

1. INTRODUCTION

In the contemporary global health landscape, non-alcoholic fatty liver disease (NAFLD) has conspicuously emerged as a major and intractable public health challenge. The pathological spectrum of NAFLD is broad and complex, ranging from the initial relatively simple liver steatosis to non-alcoholic steatohepatitis (NASH), and then possibly triggering irreversible liver pathologies such as liver fibrosis and cirrhosis. In the extremely deteriorated condition, it may even deteriorate into hepatocellular carcinoma (HCC), seriously threatening the life and health of patients.

In recent years, the incidence of NAFLD has been climbing at an astonishing rate worldwide, and its prevalent trend is rapid and fierce, which has undoubtedly become a significant problem urgently awaiting a solution in the medical and health field. Behind this phenomenon, it is closely related to many factors in modern society, such as the fast-paced lifestyle, unhealthy dietary habits, and increasing environmental pressures. Meanwhile, the rampant prevalence of obesity worldwide, the continuous rise in the incidence of type 2 diabetes mellitus (T2DM), and the widespread ravage of metabolic syndrome have all played a role in fueling the high incidence and rampant spread of NAFLD[1].

Thorough exploration of the pathogenesis of NAFLD is the key to effectively prevent, control, and treat this disease. In this process, the phenomenon of gut dysbiosis has gradually come into the vision of researchers and become the focus of studies. The gut flora in the human intestinal tract constitutes an extremely complex and highly diverse microbial ecosystem. They have a close and interdependent relationship with the host and play an indispensable role in maintaining the normal physiological functions, metabolic balance, and immune regulation of the human body[2]. However, once disturbed by internal and external environmental factors, such as an unhealthy diet structure, long-term mental stress, unreasonable medication use, and the invasion of various pathogens, the equilibrium state of the gut flora will be disrupted, thereby leading to gut dysbiosis.

With the continuous advancement of research, a growing body of evidence indicates that there are inextricable links between gut dysbiosis and NAFLD. Gut dysbiosis not only plays an inducing role in the initial stage of NAFLD but also, through various complex molecular mechanisms and signaling pathways during the disease progression, continuously promotes the development and evolution of NAFLD, aggravates the inflammatory response in the liver, promotes the accumulation of fat in liver cells, induces the formation of liver fibrosis, etc., exerting a profound impact on the entire course of NAFLD.

This review aims to comprehensively, multi-levelly, and systematically explain the intricate interrelationship between gut

dysbiosis and NAFLD, deeply analyze the core role, specific molecular mechanisms, and signaling pathways of gut dysbiosis in the pathogenesis of NAFLD; thoroughly sort out and scientifically evaluate various advanced diagnostic methods and detection tools currently used for the identification, diagnosis, and characterization of gut dysbiosis in NAFLD patients, and deeply explore their respective technical principles, application scopes, advantages and limitations, as well as their practical application value and development prospects in clinical practice; comprehensively and deeply discuss various innovative treatment strategies and intervention measures based on regulating the structure of the intestinal microbial community and restoring the ecological balance of intestinal microorganisms, such as precise dietary and nutritional intervention, rational application of probiotics and prebiotics, the cutting-edge fecal microbiota transplantation technology, and precise drug intervention targeting the gut-liver axis, etc., and systematically analyze the mechanism of action, clinical efficacy, safety and tolerability, as well as the future development trend and application potential of these treatment strategies and intervention measures. Through in-depth research and systematic discussion of these key issues, it is expected to further expand our scientific cognition, theoretical system, and technical methods in this field, and provide a solid scientific basis, theoretical support, and practical guidance for the future development of more precise, efficient, safe, and personalized diagnostic techniques and treatment regimens for NAFLD, thereby contributing to effectively curbing the prevalent trend of NAFLD, reducing the disease burden, and improving the quality of life and prognosis of patients [3].

2. GUT MICROBIOTA AND ITS ROLE IN HEALTH

The human gut microbiota is an extremely complex and highly diverse microbial ecosystem that widely colonizes the gastrointestinal tract. Comprised of a wide variety of microorganisms such as bacteria, archaea, viruses, and fungi, these microorganisms form a dynamic and interrelated community within the intestinal tract and establish a close and delicate symbiotic relationship with the host, playing a crucial role in maintaining the host's health and homeostasis [4].

The gut microbiota plays an indispensable role in the digestion, absorption, and metabolism of nutrients. Firstly, the gut microbiota can secrete various enzymes such as glycoside hydrolases, proteases, and lipases. These enzymes can break down complex macromolecular substances that the host's own enzymes cannot effectively metabolize, such as dietary fibers, polysaccharides, proteins, and fats, converting them into absorbable small

molecules, thereby significantly enhancing the efficiency of nutrient digestion and absorption [5-6]. Secondly, the gut microbiota is also involved in the synthesis and metabolism of vitamins. For example, certain gut bacteria can synthesize vitamin K and B vitamins (such as vitamin B₁₂, folic acid, thiamine, and riboflavin, etc.), which are of great significance for maintaining normal physiological functions, nervous system functions, blood coagulation, and energy metabolism in the human body [7]. In addition, through the fermentation of dietary fibers, the gut microbiota produces short-chain fatty acids (SCFAs) such as acetate, propionate, and butyrate [8]. These SCFAs not only provide the main energy source for colonic epithelial cells, maintaining the normal growth, proliferation, and metabolic activities of the cells, but also play a key role in regulating the physiological functions of the intestine and the immune system. Acetate can be absorbed and utilized by peripheral tissues as an energy source or involved in lipid synthesis; propionate is mainly absorbed by the liver and can inhibit cholesterol synthesis and regulate gluconeogenesis; butyrate is the main energy source for colonic epithelial cells and has important roles in promoting epithelial cell proliferation, maintaining intestinal barrier function, and regulating inflammatory responses [9].

There is an extensive and in-depth interaction between the gut microbiota and the host's immune system, which has a profound impact on the development, maturation, and functional regulation of the immune system [10]. The gut-associated lymphoid tissue (GALT) is an important component of the intestinal immune system, including Peyer's patches, mesenteric lymph nodes, and lamina propria lymphocytes. The gut microbiota can interact with intestinal epithelial cells and immune cells through pattern recognition receptors (PRRs) such as Toll-like receptors (TLRs) and NOD-like receptors (NLRs), activating intracellular signaling pathways in immune cells and promoting the differentiation, maturation, and activation of immune cells. For example, the gut microbiota can induce naive T cells to differentiate into different subsets such as regulatory T cells (Tregs), T helper 17 (Th17) cells, Th1 cells, and Th2 cells, regulating the level of cytokine secretion by immune cells and maintaining the balance and stability of the immune system. Tregs can secrete anti-inflammatory cytokines such as interleukin-10 (IL-10) and transforming growth factor- β (TGF- β) to inhibit excessive immune responses and inflammatory responses and maintain intestinal immune tolerance; Th17 cells can secrete cytokines such as IL-17 and IL-22, participating in mucosal immunity and anti-infectious immunity in the intestine; Th1 cells can secrete interferon- γ (IFN- γ) to enhance the cellular immune response; Th2 cells can secrete cytokines such as IL-4, IL-5, and IL-13, participating in the humoral immune response

and anti-parasitic immunity [11]. In addition, the gut microbiota can also regulate the production and secretion of immunoglobulin A (IgA) in the intestinal mucosal immune system. IgA is the main immunoglobulin on the intestinal mucosal surface, which can neutralize pathogens, toxins, and allergens, prevent them from binding to and invading intestinal epithelial cells, and maintain the integrity and stability of the intestinal mucosal barrier [12-13]. The gut microbiota is also involved in the regulation and functional maintenance of the neuroendocrine system. The gut microbiota can affect the functions of the enteric nervous system and the central nervous system by producing neurotransmitters, neuromodulators, and metabolites [14]. For example, certain gut bacteria can produce neurotransmitters such as γ -aminobutyric acid (GABA), serotonin, dopamine, and norepinephrine. These neurotransmitters can be transmitted to the central nervous system through enteric nerve fibers or the bloodstream to regulate the excitability, mood, cognition, and behavior of the nervous system. In addition, the gut microbiota can also regulate the function of the hypothalamic-pituitary-adrenal (HPA) axis by affecting intestinal barrier function, the activation of immune cells, and the secretion of cytokines, thereby affecting the body's response and adaptability to stress [15].

In conclusion, the gut microbiota plays multiple and multi-level important roles in maintaining human health and homeostasis. Once the composition and function of the gut microbiota are disrupted, that is, dysbiosis occurs, it may lead to the occurrence and development of various diseases. In-depth study of the interaction mechanism between the gut microbiota and the host is of great significance for understanding the pathogenesis of diseases and developing new diagnostic methods and therapeutic strategies.

3. THE GUT-LIVER AXIS

The gut-liver axis is an extremely complex and crucial bidirectional communication system, serving as a close interaction bridge between the intestine and the liver and playing a vital role in maintaining the delicate balance of the digestive and liver systems as well as the overall metabolic homeostasis in the body [16].

In the process of signal transmission and substance transportation from the intestine to the liver, the portal vein undoubtedly serves as a core delivery channel. Through the portal vein, not only various nutrients absorbed from the intestinal lumen continuously enter the liver to provide the basic raw materials for the metabolic activities of the liver, but also a large number of metabolites produced by the intestinal microbiota and the products after microbial digestion are transported to the liver. These microbial metabolites are of various types, among which

short-chain fatty acids, bile acid metabolites, lipopolysaccharides (LPS), peptidoglycans, etc., play a key role in the signal transduction and metabolic regulation of the gut-liver axis [17]. In addition, when the microbial antigens in the intestine stimulate the body to generate an immune response, the activated immune cells and the secreted cytokines also rapidly reach the liver through the portal vein to participate in the immune regulation and inflammatory response in the liver.

Once these substances and cells from the intestine enter the liver, a series of complex and elaborate biological processes are initiated. For the nutrients input through the portal vein, the liver is like an efficient "processing factory". With its rich enzyme systems and complex metabolic networks, it performs a series of metabolic processes such as decomposition, transformation, and synthesis on these nutrients, converting them into the energy, biomolecules, and metabolic intermediates required by various tissues and organs of the body to meet the energy and material needs of growth, development, repair, and daily physiological activities of the body [18]. At the same time, the metabolites produced by the intestinal microbiota and transported to the liver through the portal vein also become important signaling molecules and regulatory factors for the metabolic regulation and immune response of the liver.

Taking LPS, the main component of the outer membrane of Gram-negative bacteria, as an example. When it enters the liver through the portal vein, it can specifically bind to the Toll-like receptors (TLRs) on the surface of Kupffer cells and hepatocytes in the liver, and then activate a series of complex intracellular signaling pathways, such as the nuclear factor κ B (NF- κ B) signaling pathway, inducing the expression of a large number of inflammation-related genes and the release of inflammatory mediators, triggering a strong pro-inflammatory response, and ultimately leading to inflammatory damage and metabolic dysfunction of the liver [19].

In the reverse signal transmission and regulation process from the liver to the intestine, the liver also plays an indispensable important role. The liver has a strong function of synthesis and secretion, among which the synthesis and secretion of bile acids is one of the important ways for the liver to regulate the intestinal function. The bile acids synthesized by the liver are secreted into the bile and enter the intestine after eating, playing various important physiological functions in the intestine [20]. On the one hand, bile acids can emulsify lipid substances in the intestine into tiny lipid droplets through emulsification, increasing the contact area between fat and lipase, thereby promoting the digestion and absorption of lipid substances by the intestine; on the other hand, as an important signaling molecule, bile

acids can regulate the gene expression, metabolic activities of intestinal cells, and the composition and function of the intestinal microbiota by binding to the receptors on the surface of intestinal cells. For example, bile acids can affect the growth, reproduction, and metabolism of intestinal microbiota by regulating the cell membrane permeability, enzyme activity, and gene expression of intestinal microbiota, thereby maintaining the balance and stability of the intestinal microbiota community [21].

Under the normal physiological state, the bidirectional communication and interactive regulation of the gut-liver axis always maintain a high degree of accuracy and stability, enabling the intestine and the liver to work collaboratively to maintain the metabolic balance and health of the body. However, when the composition and function of the intestinal microbiota become imbalanced (i.e., dysbiosis) due to various reasons, the normal function of the gut-liver axis will be severely interfered with and disrupted [22]. Dysbiosis may lead to abnormal changes in the metabolites of intestinal microbiota, such as abnormal production and secretion of short-chain fatty acids, bile acid metabolites, and LPS, which in turn affect the barrier function of intestinal epithelial cells, the activation state of immune cells, and the secretion pattern of cytokines. These changes will not only cause local inflammatory responses and metabolic disorders in the intestine, but may also transfer abnormal signals and substances to the liver through the portal vein, triggering low-grade inflammation, metabolic dysregulation, and immune dysfunction in the liver, thereby promoting the occurrence and development of liver diseases such as nonalcoholic fatty liver disease (NAFLD), alcoholic liver disease, cirrhosis, and liver cancer [23].

Therefore, in-depth study of the physiological function, signal transduction mechanism, and changes under disease conditions of the gut-liver axis is of extremely important significance and value for a comprehensive understanding of the pathogenesis of liver diseases, the development of more accurate and effective diagnostic methods, and the exploration of innovative treatment strategies.

4. PATHOGENESIS OF GUT DYSBIOSIS IN NAFLD

4.1 Diet and lifestyle factors

The contemporary lifestyle, characterized by excessive consumption of high-calorie foods rich in saturated fats, refined carbohydrates, and sugar, along with insufficient intake of dietary fiber, has a profound impact on the composition and function of the gut microbiota. This dietary imbalance can significantly contribute to the development of gut dysbiosis in the context of NAFLD [24].

A high-fat diet, in particular, has been shown to have a substantial effect on the gut microbial community. It

can lead to an increase in the ratio of Firmicutes to Bacteroidetes, with Firmicutes being known for their efficient energy harvest from food. This shift in microbial composition can enhance the extraction of calories from the diet, contributing to weight gain and adiposity. Additionally, a high-fat diet can reduce the diversity of the gut microbiota, favoring the proliferation of pathogenic bacteria and suppressing the growth of beneficial species [25].

For instance, studies have demonstrated that a diet high in saturated fats can promote the overgrowth of lipopolysaccharide (LPS)-producing bacteria, such as certain species of Proteobacteria. The LPS released by these bacteria can trigger an inflammatory response when it translocates from the gut lumen into the systemic circulation through a compromised intestinal barrier. This inflammatory cascade can contribute to insulin resistance and hepatic lipid accumulation, which are hallmark features of NAFLD [26].

Sedentary behavior and chronic stress are also important factors in the development of gut dysbiosis. Prolonged periods of physical inactivity can disrupt the normal metabolism and hormonal balance in the body, which can indirectly influence the gut microbiota composition. Chronic stress, on the other hand, can alter the hypothalamic-pituitary-adrenal (HPA) axis response, leading to changes in the secretion of stress hormones like cortisol. These hormonal changes can impact the gut environment, including the intestinal mucus layer and the expression of tight junction proteins, thereby increasing intestinal permeability and facilitating the translocation of microbial products and bacteria [27].

4.2 Intestinal barrier dysfunction

In the pathogenesis of NAFLD, alterations in the intestinal epithelial barrier function play a crucial role in the development of gut dysbiosis. The intestinal barrier is a complex structure composed of a single layer of intestinal epithelial cells connected by tight junction proteins, such as zonula occludens (ZO)-1, occludin, and claudins, along with the overlying mucus layer and antimicrobial peptides secreted by the epithelial cells and Paneth cells in the small intestine [28].

In NAFLD, various factors can disrupt the integrity of this intestinal barrier. Pro-inflammatory cytokines, such as tumor necrosis factor-alpha (TNF- α) and interleukin-6 (IL-6), which are elevated in the setting of metabolic dysregulation and adipose tissue inflammation associated with obesity and insulin resistance, can directly target the intestinal epithelial cells and cause a downregulation of tight junction proteins. This leads to increased paracellular permeability and allows for the passage of luminal contents, including bacteria and their products, from the gut into the submucosa and then into the systemic circulation through the capillaries and lymphatics [29].

Furthermore, oxidative stress, which is often increased in NAFLD due to excessive lipid accumulation and mitochondrial dysfunction in the liver and adipose tissue, can also cause damage to the intestinal epithelial cells and tight junction proteins. Additionally, changes in the composition and metabolism of bile acids in NAFLD can have a direct toxic effect on the intestinal epithelial cells, contributing to barrier dysfunction[30].

When the intestinal barrier is compromised, bacterial endotoxins like LPS and other microbial components, such as peptidoglycans and flagellin, can translocate into the portal circulation and reach the liver. In the liver, these microbial products are recognized by pattern recognition receptors (PRRs) on Kupffer cells and hepatocytes, such as TLRs and nucleotide-binding oligomerization domain (NOD)-like receptors (NLRs). This recognition triggers an intracellular signaling cascade that leads to the activation of nuclear factor kappa B (NF- κ B) and the production of pro-inflammatory cytokines and chemokines, such as TNF- α , IL-6, IL-1 β , and monocyte chemoattractant protein-1 (MCP-1). This inflammatory response not only promotes hepatic steatosis but also drives the progression from simple steatosis to NASH by inducing hepatocyte injury, inflammation, and fibrogenesis[31].

4.3 Changes in bile acid metabolism

The gut microbiota plays a critical role in bile acid metabolism through a series of enzymatic reactions. Bile acids are synthesized in the liver from cholesterol and conjugated with either glycine or taurine to form primary bile acids, which are then secreted into the bile and released into the small intestine upon food intake. In the intestinal lumen, the gut microbiota expresses enzymes, such as bile salt hydrolases (BSHs) and 7 α -dehydroxylases, which deconjugate and modify the primary bile acids to form secondary bile acids[32].

In the context of NAFLD, alterations in the gut microbiota composition can disrupt this bile acid metabolism. Changes in the abundance and activity of BSH-producing bacteria can lead to alterations in the deconjugation of bile acids, affecting their reabsorption and enterohepatic circulation. Additionally, dysbiosis can result in an imbalance in the production of secondary bile acids, with an increase in hydrophobic and toxic bile acids, such as deoxycholic acid and lithocholic acid[33].

This imbalance in bile acid composition and metabolism has significant implications for liver health in NAFLD. Hydrophobic bile acids can cause direct cytotoxicity to hepatocytes by inducing oxidative stress, mitochondrial dysfunction, and apoptosis. They can also activate intracellular signaling pathways, such as the farnesoid X receptor (FXR) and Takeda G protein-coupled Receptor 5 (TGR5), which play important roles in regulating lipid

and glucose metabolism, inflammation, and fibrosis in the liver[34].

Dysregulation of the FXR and TGR5 signaling pathways by altered bile acid composition can contribute to insulin resistance, lipid accumulation, and the inflammatory and fibrotic processes in the liver. For example, reduced activation of FXR in NAFLD can lead to increased hepatic lipogenesis and decreased fatty acid oxidation, while activation of TGR5 can stimulate glucagon-like peptide-1 (GLP-1) secretion and improve insulin sensitivity. Thus, alterations in the gut microbiota-mediated bile acid metabolism represent an important pathogenic mechanism in the development and progression of NAFLD[35].

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4. Embedded technology is systematic development Embedded development is a systems project,so manufacturers of embedded systems are required not only to provide embedded software and hardware systems themselves,but also to provide powerful hardware development tools and software packages.
5. CONCLUSIONS
Certain obstacles.Therefore,by strengthening the research on the application and development of embedded software,we can better play its role in promoting the development of related industries,promote the rapid and stable growth of our national economy,and provide greater convenience for people's daily lives.So as to better carry out socialist modernization.
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Exploration and Research on Integrating the Theme of "National Treasure Giant Panda" into the Course of "Digital Image Processing" - Taking the Chapter of "Vector Tools and Paths" as an Example

Qiaoyi Wang

Zibo Vocational Institute, Zibo 255000, Shandong, China

Abstract: Starting from the background of ideological and political education in the course, this article takes the teaching of "Digital Image Processing" as the research subject. Through the implementation of three teaching stages before, during, and after class, it explores the path of integrating the theme of "National Treasure Giant Panda" into the "Vector Tools and Paths" chapter of "Digital Image Processing" course, and achieves the goal of ideological and political education through subtle methods, aiming to provide reference for the ideological and political education work of this course.

Keywords: Course ideological and political education; Digital image processing; National treasure giant panda

1. INTRODUCTION

In June 2020, the Ministry of Education issued the "Guidelines for the Construction of Ideological and Political Education in Higher Education Curriculum", comprehensively promoting the construction of ideological and political education in higher education curriculum. The fourth point in the Outline proposes that professional experimental practice courses should focus on combining learning and thinking, unifying knowledge and action, enhancing students' innovative spirit of daring to explore, and practical ability to solve problems. The fifth point of the Outline proposes that art related professional courses should educate and guide students to be rooted in the times, the people, and deeply involved in life, and establish correct artistic and creative views in course teaching. We must adhere to the art education and beautification of people, actively promote the spirit of Chinese art education, guide students to consciously inherit and promote excellent traditional Chinese culture, comprehensively improve students' aesthetic and humanistic literacy, and enhance cultural confidence.

2. OVERVIEW OF THE COURSE "DIGITAL IMAGE PROCESSING" AND THE CURRENT SITUATION OF IDEOLOGICAL AND POLITICAL

PRACTICE IN THE COURSE

2.1 Course overview of digital image processing

The course of "Digital Image Processing" is a professional group platform course in vocational ability courses, with strong operability and practicality, focusing on cultivating students' graphic design and graphic image processing techniques. Through the study of this course, students will master the operation of Photoshop software and be able to independently perform visual image processing, graphic design, and other tasks. The course focuses on cultivating students' design thinking, enabling them to possess innovative and rigorous design professional qualities, and achieve professional standard abilities.

2.2 Current status of ideological and political practice in the course of digital image processing

According to research findings, the current use of cases in the course of "Digital Image Processing" is relatively outdated and has not fully integrated new industry knowledge, new technologies, current affairs hotspots, etc. Students' learning enthusiasm and initiative are insufficient; The integration of ideological and political elements is relatively rigid and does not fit the professional content, making it difficult for students to feel the cultivation of their thoughts during the learning process.

2. THE SIGNIFICANCE OF INTEGRATING THE THEME OF "NATIONAL TREASURE GIANT PANDA" INTO THE COURSE OF "DIGITAL IMAGE PROCESSING"

2.1 Increase students' interest in learning

The giant panda, known as the "national treasure of China" and an ambassador for the World Wildlife Fund, enjoys high popularity and affection worldwide. In China, the influence of the national treasure giant panda is everywhere. Many mascots are designed based on giant pandas. For example, Bing Dwen Dwen, the mascot of the 2022 Beijing Winter Olympic Games, has become a beautiful name card of the Beijing Winter Olympic Games with its charming image and scientific and technological design. Giant pandas are also star animals in major

zoos both domestically and internationally, such as the recently popular Korean giant panda "Fubao", the honorary director of Chengdu Tourism Bureau "Huahua", and the "Menglan", the third prince of Xizhimen in Beijing, which have attracted countless tourists to come and see their charm. Choosing the highly popular 'national treasure giant panda' to integrate into teaching can effectively enhance students' interest in learning and classroom participation. By sharing the story of the "National Treasure Giant Panda" and designing and producing themed works of the "National Treasure Giant Panda", students' learning enthusiasm can be further stimulated and a positive learning atmosphere can be created.

2.2 Significance of ideological and political education

As a cultural symbol and envoy of friendship in China, giant panda has a wide international influence and has been writing stories for friendly exchanges and friendship transmission among people of all countries. At the same time, the existence of giant pandas also provides us with an important window for environmental education, playing a very important role in arousing more people to protect wildlife and endangered species. By incorporating the theme of "National Treasure Giant Panda" into teaching, students can gain a deeper understanding of Chinese culture, enhance cultural confidence, and also play a positive role in promoting the dissemination of Chinese culture and international cultural exchanges.

2.3 Combining intuitiveness and practicality

On the one hand, the giant panda has a unique image, with a relatively simple and varied shape, which is very suitable as a practice object for the "Vector Tools and Paths" chapter of the course "Digital Image Processing". Students can intuitively understand and master the basic operations of vector tools when drawing exercises related to the theme of "National Treasure Giant Panda", and enhance their practical skills. On the other hand, the different postures, expressions, and stories behind giant pandas provide students with a vast creative space, inspiring their innovative thinking and imagination, guiding them to design and create various related designs about giant pandas, and achieving the goal of transforming basic knowledge into practice.

3. INTEGRATING THE THEME OF "NATIONAL TREASURE GIANT PANDA" INTO THE SPECIFIC PRACTICE OF THE "VECTOR TOOLS AND PATHS" CHAPTER

According to the curriculum standards, the chapter on "Vector Tools and Paths" is divided into five summary contents: "Understanding the Basic Knowledge of Paths", "Familiarizing with the Functions of Pen Tools", "Practicing the Use of Pen Tools", "Mastering the Methods of Editing Anchors and Paths", and "Understanding the Use of Shape

Tools". Integrating the theme of "National Treasure Giant Panda" into curriculum teaching, starting from three aspects: pre class preview, in class learning, and post class expansion. The specific implementation methods are as follows.

3.1 Pre class preview

According to the course content and difficulty level, the two sections of "Understanding the Basic Knowledge of Paths" and "Familiarizing with the Functions of Pen Tools" in this chapter will be set as pre class preview sections. Publish PPT, text, videos and other materials of the taught content through online teaching platforms, requiring students to browse the knowledge points in advance and try to make them hands-on, in order to cultivate students' self-learning ability. At the same time, popularize knowledge about the ecological habits, conservation status, living habits, and habitat protection of giant pandas to students, so that they can enhance their ecological awareness and social responsibility while previewing basic knowledge.

Set up a task case of drawing cartoon style text for "Panda Paradise", requiring students to try using the curved pen tool to draw after previewing the basic skill points, as shown in Figure 1. The illustration is only a demonstration of the case by the teacher. We hope that students can fully unleash their imagination, integrate their personal ideas and styles, and make the expression of the cartoon characters in "Panda Paradise" more creative. During this process, guide students to unleash their imagination, showcase different styles, and showcase their personalities.



Figure 1. Teacher's Demonstration of Cartoon Style Text Case in "Panda Paradise"

3.2 In class learning

In formal classes, explain the knowledge points and operational skills of "practicing using pen tools", "mastering editing anchor points and path methods", and "understanding shape tools" one by one. In the "Practice Using Pen Tools" section, set up a task case of "Drawing Bamboo That Pandas Love to Eat" as shown in Figure 2.

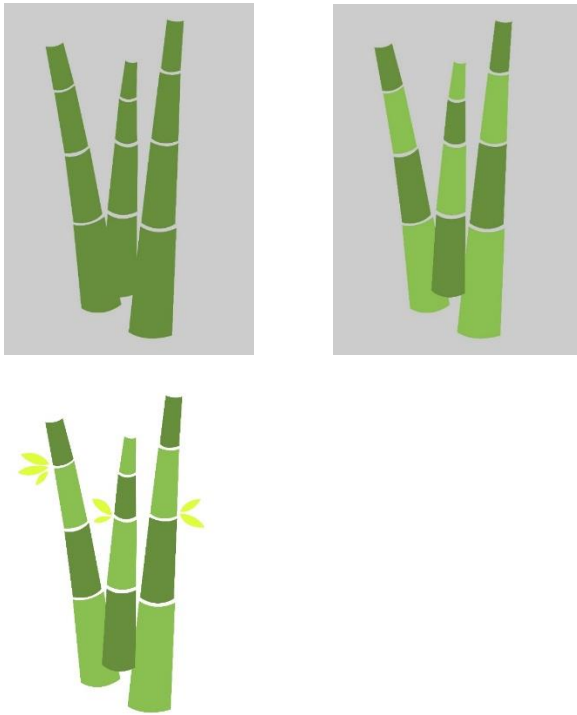


Figure 2. "Drawing bamboo that pandas love to eat" task case

In the "Mastering Editing Anchor Points and Path Methods" section, set up a task case for "Creating Panda Paradise Decoration Plaques" as shown in Figure 3.



Figure 3. Task Case of "Creating Panda Paradise Decorative Plaques"

In the "Understanding the Use of Shape Tools" section, set up a task case for "Drawing Cartoon Panda Heads" as shown in Figure 4.



Figure 4. Task Case of "Drawing Cartoon Panda Heads"

These cases not only serve to practice and enhance students' operational skills, but also provide rich materials for subsequent courses such as "3D Modeling Technology". By applying these graphics to 3D modeling software, it is possible to transform flat designs into three-dimensional physical effects, further expanding the boundaries and possibilities of design. In the subsequent course of "3D Modeling Technology", these planar graphics will play an important role in helping students transform their creativity into reality and create physical models with unique charm and practical value, as shown in Figure 5.



Figure 5. Transforming graphic design into three-dimensional physical effects

3.3 After class expansion

By expanding the after-school project to assess students' comprehensive mastery, a task case was set up to create a cultural derivative bookmark based on the theme of "National Treasure Giant Panda". The comparative effect before and after project production is shown in Figure 6.

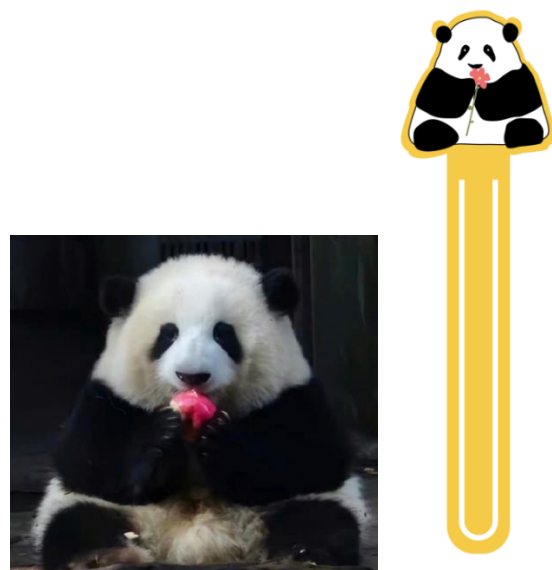


Figure 6. Reference image and production effect
At this stage, the teacher will first record the specific operation steps of the case in advance and publish

them on the online teaching platform. Students can review the basic operation content of the "Vector Tools and Paths" chapter based on the video and practice it. Then, based on the three steps of "conception design production", independently design and produce the "National Treasure Giant Panda" themed cultural derivative bookmark, completing the process of cultivating work abilities from theory to practice. In the ideation stage, students are required to collect information on the design theme and determine the source of inspiration. In the design and production stage, students are encouraged to fully utilize their personal creativity and imagination, while emphasizing the originality of the design.

4. CONCLUSION

This article elaborates on the practical methods of integrating the theme of "National Treasure Giant Panda" into the "Vector Tools and Paths" chapter of the "Digital Image Processing" course, guiding students to learn basic Photoshop operations and skills through interesting cases, and cultivating their innovative consciousness and exploratory spirit. I hope to improve students' learning enthusiasm

through this method, influence their ideological concepts unconsciously, enhance their cultural confidence and national pride, provide new perspectives for the integration of ideological and political education into professional courses, and promote the comprehensive development of students' overall quality.

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Design and Practice of Teaching Integrated Circuit Layout Design Course

Runrun Yang

ZiBo Vocational Institute, Zibo, Shandong, China

Abstract:This paper describes the teaching practice of the layout drawing course based on gate circuits. By comprehensively using schematic drawing software, schematic simulation software, layout drawing software, and layout verification software, a comprehensive teaching system is constructed to enhance students' professional ability in layout design.

Keywords: Integrated circuits, Layout design, Practical teaching.

1. INTRODUCTION

Integrated circuits are an important factor in the current game between countries and have gradually become the core focus of global attention. The integrated circuit industry chain includes many links such as design, manufacturing, packaging, and testing of integrated circuits, and integrated circuit design is a very critical link in the integrated circuit industry chain. Currently, only a few enterprises in China have made progress in the integrated circuit design industry, so the cultivation of integrated circuit design talents is particularly important. The integrated circuit layout design course is a core professional course in the field of integrated circuits. Through practical teaching, students integrate their semiconductor knowledge and apply it to layout design, cultivating their ability to analyze and solve problems, and adding bricks and tiles to the development of China's integrated circuit industry. For the vast majority of vocational colleges in China, due to the limitations of majors and layout design software, integrated circuit layout design courses are not offered, and practical teaching that allows students to operate with their hands is very rare. Through research and exploration of the integrated circuit layout design course, based on the existing resources of the university, the basic knowledge in theoretical teaching is maximally applied to layout design teaching. The course presents a complete and coherent layout design process.

2. RESEARCH BACKGROUND

Course objective setting. The Integrated Circuit Layout Design course is a core course of the Integrated Circuit Technology Application major, and also a vocational skill course that supports EDA skill competitions. The total credits are 6 credits and 96 class hours, including 48 hours of theoretical courses and 48 hours of practical courses. The practical course aims to enable students to learn the entire

process of layout design, including schematic drawing, schematic function simulation, layout drawing, and layout verification, within the existing resources on campus. Through practical teaching, students can combine the theoretical knowledge they have learned with practical operations, cultivate relevant application skills in integrated circuit layout design, and lay a foundation for working in the field of integrated circuit design after graduation.

3. TEACHING DESIGN FOR INTEGRATED CIRCUIT LAYOUT DESIGN COURSE

To ensure the quality of practical course teaching, the course content design follows the following principles. (1) Combining theory with practice. The introductory courses of our school's "Integrated Circuit Layout Design" course include "Semiconductor Device Physics" and "Integrated Circuit Manufacturing Technology". The course reviews and organizes the basic and process knowledge of semiconductors, using theoretical knowledge to guide the process of layout drawing, and using the process and standards of layout drawing to counteract semiconductor theory. Theory and practice complement each other, enabling students to fundamentally understand the significance and importance of map drawing. (2) The coherence of teaching content. Integrated circuit design includes front-end circuit design and back-end layout design. The course focuses on the layout drawing of gate circuits and carries out the full process design of integrated circuits. From the layout drawing of inverters to the layout drawing of gate circuits such as NAND gates, AND gates, and D flip flops, project-based teaching is arranged according to the principles of easy to difficult and simple to complex. Based on the above principles, the course content is arranged as follows.

(1) Module 1: Integrated Circuit Layout Pioneer. Through the discussion of case events, inspire students' belief in bravely climbing scientific peaks, cultivate their patriotism and sense of mission; Share the content of Moore's Law, transition from technological development to students' learning attitudes, and firmly establish students' lifelong learning goals.

(2) Module 2: Introduction to Linux and Layout Software. Currently, over 70% of the market share in China's EDA software market is occupied by the three giants Cadence, Synopsys, and Siemens EDA, inspiring students' belief in achieving the ultimate in

scientific research.

(3) Module 3: Design of CMOS Inverter. Details determine success or failure, and the chips produced are particularly expensive technological products. Any low-level errors can lead to chip failure, cultivating students' rigorous scientific attitude.

(4) Module 4: CMOS cell gate design. In the process of circuit diagram design and layout design, tasks are assigned in groups to cultivate students' independent thinking ability, teamwork awareness, and collaboration skills.

4. TEACHING PRACTICE OF INTEGRATED CIRCUIT LAYOUT DESIGN COURSE

The practical teaching process mainly includes five parts: introduction of course objectives, explanation of operating principles, teacher operation demonstration, student practical operation, and comparison of practical results.

(1) Introduction to course objectives. At the beginning of the course, the teacher introduces the teaching content and objectives to the students. And in the first class, present the teaching content and schedule of this semester, so that students can have a full understanding of the overall course. The course adopts a progressive teaching approach from shallow to deep, with each course content based on the previous one, emphasizing the coherence and progression of the course content. At the beginning of each class, based on the course schedule, we will review the previous learning content, explain the process and learning objectives of this class, so that students have a clear understanding of the course content.

(2) Explanation of operating principles. The course involves the layout drawing of gate circuits such as inverters, NAND gates, AND gates, and D flip flops. In the course, the process will be carried out sequentially based on the working principle of the gate circuit, the circuit function simulation of the gate circuit, the gate circuit process principle, the gate circuit layout drawing, and the gate circuit layout verification. On the basis of students' full understanding of the working principle of gate circuits, gate circuit function verification is carried out through the construction of a gate circuit function simulation environment; On the basis of students' full understanding of the principles of gate circuit technology, carry out gate circuit layout drawing and layout function verification. Fully implement the concept of theory guiding practice and practice reacting to theory.

(3) Teacher operation demonstration. The teacher will demonstrate the practical operation process of the course. The demonstration content includes schematic drawing, schematic simulation environment construction, layout drawing precautions, DRC physical verification and LVS physical verification processes, etc. During the practical process demonstration, explain the usage

methods and skills of the layout drawing software synchronously, so that students can have a deeper understanding of the layout drawing process. During the operation demonstration, teachers will introduce relevant assessment contents of the Integrated Circuit Design and Application Competition in a timely manner, encourage students to actively participate in the layout design subject competition and innovative practice activities, promote learning through competition, stimulate students' interest and potential, and cultivate students' scientific research ability and innovative spirit.

(4) Student practical operation. The on campus training base is equipped with a specialized computer room for integrated circuit design. In the first lesson of school, each student is assigned a dedicated computer equipped with layout design software. As the practical process progresses, students carry out actual operations on fixed computers and Linux accounts in each class, and complete the project layout on their own created library. To ensure teaching quality, this course adopts a small class teaching system [1]. With the existing number of EDA software in the school, the size of each class is strictly controlled to ensure that each student can operate it themselves throughout the entire process and accumulate practical experience [2].

(5) Comparison of practical results. The course adopts a project-based and group cooperative teaching mode. After each project layout is drawn, students conduct DRC and LVS verification by themselves. The group jointly analyzes the error information of DRC and LVS, deepens students' understanding of design rules, and is conducive to students carrying out mutual assistance and "teaching soldiers" activities in group learning, cultivating students' ability to solve problems collaboratively. Integrated circuit products can only stand out in the market competition if they have smaller size and better yield, which requires students not to ignore the size of the layout during the process of layout design. After the physical verification of the layout is completed, a competition will be held among the groups to select the group with the most reasonable design and the smallest layout drawing area as the winning group. The course adopts a group cooperative teaching mode with members working together within the group and members competing between groups. Respect individual differences, while creating an atmosphere of mutual encouragement, striving for progress, and solidarity among team members, to enhance students' teamwork abilities and promote their comprehensive development [3].

4. COURSE ASSESSMENT DESIGN

As a practical course, the course emphasizes process oriented results, so it adopts a 60% process oriented assessment+40% summative assessment approach. The process assessment includes students' homework,

completion of classroom practical tasks, peer evaluation within the group, and peer evaluation between groups. Inter group peer evaluation evaluates professional competence based on the completion and presentation of the project; Intra group peer evaluation evaluates non professional competencies based on student participation and communication skills. Summative assessment is conducted in the form of final exams, mainly to test students' mastery of semester knowledge.

6. CONCLUSION

The integrated circuit layout design course is a highly practical professional course in our school's integrated circuit major, which is the foundation for cultivating integrated circuit layout design engineers. In terms of course content arrangement, the practical course of integrated circuit layout design is taught in a coherent manner along the process of schematic drawing, schematic functional simulation, process flow, layout drawing, layout verification, etc., allowing students to master the process and principles of layout design within a limited teaching time. Through small class teaching, ensure that each student can independently complete the project from start to finish. The course adopts project-based teaching method, arranging project content according

to the principles of easy to difficult and simple to complex. In course assessment, not only is the student's ability to draw a map evaluated, but also their communication and collaboration skills are objectively assessed. Through the study of this course, students will develop professional skills and professional ethics, laying a foundation for their work in layout design after graduation.

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Exploration of Talent Training Mode for Electrical Automation Technology Majors in Vocational Colleges

Yu Aiwu

Zibo Vocational Institute ,Zibo 255000,Shandong,China

Abstract: Vocational education, as a form of education, carries the responsibility of cultivating high-quality workers and technical skilled talents for economic and social development and technological progress at Zibo Vocational College. The training mode of vocational talents is the fundamental way to achieve the goals of vocational talent training. This article takes the talent cultivation of the Electrical Automation Technology major group at Zibo Vocational College as an example, fully considering the characteristics of local industries and the needs of regional economic development, determining talent cultivation goals according to local conditions, practicing and exploring talent cultivation models that adapt to their own development, and continuously improving and innovating in the process of education and teaching, promoting vocational colleges and industry enterprises to build a community of shared future, and achieving a win-win situation for schools, enterprises, students, and society. This article is the research result of the teaching reform project of vocational education in our college.

Keywords: Vocational education, Talent cultivation mode of electrical automation technology major group, Practical exploration.

The high-quality development of economy and technology in the context of the new era has put forward higher goals and requirements for talent cultivation. As a type of education, vocational education carries the responsibility of cultivating high-quality workers and technical skilled talents for economic and social development and technological progress. In order to cultivate high-quality technical and skilled talents that can adapt to social development, higher vocational education must open up its education, face and rely on society, enter enterprises and markets, fully consider local industrial characteristics and regional economic development needs, and determine talent training goals according to local conditions. To achieve the talent training goals of higher vocational education, it is imperative to reform and innovate the talent training model that adapts to its own development. Therefore, starting from the mission of vocational education and the core development goal of cultivating students' employment competitiveness

and development potential in schools, and relying on the practical needs of the construction of the high-level electrical automation technology professional group project under the "Double High" plan, this study mainly explores the talent cultivation model of engineering integration based on abilities by constructing a results oriented "platform+module+project" curriculum system, creating a "four level ability progressive" practical teaching system, and promoting the pilot work of the 1+X certificate system.

1. TAKE MULTIPLE MEASURES TO DEEPEN THE REFORM OF TALENT TRAINING MODE

1.1 Collaboration between schools and enterprises, integration of engineering and practice, continuous innovation and improvement of practical talent training models

Based on the actual needs of the construction of the high-level electrical automation technology professional group project under the "Double High" plan, we will connect with the production process planning, manufacturing, operation management, data services, technical support, and customer service positions in the intelligent manufacturing equipment industry chain that emphasizes both hardware and software, system integration, and interconnection. We will strengthen the cultivation of humanistic qualities led by moral education, and shape the "three product" abilities of work production, finished product trial production, and product research and development throughout the entire process of talent cultivation. This will be implemented in three stages, with diverse collaborative training among industries, enterprises, schools, etc. We will innovate the talent cultivation model of "diverse collaboration, three-dimensional advancement, and segmented improvement". Using the production of individual works as a starting point to exercise students' technical thinking awareness, using the trial production of finished products as a starting point to temper students' engineering thinking awareness, using participation in product development as a starting point to temper students' innovation consciousness, cultivating industry general talents with correct "three outlooks" and craftsmanship spirit, gradually building on-site engineers who think, learn, and do with technical thinking, engineering thinking, and innovative thinking.

1.2 Derived and practiced various forms of talent cultivation models. in the process of talent cultivation, this professional group has also derived and practiced various forms of talent cultivation models in different periods

1.2.1 Pilot project of modern apprenticeship system at or above the college level

Based on the integration of industry and education, school enterprise cooperation, and the implementation of modern apprenticeship pilot projects, education and teaching are closely integrated with enterprise employment standards. The modern apprenticeship pilot project of "joint enrollment, joint training, and integrated education" between schools and enterprises, as well as the quasi order class project, have effectively improved the quality of talent cultivation by implementing one-on-one apprenticeship and rotation for students during on-the-job internships in enterprises. Actively promote the construction of the "School Enterprise, Enterprise Colonel" training base during the pilot process of the project. The cooperative enterprise invests certain resources and, according to the actual production process and requirements, jointly builds a training base with the professional (group) to share resources and achieve win-win benefits. Students' learning can be completed both in school and in the enterprise, combining teaching and production, theory and practice, and realizing dual main sports talents.

1.2.2 School enterprise cooperation craftsmanship specialized class

Signed a school enterprise cooperation agreement with GoerTek Co., Ltd. for the training of "Craftsmanship Specialized Class". According to the terms of the agreement, the Craftsmanship Special Class will implement a modern apprenticeship system and a new apprenticeship model for enterprises, with a "dual" approach to education between schools and enterprises. Both parties will collaborate to develop talent training plans, build and manage the teaching staff, introduce practical tasks (projects) from enterprises to develop job skills courses and textbooks, and jointly implement educational and teaching reforms. Students apply what they learn, becoming skilled craftsmen who can adapt to the needs of modern society and find high-quality employment.

1.2.3 Excellent class of sino german intelligent manufacturing college

Jointly establish the Sino German Intelligent Manufacturing College with Shandong Rheingold Intelligent Technology Co., Ltd., introduce the German dual vocational education system, implement the German "dual system" localization education model of school enterprise dual, teacher dual, theoretical and practical dual, and ability dual, introduce German standards, integrate the advantages of school enterprise resources, and set up Sino

German excellent classes in the majors of electrical automation technology and mechatronics integration technology to implement talent cultivation. Centered around students, with the fundamental goal of enhancing practical abilities and solving practical production problems, we carry out action oriented talent cultivation to improve students' comprehensive professional qualities.

1.2.4 Enterprise naming special team

Based on and serving local economic development, starting from 2021, the college has cooperated with high-end local enterprises such as Shandong Yinowei New Materials Co., Ltd., Zibo Newshidate Planetary Gearbox Co., Ltd., and Shandong Xinma Pharmaceutical Equipment Co., Ltd. to establish enterprise naming special classes. On the one hand, it helps students find high-quality employment, and on the other hand, it provides talent guarantee and intellectual support for the high-quality development of enterprises.

1.2.5 "DREAM FULFILLMENT PLAN" MODERN APPRENTICESHIP EXCELLENCE CLASS

In order to assist in poverty alleviation through education, help students achieve their dreams, better serve the development of local pulp and paper industry, cultivate outstanding talents in the industry, and provide a platform for graduates to fully display their talents, the college and Jinguang Paper Industry (China) Investment Co., Ltd. (hereinafter referred to as APP (China)) jointly launched the "Dream Fulfillment Plan" modern apprenticeship system for outstanding talents in early 2021. Through the cooperation of APP (China), Zibo Vocational College, and Qilu University of Technology, the college aims to cultivate technical and skilled talents that meet the needs of industry enterprises. This mode has opened up a new path for professional talent cultivation.

2. COLLABORATIVE EFFORTS BETWEEN SCHOOLS AND ENTERPRISES TO CREATE A RESULTS ORIENTED "PLATFORM+MODULE+PROJECT" CURRICULUM SYSTEM

Focusing on the core competencies that students should possess, guided by course learning outcomes, designing effective evaluation indicators, and developing teaching and activity plans. Closely aligning with the product lifecycle, taking the knowledge and skills required for the manufacturing process and product service process as the starting point, the school enterprise jointly optimizes the course content. Following cognitive laws, meeting students' own growth and development needs, and based on constructivist education theory, reorganizing public general ability and professional ability course resources, constructing course logic. Based on the sharing of basic ability courses, complementary professional ability courses, strengthened specialized training modules, and enhanced comprehensive ability training projects, a results oriented

"platform+module+project" curriculum system is constructed, which organically integrates ideological and political courses with curriculum ideological and political education content, and reshapes the humanistic quality education platform led by moral education. Integrate vocational skill level standards such as industrial robot system integration, CNC equipment maintenance and repair into the curriculum, and build a ladder for improving professional abilities. Reasonably deploy knowledge and skill points of general and professional abilities, and cultivate technical skills with potential for on-site engineers; Based on production practice, deepen professional theoretical knowledge, conduct comprehensive and systematic training, and cultivate the professional abilities required by on-site engineers; Based on project deepening research, innovation and reform, improving quality and efficiency, cultivating comprehensive professional abilities in design, production, and service optimization.

Based on the job groups connected by professional groups, analyze and summarize the professional direction modules, modularize the courses, and select and combine different majors according to actual needs.

3. CREATING A PRACTICAL TEACHING SYSTEM OF "FOUR LEVEL ABILITY PROGRESSION" BY COMBINING REALITY AND VIRTUALITY

Based on the key job groups in the intelligent manufacturing industry corresponding to professional groups, analyze typical work tasks, summarize key technical application capabilities, develop skill training modules, gather productive practical teaching projects, and construct a practical teaching system. Following the laws of vocational education, setting up milestones for the growth of vocational abilities, connecting with the 1+X certificate pilot program, creating a "four level ability progressive" practical teaching system for general ability practice, comprehensive training in professional directions, comprehensive practical operation of production projects, and innovation of vocational ability positions.

Relying on professional group production education integration training bases, virtual simulation training bases, and engineering technology centers at or above the city level, starting from general ability practice and focusing on comprehensive training in professional directions, we carry out general ability practice and comprehensive training in professional directions. According to the norms and standards of enterprise research and development production management, team division of labor and collaboration are carried out to enhance students' comprehensive practical operation, job innovation, division of labor and collaboration, and self-learning abilities. Adhering to the Outcome Based Education

(OBE) educational philosophy, we carry out practical teaching, implement plans, combine theory with practice, integrate teaching with practice, and cultivate students' innovative spirit and practical ability.

(Note: CDIO stands for Conceptual, Design, Implement, and Operate. It takes the product development to product operation lifecycle as the carrier, allowing students to learn engineering in an active, practical, and organically connected way between courses.)

4. PROMOTE THE PILOT WORK OF THE 1+X CERTIFICATE SYSTEM THROUGH CERTIFICATION TO FACILITATE REFORM

In response to the specific requirements put forward by professional groups for innovative talent training models, namely to implement the 1+X certificate system pilot, identify typical cases, and play a leading role, we will mainly focus on promoting the pilot work from the following aspects.

4.1 Establish a sound organizational management and guarantee mechanism

Considering the establishment of a 1+X certificate pilot operation mechanism from both the school and professional group levels, the first step is for the school to establish a leadership group for the 1+X certificate construction committee to coordinate the organization and management of the project; According to the requirements of the provincial pilot work, apply for pilot units, establish a 1+X professional pilot guidance committee on campus, form a construction team, and formulate plans for institutional construction and faculty improvement. At the level of professional groups, focus on managing training and examination affairs, with dedicated teachers from each teaching department coordinating the work. At the same time, we will carry out the construction of quality monitoring mechanisms (including risk assessment and response mechanisms), and promptly correct or rectify any deviations that arise during the pilot work.

4.2 Revise talent development plan, reconstruct teaching standards and curriculum system

Construct teaching standards and curriculum systems that are compatible with the 1+X certificate system, and make appropriate adjustments to talent training programs. At present, the four vocational skill level certificates (intermediate) obtained by the professional group are: industrial robot operation and maintenance, industrial robot integrated application, production line digital simulation application, and CNC equipment maintenance and repair. Firstly, the knowledge points involved in the X certificate standard are sorted, classified, and combined according to the principles of continuity and progression, achieving an organic connection between the X certificate standard and teaching standards. Secondly, based on the integration of documentary evidence, reconstruct the curriculum

system. Finally, with the new concept of emphasizing both regular education and vocational training, the teaching system will be redesigned and transformed, especially by integrating the previously relatively independent academic education process with certificate training activities to meet the needs of vocational training.

4.3 Innovate the path of school enterprise cooperation and promote the construction of new mechanisms for the integration of industry and education

Strengthen close cooperation with training evaluation organizations and industry enterprises, jointly develop training and assessment plans between schools and enterprises, use vocational activities as carriers, develop courses and training content based on work processes, and achieve the "mutual embedding and symbiosis" of course and certificate standards. The school enterprise joint construction of practical teaching system includes the joint construction and sharing of on campus and off campus internship and training bases by both schools and enterprises, conducting technical verification of training equipment and standard measurement, etc., to ensure the standardization and normalization of training equipment. The school and enterprise jointly carry out teacher training, promote the reform of the "three educations", and improve the technical skills, teaching and training abilities of teachers through measures such as internal training and external introduction. They aim to create a high-level "dual teacher" teaching team that integrates knowledge and action, excels in both morality and technology, has a high level of education, and embodies the spirit of craftsmanship.

4.4 Emphasize vocational skills training and build a comprehensive vocational education system that integrates education and training

Support members of society who have obtained vocational skill level certificates to be exempted from certain courses during the academic certificate examination, and also support vocational college

students who have obtained academic certificates to be exempted from certain content during the X certificate examination. Deepen school enterprise cooperation, target technical personnel from industry enterprises, and widely carry out training work in the form of continuing education and training, vocational skills improvement, etc., so that they can accumulate credits for academic advancement while obtaining X certificates.

Based on the experience of exploring various forms of talent cultivation models in practice, the School of Intelligent Manufacturing will further strengthen school enterprise cooperation, deepen the integration of industry and education, continue to conduct in-depth research, innovate and create new models of intelligent manufacturing talent cultivation, and steadily promote the high-quality development of the high-level electrical automation technology professional group in the "Double High" plan.

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Exploration of Programming Reform in Computer Culture Foundation Teaching in Higher Vocational Colleges

Zhang Dedi, Ding Lingling

Zibo Vocational Institute, Zibo 255000, Shandong, China

Abstract: Teachers need to set specific and feasible learning objectives for new technologies, and ensure that the course content is closely related to industry changes, such as using cloud computing technology for data backup or the use of high-performance computing. Secondly, teachers can introduce practical projects to enable students to learn new technologies in practice and apply them to practical work. In addition, teachers can also utilize online resources such as online courses, video tutorials, and online forums to provide students with more learning resources and opportunities. Finally, teachers can encourage students to participate in relevant competitions and activities to stimulate their interest in learning and innovative abilities.

Keywords: Computer Culture Foundation Teaching; Higher Vocational Colleges; Teaching methods

1. CURRENT PROBLEMS IN COMPUTER CULTURE FOUNDATION COURSES IN HIGHER VOCATIONAL COLLEGES

1. The teaching content is disconnected from modern technology

Many computer culture foundation courses in higher vocational colleges still focus on the explanation of basic knowledge, lacking the introduction and application of new technologies.

1.2 Single teaching method

Many higher vocational colleges still use traditional teaching methods for computer culture foundation courses, such as lectures and demonstrations, which lack interactive and practical elements and are difficult to stimulate students' interest in learning.

1.3 Uneven student foundations

Students in higher vocational colleges come from different regions and schools, and their computer foundation levels vary greatly, which poses great challenges to teaching.

1.4 Insufficient teaching resources

Many higher vocational colleges lack sufficient teaching resources for computer culture foundation courses, such as textbooks, experimental equipment, etc., which limits the improvement of teaching quality.

1.5 Lack of practical opportunities

Many computer culture foundation courses in higher vocational colleges lack practical opportunities, and students can only learn theoretical knowledge in the

classroom, lacking opportunities for practical operation, which is not conducive to the cultivation of students' skills. C language is a very basic and important programming language. In the computer culture foundation courses of higher vocational colleges, the cultivation of C language programming ability is very important. However, there are some problems in the cultivation of C language programming ability in the current computer culture foundation courses in higher vocational colleges, and measures need to be taken to improve them.

2. HOW TO COMBINE THE TEACHING OF COMPUTER CULTURE FOUNDATION COURSES WITH NEW TECHNOLOGIES

Firstly, the computer culture foundation courses in higher vocational colleges should focus on the integration with modern technology. With the continuous development of computer technology, new programming languages and technologies continue to emerge. The computer culture foundation courses in higher vocational colleges should update their teaching content in a timely manner, introduce new technologies and programming languages, and enable students to understand the latest trends in technological development.

Secondly, the computer culture foundation courses in higher vocational colleges should adopt various teaching methods, such as case-based teaching, project-based teaching, inquiry based teaching, etc., to enable students to learn and master knowledge through practice. At the same time, interaction and practical activities should be strengthened to enable students to discover and solve problems in practice, and improve their practical and innovative abilities.

Again, the computer culture foundation courses in higher vocational colleges should focus on differentiated teaching for students. Due to the varying levels of computer fundamentals among students, computer culture courses in higher vocational colleges should adopt different teaching methods and content based on students' actual situations, so that students can better grasp knowledge.

Finally, the computer culture foundation courses in higher vocational colleges should strengthen the construction of teaching resources. Teaching resources are an important guarantee for teaching quality. The computer culture foundation courses in

higher vocational colleges should strengthen textbook construction, experimental equipment construction, etc., to provide students with better learning conditions.

The main goal of computer culture foundation teaching in higher vocational colleges is to enhance students' computer skills and cultural literacy, enabling them to possess certain computer application abilities and information literacy. Specifically, students need to master basic computer knowledge such as operating systems, office software, network applications, etc., and be able to proficiently apply this knowledge to solve practical problems. At the same time, students also need to have good information literacy, including the ability to obtain, analyze, and apply information, and be able to use and manage information correctly to avoid information security issues. In addition, the basic teaching of computer culture in higher vocational colleges also focuses on cultivating students' innovative thinking and teamwork spirit, so that they can better adapt and develop in their future careers.

3. DIFFERENTIATED TEACHING OF COMPUTER CULTURE FOUNDATION COURSES BASED ON STUDENTS' ACTUAL SITUATIONS

Differentiated teaching is very important in computer culture foundation courses in higher vocational colleges. Due to the varying levels of computer foundation among students, it is necessary to adopt different teaching methods and content based on their actual situation, so that students can better grasp knowledge.

3.1 Differentiated teaching can be conducted based on students' computer foundation level

For students with a high level of computer foundation, teaching content on advanced programming languages and technologies such as Java, Python, etc. can be added to enable students to deeply learn and master advanced computer programming techniques. For students with lower levels of computer fundamentals, teaching content on basic programming languages and techniques such as C language, HTML, etc. can be added to enable students to master the fundamental knowledge of computer programming.

3.2 Differentiated teaching can be conducted based on students' interests and strengths

Each student has different interests and strengths, so it is possible to choose teaching content and methods that are suitable for them based on their interests and strengths. For example, for students who enjoy design and art, some teaching content on graphic design and animation production can be added to enable students to better utilize their strengths.

3.3 Differentiated teaching can be conducted based on students' learning progress

Due to the different learning progress of students, different teaching methods and content can be

adopted according to their learning progress. For example, for students who are progressing quickly in their studies, some practical project teaching content can be added to enable them to better apply the knowledge they have learned to practical projects. The computer culture foundation courses in higher vocational colleges should be differentiated according to the actual situation of students. Firstly, teachers should understand each student's learning background and interests in order to develop personalized teaching plans. Secondly, teachers can divide students into different study groups based on their learning abilities and levels, in order to better meet their needs. In addition, teachers can also use various teaching methods, such as case-based teaching, project-based teaching, group discussions, etc., to stimulate students' interest and enthusiasm for learning. Finally, teachers should promptly evaluate students' learning outcomes and make adjustments and improvements based on their feedback and suggestions to enhance teaching effectiveness.

In short, the basic courses of computer culture in higher vocational colleges should adopt differentiated teaching according to the actual situation of students, so that each student can obtain suitable teaching content and methods, thereby better mastering knowledge, improving their computer skills and cultural literacy.

4. HOW TO COMBINE COMPUTER CULTURE FOUNDATION TEACHING TO CULTIVATE STUDENTS' INNOVATIVE THINKING AND TEAMWORK

Enable students to have a keen observation and understanding of new technologies while mastering computer fundamentals. Secondly, practical teaching should be strengthened to enable students to master the application of new technologies in practical operations and improve their practical abilities. Thirdly, teaching content on new technologies such as artificial intelligence, big data, cloud computing, etc. should be introduced to enable students to understand the development trends and application prospects of new technologies. Fourthly, we should strengthen cooperation with enterprises, so that students can be exposed to the actual needs of enterprises during the learning process and improve their employment competitiveness. In order to attract students' attention, stimulate their interest in computer culture basic courses, and free the courses from the constraints of traditional teaching models, vocational colleges should organically combine new technologies with course content. New technologies such as virtual reality and artificial intelligence can be introduced in the classroom to turn theoretical knowledge into interesting interactive demonstrations, allowing students to intuitively experience and master new technologies, and cultivating their ability to apply new technologies to solve practical problems. In addition, students can be encouraged to participate

in the research and development of new technologies, deepen their understanding of new technologies in practice, and cultivate innovative thinking and teamwork skills. For example, a research project can be designed to allow students to use new technologies to solve a practical problem and showcase their research findings in class. This teaching method not only stimulates students' interest in learning, but also cultivates their practical ability and innovative spirit, laying a solid foundation for their future career development.

Cultivating students' innovative thinking and teamwork spirit is one of the important goals of computer culture foundation teaching in higher vocational colleges. Here are some effective methods.

4.1 Encourage students to participate in practical projects

Practice is an important way to cultivate students' innovative thinking and teamwork spirit. Teachers can design some practical projects to enable students to apply their learned knowledge and solve practical problems in practice. In the practical process, students need to collaborate with each other and complete tasks together, thus cultivating their teamwork spirit.

4.2 Conducting group discussions

Group discussions are an effective teaching method that allows students to communicate with each other, share their ideas and viewpoints during the discussion. In group discussions, students need to respect each other and listen to others' opinions in order to cultivate their teamwork spirit.

4.3 Introduction of innovative thinking training

Innovative thinking training is an effective teaching method that can help students develop innovative thinking and problem-solving abilities. Teachers can help students cultivate innovative thinking through methods such as brainstorming and problem-solving.

4.4 Encourage students to participate in competitions

Competitions are an effective teaching method that allows students to showcase their talents and abilities in competitions. During the competition, students need to collaborate with each other and complete tasks together to cultivate their teamwork spirit.

4.5 Establishing a good teacher-student relationship

A good teacher-student relationship is an important prerequisite for cultivating students' innovative thinking and teamwork spirit. Teachers should establish good communication and trust relationships with students, encourage them to actively think and explore, and cultivate their innovative thinking and teamwork spirit.

In short, cultivating students' innovative thinking and teamwork spirit is one of the important goals of computer culture foundation teaching in higher vocational colleges. Teachers should use various

teaching methods and tools to help students cultivate innovative thinking and teamwork spirit, laying a solid foundation for their future career development.

In order to cultivate students' innovative thinking and team spirit in the basic computer culture courses of higher vocational colleges, the following methods can be adopted: first, teachers can guide students to use Internet technology, obtain the latest scientific and technological information and industry trends through search engines, social media and other ways, and stimulate students' innovative thinking. Secondly, teachers can organize students for group discussions and project collaborations, allowing students to learn from each other and inspire each other in the team, cultivating their teamwork spirit. In addition, teachers can organize students to participate in science and technology competitions, hold science and technology lectures, and other activities to help students develop innovative thinking and teamwork skills through practice. Finally, teachers can encourage students to raise and discover problems during the learning process, and solve them through self-directed learning and exploration, cultivating students' innovative thinking and teamwork spirit.

5. CONCLUSIONS

In summary, there are some problems in the cultivation of C language programming ability in the computer culture foundation courses of higher vocational colleges, and measures need to be taken to improve them. By updating teaching content, adopting various teaching methods, emphasizing differentiated teaching for students, and strengthening the construction of teaching resources, the computer culture foundation courses in higher vocational colleges can better cultivate students' C language programming ability and lay a solid foundation for their career development.

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Community Course Design of "Social Behavior and Etiquette" That Integrates Multi-Dimensional Education through Situational Setting and Role-Playing

Haijun Zhao

Zibo Vocational Institute, Zibo 255000, Shandong, China

Abstract: In terms of the organization of teaching content, this course organizes teaching activities according to the basic knowledge and skills required for social etiquette in interpersonal communication. The course has designed six parts: standing etiquette, sitting etiquette, walking etiquette, gesture etiquette, facial expression etiquette, and squatting etiquette. The content is further divided into 17 small knowledge points, each of which is made up of "teaching videos+case videos+PPT courseware+lesson plans+exercises" course resources. The content of each part is closely connected and effectively constitutes the core content of the course.

Keywords: Situational setting; Role-playing; Ideological and political elements; Community courses.

1. SPECIFIC CONTENT

1.1 Standing etiquette

This section mainly teaches the standard requirements for male and female standing posture, the essentials for male and female standing posture operation, the essentials for male and female business standing posture operation, common taboos for standing posture, and the standard requirements for male and female sitting posture.

1.2 Sitting etiquette

This section mainly teaches the operation essentials of men's sitting posture, split leg posture, and overlapping posture, as well as the operation essentials of women's sitting posture, side sitting posture, cross sitting posture, side hanging posture, and overlapping posture, and common taboos for male and female sitting posture.

1.3 Walking etiquette

This section mainly teaches the standard requirements for walking posture, the walking posture requirements for wearing suits, qipao, and skirts, and common walking posture taboos.

1.4 Gesture etiquette

This section mainly teaches the standardized requirements of gestures, the operating essentials of forward swing, lateral swing, oblique swing, straight arm, and like gestures, and the taboos of common gestures.

1.5 Emojis and etiquette

This section mainly teaches taboos in using gaze, standardized requirements for smiling, commonly used smile training methods, and taboos in smiling.

1.6 Squatting etiquette

This section mainly teaches the classification of squatting posture, the operation essentials of standardized dunzi, and the taboos of dunzi.

2. COURSE CONTENT STRUCTURE

The course unit names include: standing etiquette, sitting etiquette, walking etiquette, gesture etiquette, facial expression etiquette, and squatting etiquette.

3. TEACHING OBJECTIVE DESIGN

Through the study of this course, we aim to meet the needs of community residents to understand, familiarize themselves with, and apply the etiquette knowledge and basic etiquette skills required for daily social interactions and fulfilling job responsibilities in their respective units. This will comprehensively improve the cultural literacy of community residents, enhance their comprehensive social skills, and ultimately improve their professional qualities, shape a good personal image, and create a civilized and harmonious community[1].
Knowledge objective: To understand etiquette knowledge and norms, and master the basic etiquette skills and operation essentials of demeanor and behavior.

Ability goal: To apply what you have learned, shape a graceful and appropriate social image, and foster harmonious interpersonal communication.

Quality goal: Improve etiquette literacy and become a civilized community member who knows etiquette, observes etiquette, and uses etiquette.

4. COURSE CONTENT DESIGN

4.1 Course design ideas and content selection

The community course of "Social Behavior and Etiquette" follows the curriculum design concept of "determining teaching needs - selecting course content - teaching design - teaching implementation", starting from familiarizing oneself with knowledge points, mastering skill points, and standardizing the use of behavior and etiquette. Through analysis, induction, and reorganization, the teaching content is reconstructed and integrated teaching is implemented. In the teaching content design of "Social Behavior Etiquette", the focus is on the standardized

requirements for different standing postures in standing etiquette, the standardized sitting posture requirements for men and women in sitting etiquette, the standardized operation essentials for walking posture, the standardized use of gestures in gesture etiquette, and the correct use of gaze in facial expression etiquette[2].

In terms of teaching content organization, the course follows the standard requirements for etiquette in interpersonal communication: upright standing posture, dignified sitting posture, elegant walking posture, sincere expressions, and appropriate gestures. By creating scenarios, students gradually master the relevant knowledge of etiquette. In order to achieve a natural connection and clever integration between course content and cultural education, the course team pays attention to professional details, collects, crushes, sorts, integrates and repeatedly discusses many social hotspots, practical issues and other materials, and determines the timing of integration based on the needs of the content.

4.2 Skill training programs and lesson allocation

1 hour of standardized standing posture training, 1 hour of standardized sitting posture training, 1 hour of standardized walking posture training, 1 hour of standardized gesture training, 1 hour of standardized smile training, and 1 hour of standardized squatting posture training[3].

5. CURRICULUM IMPLEMENTATION DESIGN: (TEACHING MODE AND METHODS)

5.1 Teaching mode

This course mainly adopts the teaching mode of "on-site teaching+online classroom" (a combination of offline and online) in teaching.

5.1.1 On site multimedia teaching

Multimedia teaching methods mainly include electronic courseware, projection, video, and multimedia teaching software. Multimedia teaching can be used for interactive teaching, classroom presentations, and other teaching activities.

5.1.2 Online teaching methods

Online teachers can utilize resources such as videos, PPT presentations, lesson plans, and exercises to enable students to engage in self-directed learning and self testing, while providing corresponding teaching guidance and feedback.

5.2 Teaching Methods

Based on the characteristics of the course content and with a focus on applying knowledge, social situations are created to integrate teaching, learning, and practice. Through various teaching methods such as situational teaching, role-playing, case-based teaching, and discussion, emphasis is placed on stimulating students' interest in learning and meeting their personalized and diverse needs. Make full use of multimedia, video recording, animation, micro videos and other means to assist teaching, making the teaching content more vivid and intuitive, while integrating the cultivation of professional qualities

and awareness, enabling students to master learning methods and improve their offline self-learning ability.

Specifically apply the following teaching methods:

(1) Teaching method: Teachers focus on the key and difficult points of learning.

(2) Interactive method: combining teacher demonstration with individual learner perception, individual display, and collective perception training.

(3) Situational approach: Learners conduct practical training based on specific scenarios set by teachers.

(4) Intuitive perception method: Using video materials, scenario demonstrations, teacher demonstrations, individual feelings of learners, and individual presentations, learners can further understand and master skills and techniques through intuitive perception.

(5) Discussion method: Organize learners to discuss video materials, cases, teacher demonstrations, and learner presentations, distinguish right from wrong, and clarify key points.

(6) Comparative evaluation method: Using teacher-student comparison and learner comparison displays, organizing learners to comment and evaluate each other in order to achieve common improvement.

(7) Observation and analysis method: Teachers may narrate life phenomena or require learners to carefully and meticulously observe the performance of etiquette skills in social life and various industry services outside of class, and make observation records. Then, they organize learners to analyze phenomena, gain practical experience, and enhance personal abilities.

(8) Legal integration of in class and out of class learning: using classroom learning to drive extracurricular training.

Based on the applicability, practicality, and operability of the teaching content, emphasis is placed on the principles of theoretical necessity, adequacy, and practical application. Through teacher demonstration, individual perception, individual display, collective perception, classroom training, situational training, extracurricular training, individual training, comprehensive training, practical practice, and display, the learning of theoretical knowledge is deepened.

Using multimedia teaching methods to change traditional teaching modes and creating multimedia teaching courseware. Observe, discuss, and imitate learning through watching video materials, case studies, and other forms. In this way, it effectively enhances learners' interest in learning, fully utilizes the limited classroom teaching time, and achieves good teaching results.

6. COURSE ASSESSMENT AND EVALUATION DESIGN

The teaching evaluation of this course is divided into the following two situations.

6.1 On site teaching

The evaluation of students' grades participating in on-site teaching adopts the method of "on-site learning (80%)+project testing (20%)". Students who participate in on-site teaching directly receive 80% of the score, while those who participate in project testing can receive 20% of the test score.

6.2 Online classroom

For students participating in online classroom learning, the course assessment consists of "online learning (70%)+course communication (10%)+project testing (20%)".

6.2.1 Online learning

Obtain grades based on video viewing progress, online note taking, and question answering.

6.2.2 Course exchange

Determine the course exchange score based on the number of discussions and Q&A sessions participated in the forum.

6.2.3 Project testing

At the end of each project, students participate in online project testing and achieve corresponding scores.

The online learning performance assessment items include: online learning accounts for 70%, course communication accounts for 10%, and project testing accounts for 20%. The forms of online learning assessment include watching course videos and other resources, taking course notes online, and answering questions to determine. The forms of course exchange assessment include: determining the regular grades based on the number of times students participate in discussions and answer questions. The project testing and assessment forms include: the system automatically gives scores based on the number of completed questions, timely submission, correctness, and standardization. The organizational methods of online learning include online inspection, attending a certain number of class hours and time, and recording complete course notes. The organization of course communication includes: teachers determine grades based on the number of times students participate in discussions, publish effective topics, and answer questions. The organization of project testing includes online submission, where students can independently choose the questions they want to answer during class, and the system will automatically score based on the number of correct answers.

7. COURSE DESIGN FEATURE: CULTURAL EDUCATION RUNS THROUGH THE ENTIRE PROCESS

7.1 Rich course teaching resources

The course has rich teaching resources, consisting of five modules: "Standing etiquette+Sitting etiquette+Walking etiquette+Gesture etiquette+Expression etiquette", which constitute the core content of etiquette. Each knowledge point is equipped with resources such as videos, PPT

courseware, lesson plans, exercises, etc., suitable for students to learn selectively and targetedly in their spare time.

7.2 Flexible and diverse forms of teaching organization

The course adopts a combination of "on-site teaching+online classroom" (offline+online) approach in teaching organization, allowing students who participate in the course to participate in on-site teaching activities and continue learning online, listen to videos, consult online, practice and consolidate. The diverse teaching methods have improved students' learning enthusiasm and flexibility, and have been unanimously recognized by students.

7.3 Multidimensional teaching evaluation

Change the previous mode of single evaluation of students' learning effectiveness, adopt various methods such as diagnostic evaluation, process evaluation, and summary evaluation, and comprehensively integrate them throughout the entire learning process of students. While improving students' learning enthusiasm, teachers can grasp students' learning situation, evaluate and assess students from multiple dimensions, and make objective and truthful evaluations of students' learning situation.

7.4 Cultural education elements run through the entire process

Cultural education runs through the organization and implementation of the curriculum, not only meeting the needs of community residents to understand, familiarize themselves with, and apply etiquette knowledge and basic etiquette skills required for daily social interactions and fulfilling job responsibilities in their units, but also comprehensively improving the cultural literacy of community residents, enhancing their comprehensive social skills, and thus improving their professional qualities. It plays a positive role in shaping a good personal image and creating a civilized and harmonious community.

The design concept of this course: Based on a thorough investigation of the learning needs of community learners, the course content is divided into five parts, and specific knowledge and skill points are designed on this basis. Focusing closely on the teaching objectives of the course, a complete system, rich and diverse content, distinctive features, and strong practicality of course resources are constructed, reflecting the educational philosophy of student-centered and teacher led, combining on-site teaching and online learning, blended online and offline teaching, creating diverse online learning activities, and adopting diversified learning evaluation methods. Learners can choose personalized learning plans according to their own needs.

The community course of "Social Behavior and Etiquette" follows the curriculum development

concept of "determining teaching needs - selecting course content - teaching design - teaching implementation", starting from familiarizing oneself with knowledge points, mastering skill points, and standardizing the use of behavior and etiquette. Through analysis, induction, and reorganization, the teaching content is reconstructed and integrated teaching is implemented.

In terms of organizing the course content, teaching activities are organized according to the basic knowledge and skills required in etiquette. The course is designed in six parts, each of which effectively supports the core content. The on-site teaching of the course can be arranged according to 8 class hours. The online course mainly focuses on micro videos of core knowledge points, and is equipped with corresponding case videos, PPT courseware and other auxiliary resources for teaching organization, so that community students can selectively use their spare time for learning.

In terms of teaching mode and methods, based on the characteristics of the course content, with learning for practical use as the main line, social situations are

created to integrate teaching, learning, and doing. Through various teaching methods such as situational teaching, role-playing, case teaching, and discussion, emphasis is placed on stimulating students' interest in learning. Make full use of multimedia, video recording, animation, micro videos and other means to assist teaching, making the teaching content more vivid and intuitive, while integrating the cultivation of professional qualities and awareness, enabling students to master learning methods and improve their offline self-learning ability.

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Reform of Mechanical Manufacturing Technology Course in Vocational Colleges

Zhao Renhan

Zibo Vocational Institute, Zibo 255000, Shandong, China

Abstract: This article takes the mechanical manufacturing process course in vocational colleges as the research object, discusses various problems that exist in the teaching implementation process of mechanical manufacturing process course, determines corresponding solutions, and provides reference for the teaching of mechanical manufacturing process course in vocational colleges.

Keywords: Vocational colleges; Mechanical manufacturing process; Resolvent

1. INTRODUCTION

The course of Mechanical Manufacturing Technology, as one of the compulsory courses for mechanical majors, accounts for a large proportion in the curriculum system and training programs of major vocational colleges[1]. Starting from the requirements of the development of mechanical manufacturing technology for engineering technology applied talents such as field engineers, this course combines the theoretical knowledge of mechanical manufacturing with the production practice of parts manufacturing and product (component) assembly, highlights the practicality, comprehensiveness and progressiveness of knowledge, focuses on strengthening the students' ability to prepare and implement mechanical manufacturing process procedures[2], and combines the national professional qualification standards and the training requirements of professional literacy and manufacturing technology application ability required by professional post groups, focusing on cultivating students' professional ability and professional quality for equipment manufacturing posts such as parts manufacturing and product (component) assembly[3]. However, due to the large amount of content and abstract concepts in the course of mechanical manufacturing technology, which requires a high level of learning foundation, students face significant learning difficulties in learning mechanical manufacturing technology[4]. Many students lack experience and are not familiar with the concepts and principles of mechanical manufacturing technology, resulting in difficulty in learning and a sense of disinterest in learning. Based on this, it is necessary to reform the teaching process of mechanical manufacturing technology[5].

2. ANALYSIS OF TEACHING PROBLEMS AND REASONS

The course of Mechanical Manufacturing Technology

is one of the core courses in the field of mechanical engineering, occupying an important position. However, due to the high basic requirements of this course, teachers have found the following problems during the teaching process:

(1) This course has high basic requirements, and the mechanical manufacturing process course requires a good learning foundation and relevant experience, with high demands on students' early knowledge reserves. However, vocational college students generally have weak foundations and lack experience. Most students have not been to relevant enterprises and are not familiar with the on-site situation of enterprises. Many concepts and theories cannot be understood. Therefore, for most students, the overall learning difficulty is relatively high.

(2) The development of the training plan is unreasonable. There are many courses in vocational colleges, but the number of hours is limited, resulting in limited hours for the course of mechanical manufacturing technology. Teachers have to finish the content of the training plan within the limited hours. However, vocational college students generally have weak learning abilities and insufficient ability to absorb new knowledge. Therefore, it is difficult for students to master and absorb a large number of knowledge points in a limited time. Over time, students are prone to develop a disinterest in learning and develop a rejection of mechanical manufacturing technology courses, which is detrimental to their subsequent studies. In addition, some students transfer their aversion to learning to other courses, which affects their learning status in other courses and has a significant impact on their entire college life. Meanwhile, unrealistic credit requirements may bring unnecessary pressure to students. Excessive credit requirements not only increase students' burden, but may also force them to sacrifice other important extracurricular activities and personal development opportunities. In this situation, students may feel exhausted and frustrated, which can affect their overall learning experience and mental health. In addition, the training program cannot meet the learning motivation and career goals of different students. Every student has their own unique interests and talents, and the current training program cannot provide enough choices for students to choose according to their own interests and career plans for learning.

(3) Students lack motivation to learn, and many of

them experience significant changes in their mentality after entering university. Their learning attitude is not correct, their enthusiasm for learning is insufficient, and they lack ambitious goals. In addition, their self-discipline is poor, resulting in some students being lazy and uninterested in attending classes, and even some students being late, leaving early, and skipping classes. As a result, teachers are unable to stimulate students' learning enthusiasm during the teaching process, and students receive knowledge slowly, leading to poor overall teaching effectiveness.

(4) The assessment and evaluation methods are unreasonable. Currently, most vocational colleges use a combination of regular and final grades as the assessment method. This assessment method is too single, and the focus is still on scores. For some students who are good at practical operations but not good at exams, the existing evaluation methods cannot reflect their practical abilities. Therefore, they cannot evaluate students from multiple perspectives, which is not conducive to their growth and development. At the same time, some teachers have insufficient understanding and mastery of the course content, resulting in scoring errors when evaluating students, making it difficult to scientifically and effectively evaluate them.

(5) The teaching content is out of touch with industry needs. Due to the rapid development of the mechanical industry, new technologies, methods, and processes are updated quickly. Therefore, some content in the mechanical manufacturing process course has fallen behind and been eliminated. However, related teaching resources (such as textbooks, PPTs, videos, etc.) have not been updated in a timely manner, resulting in a significant gap between what students have learned and what the industry needs. The students trained need to go to the factory for retraining to be competent in related work. On the one hand, it wastes time and money, and on the other hand, it is easy for enterprises to have a negative impression of the students trained in vocational colleges, which affects their future employment; In addition, students are prone to thinking that the knowledge they have learned is useless, which affects their learning mentality.

(6) The teaching method is unreasonable. Currently, vocational colleges have always adopted a rote learning approach, which directly injects knowledge points from textbooks into students' brains. This teaching method is not conducive to students' understanding and absorption of knowledge and skills. In addition, due to the strong practicality of this course, a large amount of practical experience is needed to support it. Therefore, this course requires teachers to have a high level of knowledge reserve, and teachers need to have rich theoretical knowledge and practical experience to be competent. However, many vocational colleges arrange for newly hired

young teachers to teach this course, and many of the content in the course is only partially understood by the new teachers themselves, which cannot be fully integrated, thus affecting the final teaching quality. Meanwhile, teaching is not only about imparting knowledge, but also about paying attention to students' emotional development and mental health. If the teaching method ignores this point, it may lead to students feeling anxious, affecting their learning interest and mental health.

3. TEACHING STRATEGIES

Based on the above-mentioned issues, the corresponding teaching methods are proposed as follows:

(1) Understand the course offerings of students who have applied to schools in recent years, adjust enrollment plans based on the course offerings, set enrollment requirements, and recruit students with a solid foundation. At the same time, cooperate and negotiate with relevant schools to offer courses that are closely related to vocational college courses, laying a solid foundation for students before they come to vocational colleges to study.

(2) Optimize the talent training program, increase the number of mechanical manufacturing process class hours, ensure the teaching time and content of teachers, and abandon obscure and outdated chapter content based on students' acceptance ability and foundation, combined with the current industry development situation. During the teaching process, pay attention to students' reception of knowledge points, adjust the teaching schedule and teaching methods in a timely manner according to their actual situation, and avoid the accumulation of knowledge blind spots, which may affect the subsequent learning process and lead to students' aversion to learning, affecting their learning enthusiasm. Simultaneously set reasonable credit requirements: avoid excessively high credit requirements. Provide sufficient course options, Strengthen practical teaching, increase opportunities for internships, projects, and work experiences, and help students apply theoretical knowledge to practice. Provide personalized learning paths that allow students to choose courses and study plans based on their interests and career goals.

(3) Enrich and improve the resource database of mechanical manufacturing process courses, introduce classic courseware, pictures, teaching plans, handouts, animations, exercise questions and other materials from other vocational colleges into the classroom, adopt a variety of teaching methods, and take multimedia equipment and the Internet as the carrier. On the one hand, students can easily grasp the basic concepts of mechanical manufacturing process through rich course materials; On the other hand, by strengthening students' training through practice, they can apply the knowledge points they have learned, further deepen their understanding of the knowledge points in the practical process, and achieve

integration and mastery in their hearts.

(4) Reform the assessment and evaluation methods, establish a scientific assessment and evaluation system, comprehensively consider students from multiple dimensions and levels, and introduce the assessment requirements of enterprises into it, with the goal of cultivating high-level and high-quality practical talents. Provide timely feedback on students' learning situation during the learning process, urge them to correct bad learning habits, cultivate students' sense of responsibility and national pride, and prepare for their work after graduation.

(5) Regularly organize course leaders and lecturers to enter the enterprise for on-the-job training, familiarize themselves with the development and needs of the enterprise through practical work, and regularly revise and improve talent training plans and course standards according to the needs. At the same time, the relevant course resource library should be updated annually, deleting outdated resources and introducing the latest resources to ensure the quality and quantity of the resource library, and to provide a good guarantee for students' learning.

(6) Regularly organize course discussions, with the course leader leading the course team to discuss the course, delve into the course content, clarify course objectives and teaching methods. At the same time, organize mentoring activities for both old and new teachers, with old teachers leading new teachers, old teachers giving lectures, and new teachers assisting. New teachers are required to follow old teachers to complete the entire course listening work, and new teachers can directly discuss with old teachers if they have any questions they don't understand.

4. CONCLUSIONS

With the rapid development of technology and the intensification of global competition, the mechanical manufacturing industry is facing unprecedented challenges and opportunities. In this context, the processing quality and assembly quality of components have become key factors in measuring product competitiveness. The increasing demand for high-precision and high reliability mechanical products not only drives technological innovation in

the mechanical manufacturing industry, but also sets higher standards for the professional skills and knowledge level of practitioners. In order to address these challenges, this article will conduct an in-depth analysis of the problems existing in the teaching of mechanical manufacturing technology courses, and propose new teaching methods and strategies based on modern educational concepts and industry development trends. Enhance the practicality and interactivity of the curriculum; By closely collaborating with enterprises, we provide students with internship and practical training opportunities, enabling them to directly participate in real production processes and better understand the complexity and challenges of mechanical manufacturing processes.

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Symptoms and Treatment Measures of Common Digestive Organ Diseases in Mutton Sheep

Hao Caihong

Branch of Animal Husbandry and Veterinary of Heilongjiang Academy of Agricultural Sciences, Qiqihar 161005, China.

Abstract: Digestive system disease is one of the most common diseases in the sheep industry, if not treated in time, it will lead to serious economic losses. The digestive system is an organ system that enters food into the body and absorbs and nourishes the body, including the digestive tract (mouth, pharynx, esophagus, forestomach, creomasum, small intestine, large intestine, anus) and digestive glands (salivary glands, liver, pancreas). The digestive tract and digestive glands of sheep are digestive disorders. The common digestive disorders of sheep mainly include stomatitis, stomatitis, esophageal infarction, anterior gastric retardation, rumen development, rumen expansion, tertiary gastroenteritis, gastroenteritis, acute parenchymal hepatitis, etc. Treatment of gastrointestinal disorders.

Keywords: Sheep; Digestive System; Disease; Prevention; And Treatment

0 FOREWORD

Digestive system diseases are one of the most common and serious diseases in sheep-raising production. The disease is endemic worldwide and can cause serious economic losses. The digestive system of sheep is the organs and tissues that ingest food, absorb nutrients, maintain the balance of fluids and electrolytes, and expel waste products. Including the stomach (including the rumen, the second stomach, the stomach). Phasum), phomasum (creomasum), liver, pancreas (pancreas), small intestine, large intestine, anus. The ability of the body to digest food depends on the peristaltic and secretory functions of the gastrointestinal tract and the ability of ruminal microorganisms to digest cellulose, ferment carbohydrates, and transform nitrogen-containing substances. The external causes of gastrointestinal diseases are diet indigestion, improper feeding, excessive hunger, overeating or feed mildew, excessive acidification, while the internal causes of gastrointestinal diseases are secondary to the disease, resulting in gastrointestinal movement weakness, abnormal. Gastrointestinal muscles. Digestive and absorption disorders are caused by the secretion of digestive glands, mucosal damage, and the invasion of pathogenic

microorganisms. Sheep digestive system diseases including oral disease, esophageal disease, former stomach disease, stomach disease, intestinal disease, the disease of digestive gland (including salivary gland disease, liver disease, pancreatic disease), stomach upset, rumen disease, rumen, expansion, flap stomach obstruction, stomach, and gastroenteritis, acute substance hepatitis should cause field (door). This paper introduces the prevention and treatment of common digestive tract diseases in sheep, for your reference.

1 ORAL DISEASES — SHEEP STOMATITIS AND SHEEP STOMATITIS (INFECTIOUS SHEEP ABSCESS)

Stomatitis is a superficial and deep tissue inflammation of the oral mucosa that is characterized by salivation, eating, and chewing disorders. Clinically common is catarrhal stomatitis, bullous stomatitis, ulcerative stomatitis. Sheep infectious abscess, commonly known as sheep stomatitis, is an acute contact infection caused by sheep infection with sheep infectious abscess virus. The clinical manifestations are papules, pustules and ulcers in the skin mucosa of sheep lips. Scrub formation. symptom.

1.1 Prevention

One is to strengthen feed management, reasonable distribution of feed, prevent sharp contamination feed damage oral mucosa, the other is to prohibit feeding. Feed is moldy and deteriorated; third, avoid damaging drugs and equipment when raising or opening pens; fourth, infectious sheep abscess (stomatitis) and other diseases; pay attention to prevention, vaccination, isolation, disinfection and treatment as needed.

1.2 Treatment

Ulcers can generally be washed away with 0.1% to 0.2% potassium permanganate solution. In case of erosion or leaching, wash with 2% alum solution. If the oral mucosa has ulcer or oral ulcer virus infection, pustules, ulcer or scab appear in the skin or labial mucosa, it should be cleaned with 0.1%~0.2% potassium permanganate solution, and then clean with iodoglycerin. second-hand. Apply 1 portion of 6% iodine tincture, 10 parts of glycerol) or tetracycline ointment or erythromycin ointment to the affected

area.

2 OESOPHAGEAL DISEASE — OESOPHAGEAL INFARCTION

Esophageal infarction refers to the food block, eating mass, foreign body and other stuck in the specific parts of the esophagus, blocking the esophagus, causing the lower pharynx, hiccup disorders. Acute disease. Clinically, it is characterized by sudden dysphagia, salivation, mesh, and dyspnea.

2.1 Prevention

One is to prevent sheep from excessive hunger for swallowing a large amount of bulk or dry powder feed, the other is to properly grind and process the feed, and the third is.

First, when feeding the root or tuber feed, it should be chopped and then fed;

2.2 Treatment

According to the blockage site and the nature of the blockage, the blockage is removed by removing, falling, and squeezing (crushing).

The procedure involves cutting the esophagus to remove the blockage.

3 Before Gastric Stasis, Rumen Accumulation, Rumen Expansion, And Ruminant Obstruction

Sheep are herbivorous ruminants, and the physiological structure and function of the forestomach determine its susceptibility to forestomach diseases. Anterogastric hypoplasia is a gastrointestinal disease caused by the decreased excitability and contractility of the forestomach, resulting in long-term anorexia and large fluctuations, burping and rumination disorders, decreased ruminal peristalsis, and recurrent constipation and diarrhea. The ruminal food accumulation is the accumulation of excessive food in the rumen, leading to the enlargement of the rumen.

Severe dyspepsia diseases caused by gastric wall expansion and volume increase. The clinical features include no grazing, no rumination, ruminal enlargement, swelling and depression in the left lower abdomen, hard rumen contents, weak peristalsis, and delayed defecation. Rumen distension refers to the fermentation of food in the rumen or excessive fermentation under the action of rumen microorganisms, which rapidly produces a large amount of gas, causing the expansion of the rumen wall and the volume increase, and is a disease that causes belching and rumination disorders. The clinical features were sudden enlargement of abdominal circumference, significant enlargement of the left upper abdomen, percussion tonometry, and dyspnea.

Pangolin obstruction is a disease caused by the decrease of pangolin contraction and dry food in the pangolin stomach. Lime material, dark stomach, constipation, stomach swelling and pain, the secret of stomach food.

3.1 Reason

Because sheep eat too much dry, hard, high-crude

fiber feed, eat too much pea, soy, corn, and other bean concentrates, or suddenly adjust their diet, the microorganisms in the rumen stomach can cause sheep to quickly become unsuitable. Stealing feed rich in carbohydrates causes abnormal rumen fermentation, produces a large amount of lactic acid, causes rumen acidosis, and thus causes disease. Moreover, sheep are more prone to disease if they do not get enough exercise. In addition, if the sheep suffer from anterior gastric weakness, true gastric obstruction, true gastric obstruction, or traumatic retinitis, it may also follow.

3.2 Rumen flatulence

cause

Under normal circumstances, the chyme in the rumen constantly produces gas during the decomposition process, and gradually exits in the form of burping, maintaining the relative balance between gas production and discharge. Easy fermented feed stays in the rumen, causing abnormal fermentation and gas production, so that the rumen volume reaches the upper limit of normal, affecting normal belching, abdominal distension, pain, etc., leading to the occurrence of disease. In spring, sheep are prone to rumen gas accumulation due to changes in feed structure or unscientific feeding management.

Usually the whole winter

3.3 wrinkle stomach disease — creasia

The abomasum is inflammation of the mucosa and submucosa. Clinical features are severe digestive dysfunction, anterior stomach stagnation, anorexia, lachrymal area allergy, mostly secondary.

3.4 intestinal diseases-gastroenteritis, enteritis

Enteritis is an inflammation of the superficial and deep tissues of the intestinal mucosa. Clinically, gastritis and enteritis are often combined with gastroenteritis, which is hemorrhagic, fibrous and necrotizing inflammation of deep tissues of gastrointestinal mucosa. Clinical features include gastrointestinal disorders (gastrointestinal dysfunction), abdominal pain, diarrhea, and a large number of inflammatory products in the stool.

3.5 Flap gastric obstruction.

Cause: Long-term feeding of coarse, hard, and indigestible feeds, such as sweet potato vines, peanut seedlings (stalks) or feed containing sediment, can cause the following symptoms:

Disease: Meat sheep are widely raised and long fed with hay, especially hard crude fiber vines. In addition, the lack of drinking water, transportation Both underexercise and adverse factors can lead to disease. In addition, the disease can also be secondary to other diseases, such as rumen food accumulation, anterior stomach relaxation.

(1) Prevention

The first is to strengthen feed management, provide digestible forage feed, reasonable processing and adapt to feed, the other is to strengthen grazing and exercise. Exercise is helpful for digestion and

absorption, the third is not to feed easy to ferment gas production feed, moldy and deteriorated feed, moist and not dry sweet potato vine leaves, etc.), five is the active treatment of basic diseases. It causes secondary anterior gastric disease.

(2) Treatment

Treatment measures for anterior gastric growth retardation

Eliminate pathogens and improve feeding management." If the feed is moldy or not digested reasons, should immediately stop feeding, first fast for 1-2 days, and then feed easily digestible, nutritious feed, preferably green. The juicy feed was given. Stimulate the anterior stomach, stop fermentation, eliminate the cause, promote appetite and rumination. Ruminant body fluids (5% glucose / 0.9% sodium chloride injection 150-300 mL, 10% sodium chloride injection 20-50 mL, 5% calcium chloride injection 20-50 mL, 20% benzene / sodium formate injection 2 mL liquid), 1 i. v. Or subcutaneous injection of neostatin sulfate 2 mL Min injections twice daily to promote rumen excitability and peristalsis. exclude the gastric contents. For example, oral magnesium sulfate 50-100 grams into 10% aqueous solution, and 100-200 ml of paraffin oil orally. (4) Treatment of Traditional Chinese medicine Veterinary medicine mainly adopts syndrome differentiation treatment, mainly to invigorate the spleen, exercise qi, dispel accumulation, and choose drugs according to the specific condition and on-site inspection. Treatment experience prescription: 10-15 grams of fried hawthorn, 10-15 grams of fried malt, 10-15 grams of fried divine comedy, 10-20 grams of tangerine peel, 10-15 grams of magnolia bark, 15-20 grams of wood fragrance, 10-20 grams of radish, white 10-20 grams, 15-20 grams of dry ginger grams, licorice 6.0-10.0 grams, a total of the final grind, boiling water decoction, twice a day, or soup mixed clothing, twice a day.

(3) Treatment of ruminal dyspepsia

Massage the rumen to promote the emptying of the rumen contents. (2) Promote rumination and rumen peristalsis; Take salt laxatives or oil laxatives (magnesium sulfate, paraffin oil, etc.) to remove gastric contents. After laxative, 10 - 20 mL of tincture and 5 - 10g of thiosin were given to prevent fermentation. Symptomatic treatment is needed in severe cases. Enhance heart function and replenish water, alleviate and correct acidosis and so on. Veterinary treatment in China. In Traditional Chinese medicine, the food accumulated in the rumen is called the grass, which mainly strengthens the spleen and appetizing, eliminates food and qi, and causes stagnation. Treatment prescription: 10-15 grams of rhubarb, 10-15 grams of fructus aurantii, 10-15 grams of fried hawthorn, 10-15 grams of fried malt, 10-15 grams of fried divine comedy, 10-20 grams of tangerine peel, 10-15 grams, 30~50 grams of mango nitrate, 10~15 grams of betel nut, 10~20

grams of radish, powder, boiled water, twice a day or in water, twice a day.

4 CREASIA

The ababasum is inflammation of the mucosa and submucosa. Clinical features are severe digestive dysfunction, anterior stomach stagnation, anorexia, lacomasal area allergy, mostly secondary.

4.1 Prevention

First, to strengthen feed management, use easily digestible and high-quality feed and feed, and provide reasonably matched feed; second, to reduce stressors, improve sheep house and environmental cleanliness; third, to treat early animals actively. A disease that causes abdominal gastritis.

4.2 Treatment

(1) Clean the stomach, stomach and intestines. First, fasted for 1-2 days, along with 100-200 ml of vegetable oil, 100-200 g of artificial salt, and 1000-2000 ml of water.

(2) Anti-inflammatory and analgesic effects; oral tetracycline, florfenicol, methfinomycin or sulfa can be used for anti-inflammatory. If the abdominal pain is obvious, atropine sulfate injection can be injected to relieve spasm and relieve pain.

(3) The stomach helps in digestion. Oral compound Gentian Tincture 10 ~ 30 mL, tangerine peel tincture 10 ~ 20 mL, etc.

(4) Veterinary treatment in China. Traditional Chinese medicine treatment of creomasis mainly to strengthen the stomach, invigorate the spleen and stop yeast. Treatment experience prescription: 10-20 grams of fried hawthorn, 10-20 grams of fried malt, 10-20 grams of fried Divine Comedy, 10-15 grams of fried radish, 10-15 grams of fried betel nut, 10-15 grams of wood, 10-15 grams of magnolia, 10-20 grams of tangerine peel, 10-15 grams of fructus aurantii, 5-10 grams of rhubarb, 15-20 grams of turmeric, fried in hot water, twice a day, or after cooking. After mixing with water, take it twice within 1 day.

5 INTESTINAL DISEASES — GASTROENTERITIS, ENTERITIS

Enteritidis is the inflammation of the surface and deep tissues of the intestinal mucosa. Clinically, gastritis and enteritis are often interrelated, collectively known as gastroenteritis.

Inflammation, namely, hemorrhagic, fibrous, and necrotizing inflammation in the deep tissue of the gastrointestinal mucosa." Clinical features include gastrointestinal disorders (gastrointestinal dysfunction), abdominal pain, diarrhea, and a large number of inflammatory products in the stool.

5.1 Prevention

One is to properly manage feed, do not give moldy feed, prevent sheep from eating feed contaminated by toxic, harmful substances or toxic and harmful chemical substances; two is to avoid stimulating stressors, do sanitary disinfection, reduce toxic substances. Potential infection with pathogenic

microorganisms; fourth, active treatment of underlying diseases that cause gastroenteritis; fifth, scientific planning for routine vaccination and herd repellent.

5.2 Treatment

(1) Antibacterial and anti-inflammatory effects. Sulfonamide 2.5-5.0 g, 2.5-5.0 g of sodium bicarbonate orally twice daily (twice the initial dose), intramuscular gentamicin 160,000-320,000 U, intramuscular injection 0.5-1.0 g of florfenicol injection are also acceptable." For fungal gastroenteritis, antifungal drugs such as nystatin and amphotericin B should be used.

(2) With laxative, anti-fermentation effect, gastrointestinal purification. 100-200 mL vegetable oil, 5-10g fish sulfur, 10-20 mL alcohol, water, internal service.

(3) It has the convergence effect and the anti-diarrhea effect. When taken orally, 0.1% potassium permanganate solution 500~1000 ml, medicinal carbon 30~80 grams, 5~10 g sodium bicarbonate, add appropriate amount of water oral.

(4) Strengthen the heart, replenish water, detoxification. In mild cases, appropriate oral rehydration salts (ORS) can be used, and in severe cases, 0.9% sodium chloride injection 500-1000 ml, 20% sodium chloride injection 5-10 ml, 25% vitamin C injection, 5% sodium bicarbonate injection 250-500 mL, i. v.

(5) Veterinary treatment in China. Traditional Chinese medicine treats enteritis mainly by clearing away heat and detoxification, reducing inflammation and relieving pain. Prescription: 10-20 grams of *Scutellaria baicalensis*, 10-15 grams of *Coptis chinensis*, 10-15 grams of yellow cypress, 10-15 grams of *Scutellaria baicalensis*, cassia bark 10-15 grams of *Scutellaria baicalensis*, 10-15 grams of turmeric, 6-10 grams of licorice powder, decocted in boiling water twice daily, orally or decoction with two medicines twice a day.

6 LIVER DISEASE - ACUTE PARENCHYMAL HEPATITIS

Acute parenchymal hepatitis refers to the liver disease characterized by hepatocyte degeneration and necrosis due to the action of infectious or toxic substances.

scorching.

6.1 Prevention

First, to strengthen the feeding management, to prevent feed mildew, toxic and harmful substances, chemical poison poisoning.

The sanitary disinfection of the sports field can reduce the infection caused by the invasion of bacteria, viruses, parasites and other infectious sources; third, pay attention to liver protection.

Such as reducing the use of liver-damaging drugs to protect the liver, or increasing the use of liver-protecting drugs. Fourth, we will make good routine immunization and herd immunity programs.

Deworming is effective.

6.2 Treatment

(1) Eliminate the etiology. Stop feeding moldy feed or feed suspected of containing toxic and harmful substances (pollution, etc.), and actively treat the basic diseases. If it is caused by bacterial infection, then give antibiotics, anti-inflammatory drugs and other selective treatment. If caused by parasites, choose treatment with anthelmintics.

(2) Protect the liver and benefit the gallbladder. 25% glucose injection 50-100 mL, or 5% glucose-0.9% sodium chloride injection 100-500 mL, 25% vitamin C injection 10-15 mL, 5% vitamin B1 injection 2-5 mL, 2% Gantel injection 10-20 ml, i. v.

(3) Veterinary treatment in China. Mainly clear away heat and dampness, clear away heat and diarrhea fire. Prescription of treatment experience: 20-30 grams of mugwort, 10-15 grams of rhubarb, 10-15 grams of *Scutellaria baicalensis*, 10-15 grams of gardenia, 20-30 grams of isatidis root, 10-15 grams of tangerine peel 6-10 grams of licorice, ground powder, hot water, twice a day, or two doses, twice a day.

7 SUMMARY

Digestive system diseases are the most common and inevitable diseases in clinical practice. It is necessary to strengthen the management of sheep feeding, increase the responsibility of keepers, promote scientific feeding methods, and prevent oral diseases. Early treatment of sheep gastrointestinal diseases should be detected, diagnosed and treated early. Observe the dietary management of sick sheep (first stop feeding for 1-2 days), clean up the intestines and stomach, make timely clinical diagnosis, and make rational drug use. Chinese medicine treatment of gastrointestinal diseases is very good, can be treated with integrated Chinese and western medicine.

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A Study of Body language in music and Dance of Tang Dynasty

Yujun Ni

Philippine Christian University Center for International Education, Manila, 1004, Philippines

Abstract: As the representative of classical dance in China, tang Dynasty music and dance, the body language conveyed in its posture and movement has important research value of dance culture, which can form great inspiration and reference for modern dance in China. With the help of the beautiful dance forms of music and dance in the Tang Dynasty, it can not only reflect the heyday of the economic, political and cultural development of the Tang Dynasty, but also promote the evolution of the whole Asian dance culture. Tang dance posture movement in the body language, to some extent, shows the culture of the tang dynasty aesthetic, more can with the diversity of style and rich content, form the form of music, music, hu, compatible, therefore, strengthen the study of the tang dynasty dance, can from the study of Chinese classical dance form great inspiration and promote. This article will dance in the tang dynasty as the research object, now analyzes the causes of the tang dynasty dance movements, combined with the formation of the tang dynasty dance movements and dance movements body language representation, strive to fully show the tang dynasty dance importance in the study of classical dance, and form the current dance education and classical dance body language construction.

Keywords: Music and Dance in Tang Dynasty; Posture and Movement; Body Language; Artistic Value

1. INTRODUCTION

Body language is mainly to convey information and exchange thoughts and emotions through the changes in body posture and movements. Among them, the posture and movements of the dancers in the Tang Dynasty dance are the body language, which can play the functional expression of silent and sound, and leave a large imagination space for the audience. Tang dynasty dance as an outstanding representative of ancient dance, the dance body language has strong cultural connotation and artistic connotation, also can show the ancient aesthetic of dance art, form the full display of ancient traditional culture and art, this paper focuses on the body language, to reshape and protect the tang dynasty music and dance has great significance.

2. ANALYSIS OF MUSIC AND DANCE IN TANG DYNASTY

2.1 The artistic tracing of music and dance in the Tang Dynasty

Music and dance in the Tang Dynasty mainly refer to the traditional dance art of the Tang Dynasty. It is the dance art form formed on the basis of inheriting the traditional dance art and integrating into the foreign new style, which can show the peak of classical dance art and has an important role and value in the history of Chinese art. From the analysis of its artistic value, it can be defined as the carrier of absorbing foreign excellent culture and spreading traditional Chinese culture. From the Three Kingdoms period at the end of the Eastern Han Dynasty, through national division and political turmoil, and in the process of frequent wars, it formed the mutual exchange and integration of different ethnic cultures, and then gathered a variety of cultural connotations, laying a foundation for the formation of music and dance in the Tang Dynasty [1]. From the perspective of the form of music and dance in the Tang Dynasty, to some extent, it inherited the characteristics of the traditional music of the Central Plains and the ethnic minority music and dance, and absorbed a large number of artistic essence of foreign music and dance, thus showing the compatibility and breakthrough of ancient Chinese art and culture.

2.2 The form and artistic uniqueness of music and dance in the Tang Dynasty

In the study of the tang dynasty dance art, not only from the ideas of the study, but also from the perspective of human body development, thinking about the vitality of dance art, and with the help of dancers body movement, form the understanding of life and thought, further form the reconstruction of the tang dynasty culture [2]. In the process of studying the artistic uniqueness of music and dance in the Tang Dynasty, it can be found that in addition to the expression of body culture, it can also convey the connotation of humanistic thought at that time, which can be used as the concentrated embodiment of the materialization of aesthetic consciousness in the Tang Dynasty, and then show the ideology and culture of the Tang Dynasty. In the tang dynasty dance can profoundly reflect the influence of Confucianism and Buddhism, relying on the enlightened political and economic prosperity, let the culture of the tang dynasty is more open inclusive attributes, it not only has its own cultural development, also embraced a lot of foreign ideas and culture, especially with the development of the silk road, let Japan, Europe and other countries cultural thought into China, formed a variety of forms of art mode. Among them, music and

dance in the Tang Dynasty are most influenced by Confucianism, and they can feel a lot of "rites" in the body form of music and dance in the Tang Dynasty."The analects of Confucius" in the "eight yi dance Ding Ting, is can endure which cannot endure" can profoundly show the tang dynasty dance etiquette culture, and let the tang dynasty dance contains many composed of dance, let posture movements contains "ritual" intention, then let music dance show people, man and nature, man and the universe of Confucianism.

2.3 Normalization of music and dance posture movements in the Tang Dynasty

In the music and dance of the Tang Dynasty, it can also reflect the basic aesthetic forms of ancient times, in which qi, rhyme, line and God are the core of Chinese classical aesthetics. In the Tang Dynasty, music and dance, as the typical art form of the Tang Dynasty, can fully show the characteristics of traditional aesthetics and fully express the thoughts of ancient Chinese aesthetics. Among them, the music and dance of the Tang Dynasty are mainly concentrated between the movements and movements, showing a strong vitality for the viewers. In the process of harmonizing the breath, the music and dance dancers in the Tang Dynasty mainly control the interaction between the breath in the body and the inner breath between heaven and earth, and then sink the breath under the feet. No matter the speed of the

dance pace, they can show the agile visual effect. In the process of breathing structure, dancers need to keep fast suction and slow vomiting. The so-called fast breathing is not to pause, but to maintain fluency, while slow breathing is to convey humility by breath, and then form the overall charm cycle, forming a more introverted aura. Specifically, the tang dynasty dance in the hook rebate salute, its main essence is the breath from the foot, and by a foot backward, a foot rebate, and at the same time the arm to flat position, form artistically whole throughout, and in the body when exhale chest recovery, the arm in the shoulder back into ritual. This body movement can form a dynamic artistic charm, and show the modest and polite body language, reflecting the unique vivid and dynamic artistic charm.

In order to express the elegance and beauty, the tang Dynasty music and dance also need to ensure the standardization of the body movements. The dancers need to maintain the standardization of every twinkle and smile, and then try to express the body language. Take a woman's dance movements as an example, the head should not show any large movements to reflect the sense of modesty; and the jaw is slightly recovered, the head is slightly low, the eyes with the chest and the head looking down and slowly, and keep C posture (Figure 1). This is obviously different from the classical dance O and Dunhuang music dance S, see Table 1.

Table 1 Different points in the posture of "C, O and S"

factions	Body sign	source	Power point	Body language characteristics
Tang le dance	C	Music score, dance score	the pubic region	Demure, modest
Body rhyme system	O	Opera refining	waist	Smooth, chic
Dunhuang system	S	Mural paintings, grottoes	hip	Charming, mysterious



Figure 1 C posture of music and dance in tang Dynasty

3. THE INHERITANCE VALUE OF BODY LANGUAGE OF MUSIC AND DANCE IN THE TANG DYNASTY

3.1 Main forms of music and dance in the Tang Dynasty

In terms of physical movements, music and dance in the Tang Dynasty not only inherited the music and dance style of the previous generation, but also acquired a variety of dance artistic characteristics from outside the region, thus showing the absorption and inheritance attributes of music and dance in the Tang Dynasty and forming a relatively distinct artistic style[3]. The main forms of music and dance in the Tang Dynasty are summarized now:

(1) Ten music. This form is mainly upgraded on the original basis, which can be compatible with the evolution of the folk music and dance in the Tang Dynasty and the world music and dance, and then form a variety of structural forms, which are concentrated on the praise of the prosperous scene at



that time. The different structure form will exist some distinguishing features, such as qing body movements is graceful and elegant, dancers need to deliver a calm slow body language, and turtle is mainly use foreign dance culture show tanghua color, and can use rapid agile posture movements, easily vivid eyes and expression, music dance performance, impress the viewer.

(2) ji and sitting ji. The form structure is on the basis of ten music, according to different scenarios to distinguish (figure 2), more in the way of both, form a relatively complete music dance works show, such as "broken music", is adopted the department combined with the department, more vividly show the tang dynasty music dance body movements, according to the relevant research data, the music dance works mainly in battle formation change arrangement, music with the change of battle formation change, form a staggered, grand art show.

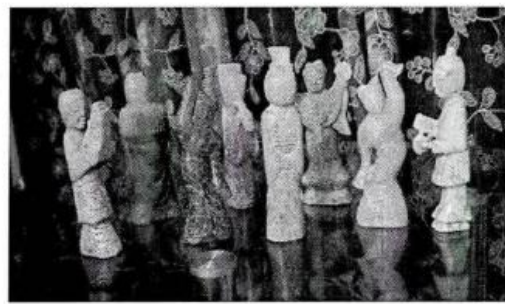


Figure 2 Schematic diagram of sitting and standing ji performing

(3) Healthy dance and soft dance. The two kinds of posture movement transfer body language for masculine and feminine, can clearly reflect the traditional philosophy of Yin and Yang, in the concrete dance show, form high skill action difficulty, and completed by single or double, has strong ornamental and symbolic, can reflect the strong aesthetic charm. Among them, different works will be combined to show different body language. For example, in the Sword Dance, dancers are required to hold a long sword to show the magnificent and heroic feeling, and show the beauty of striving, just like Du Fu's "Huo Ruyi shot the nine-day fall, just like the dragon of the Can of the group. To thunder and anger, such as the river coagulation clear light." Soft dance, on the other hand, requires the soft posture to form soothing language expression. In the song of Spring warbler, it was created by the Tang Gaozong, which expresses the song with the body movements of the early warbler, thus forming the elements of bird sound and bird shape, and then shows the characteristics of soft dance moving with the song and helping the song and dance.

(4) Big song. The music and dance is mainly composed of three parts: scattered sequence, middle sequence and broken, forming a more complex set pattern. Among them, the feather Dance is the

representative work of the structure, forming the interaction and progression of instrumental music, dance and vocal music, which is a legendary stroke for the painting of Chinese classical dance art.

(5) Song and dance drama. The structure is mainly composed of teaching fang teach, used for palace entertainment, as a form of palace song and dance, its song, dance, white, form a special form of art, in the relevant research as the bud of early drama, the famous representative works have "big face" "dial" tread a rumor niang", etc.

3.2 Inheritance value of body art

3.2.1 Inheriting the essence of traditional culture

In the process of the study of the tang dynasty dance, it is not difficult to find the tang dynasty dance classics enduring, and the modern classical dance art research has a great guiding role, in the thorough study of the tang dynasty dance, can form the reproduction of the tang dynasty dance, such as the tang palace banquet works, are able to show the essence of traditional culture. In the study of the tang dynasty dance, Dr Liu Fengxue on the basis of traditional culture principles in the reconstruction of the tang dynasty dance "spring warbler", "qin broken music" (figure 3), etc., not only reflects the tang dynasty dance contains and for your, ritual civilization traditional culture values, also can use the

dancers unique posture, deep describe abundant emotion[4]It has made great contribution to the study

of yan music and dance in tang Dynasty and its related culture.



Figure 3 King of Qin

3.2.2 To promote multicultural exchanges

Among the many works of music and dance in the Tang Dynasty, it is not difficult to see that its artistic styles are relatively diverse, which can form the integration of tang Dynasty culture and foreign culture, and show the cultural implication of openness and integration, and deeply reflect the cultural connotation of music and dance in the Tang Dynasty. Its formation and development was influenced by the Silk Road, and realized the effective communication and exchange between China and the world. Whether in the Tang Dynasty or at present, it can use the inheritance value of the music and dance of the Tang Dynasty, to show the artistic charm and humanistic spirit of the excellent traditional Chinese culture to the world[5], To further realize the exchange and communication of Chinese and foreign art and culture, and then can provide a strong boost for the development of cultural openness.

3.2.3 Meet the spiritual and cultural needs

In the process of in-depth research on the music and dance of the Tang Dynasty, it can be found that it is not only the artistic expression form of ancient times, but also the main way of ancient people to relax and entertain, which has strong historical research value. Strengthen the study of the tang dynasty art, dance also has a larger role in today's society, such as the launch of the tang dance works, is the use of modern dance form, dance in the tang dynasty, not only can let people to feel the scene of the tang dynasty, also can intuitively feel the spirit of the tang dynasty, and then to show the world datang civilization, is impressed by the Chinese traditional civilization.

4. THE LANGUAGE EXPRESSION OF MUSIC, DANCE AND POETRY IN THE MUSIC AND DANCE OF THE TANG DYNASTY

Combined with the types of music and dance of the Tang Dynasty for the cause analysis of body movements, it can be found that it is closely related to the poetry, music and dance of the Tang Dynasty. Without dividing the ancient music and dance, it is necessary to consider the music and dance culture of the Tang Dynasty in the same dimension[6].

4.1 Court music and performance dance

From the cooperation of court music and dance, court music can be divided into elegant music and Yan music, among which the former is used on grand occasions related to the national standard system, while the latter is used in court banquet and other occasions. And tang dynasty court music on the basis of the integration, form twelve and content, for different occasions, and the court banquet music transformation, for ten music, and in the period of Chinese and western music, promote court music has formed a new development, the corresponding with court music also formed the court ceremony dance, used for court feast celebration and other occasions. This kind of music and dance is mainly based on performance, and forms different types, such as healthy dance and soft dance. The former has a bright rhythm, while the latter has a slow rhythm, showing the beauty of vigor and softness respectively. In this period, the forms of music and dance include Hu Xuan dance, Hu Teng dance, Zhe Zhi dance, green waist dance, etc. Hu Xuan dance is mainly the performance of young women, which mainly reflects the word "xuan" and shows the dynamic characteristics of young women. Hu Teng dance is mainly a dance performed by young men, mainly with the body movements, eyebrows and eyes, and with the performers' light shirt and grape belt, forming a unique aesthetic feeling. The main body language of Zhe Zhi dance is graceful, light and elegant, combined with the embroidered curling dummy hat of the performers, forming a pleasing picture. The green waist dance is mainly intended to express the light and graceful, soothing and soft body characteristics of the performers, so that the dancers can look like red birds raising their wings to fly. Through the combination of various body movements, on the one hand, it shows the artistic characteristics of performance, and on the other hand, it can meet the needs of various cultural exchanges at that time. This kind of palace music and dance was very popular at that time. For example, Tang Xuanzong organized large-scale music and dance performance every year.

4.2 Folk music and folk dance

Folk music in the tang dynasty has a strong mass base

and vitality, in the study of folk music in the Tang Dynasty found it not only covers many classic folk songs, from the folk music to the field of elegant music, also condensed the product of people labor, can reflect the real folk music in the Tang Dynasty folk life[7], Then formed a relatively strong artistic rendering force. In terms of content, it can be classified as labor song, elegy, ritual and vulgar song, etc., and can be differentiated according to different regions. The development of folk music can form the harmonious development of refined and popular Tang culture, and then form a cultural scene of both refined and popular tastes. Among them, the poetry of the Tang Dynasty was relatively prosperous, and it became the main content carrier of musical works and song and dance works. The folk dance of music and dance in the Tang Dynasty also comes from the daily life of the working people in the strata, and is used for self-performance and entertainment. In structure and form, it is mostly used to dance with the cheerful music, and the step singing is popular. In the period of Emperor Xuanzong of the Tang Dynasty, folk folk music and dance were widely used in the banquet performances of the imperial court, and a new form of music and dance was formed to pray for peace and harmony in Anqing.

4.3 Integration of music, dance and poetry

If the in-depth analysis of Tang Dynasty music and dance, it can be found that its art form is mainly a combination of music, dance and poetry, forming a large-scale comprehensive song and dance drama, which is not only an important part of Chinese classical dance, but also shows the prosperous social scene and excellent Chinese culture during the Tang Dynasty[8]. Take the song as an example to analyze the body language of music and dance in the Tang Dynasty.

As an outstanding representative of music and dance in the Tang Dynasty, "The Song" can fully reflect the profound artistic attainments in music, dance and poetry of the Tang Dynasty, and bring a strong aesthetic feeling to people. From the analysis of the body movements of the dance, it can be found that its expression form is not fixed, including solo dance, pas de deux and group dance. In the whole work is filled with a lot of rotation, longitudinal and other dance movements, and show the low sleeve mood. The analysis of this work shows the effective integration of the traditional culture of the Central Plains and the characteristics of the Western Regions, and the music is mainly adapted from the Brahmin Song of the Western Regions[9], Make the music style form a gentle implicit, beautiful and fresh characteristics and passionate and enthusiastic, the typical characteristics of the compatible appearance. According to the music, the unique dance form is formed, including the basic posture of the Central Plains Han Dynasty "small hand" dance, as well as the typical movements of "Hu Xuan dance" and

"around the wrist" in the Qiuci dance[10], Form a more unique impression. In Bai Juyi's "neon clothes feather clothes dance song", the dance movements is described, " the first beat, the autumn bamboo pole cracked spring ice cracked; the floating rotation back to the snow light, the dragon jing; the small hanging hand after the willow is weak, the slanting train of the clouds, the smoke moth is slightly weak, the wind sleeve low if love; the calyx green, the queen mother do not fly qiong." 。 Then, the organic integration of music, dance and poetry in the culture and art of the Tang Dynasty is formed, and the aesthetic characteristics and iconic paradigm of music and dance of the Tang Dynasty are reflected to a certain extent.

5. CONCLUSION

To sum up, the study of the body movements in the music and dance of the Tang Dynasty can find that it has a unique body language, which can deeply convey the openness and compatibility of the Tang culture, and show the charm of Chinese traditional culture and art. In the study of the artistic value of the Tang Dynasty dance, can be found in the posture of the unique body art, with strong national traditional culture and aesthetic inheritance value, thus to the Tang Dynasty dance of the body language as the study of its cultural value, to some extent, can reproduce the cultural characteristics of the Tang Dynasty society.

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Impact of the Medical Device Registrant System on the Medical Industry

Jiayao Deng¹, Wenbo Zhang², Qingfeng Bu^{1,*}

¹School of Medical Instruments, Shanghai University of Medicine and Health, Shanghai, China

²College of Agricultural & Environmental Sciences, University of California, Davis, US

LOOOOOOGLE@163.com

Abstract: This document provides a comprehensive overview of the latest advancements in artificial intelligence, focusing on the development of intelligent systems that can learn, reason, and perform tasks autonomously. Key topics include machine learning algorithms, natural language processing, computer vision, and robotics. The paper also explores the ethical implications and societal impacts of AI technologies, emphasizing the need for responsible innovation. Strategies for integrating AI into various industries and the future prospects of AI research are also discussed.

Keywords: Innovation; Sustainability; Artificial Intelligence; Globalization; Resilience

1. INTRODUCTION

The Medical Device Registrant System (MDRS) is a system where the registrant takes primary responsibility for the quality of medical devices throughout their lifecycle. Under this system, registrants can delegate the production of their devices to different manufacturers during the registration and production phases. The MDRS was first piloted in Shanghai in 2017 and fully implemented on June 1, 2021. This system has made the relationship between medical device registration and production more flexible, decoupled the two certifications, optimized resource allocation, and injected new vitality into the medical industry. Moreover, the regulations state: "Medical device registrants and filers should strengthen quality management throughout the lifecycle of medical devices and are legally responsible for the safety and effectiveness of devices during research, production, operation, and use." This regulation fundamentally minimizes risks and helps create a safer medical industry. As the MDRS was officially released and implemented in recent years, research on this subject is limited, with most focusing on pilot studies. This paper compares the changes in the medical industry before and after the implementation of the MDRS to explore its effects and aims to deepen and enrich theoretical and practical research in this area, filling current research gaps and providing significant theoretical reference value.

2. LITERATURE REVIEW

Medical device registration systems vary across countries. The U.S. FDA certification ensures the safety, legality, and effectiveness of medical devices

on the market by incorporating products into the FDA's regulatory system. Only devices approved by the FDA can be legally sold in the U.S., significantly improving product safety and reliability and enhancing user trust, thereby promoting the healthy development of the medical industry. Japan's PMDA, in cooperation with the Ministry of Health, Labour and Welfare, manages medical device registration, regulation, and international cooperation, playing a crucial role in the entry of medical devices into the Japanese market and promoting the development of the international medical industry. Baines Rebecca et al. (2023) used inductive thematic analysis and activity theory to study stakeholders' experiences with medical device certification in the UK and EU, revealing that the current certification process is unsuitable, unethical, and unsustainable, particularly affecting small and medium-sized enterprises (SMEs) and stifling innovation. Establishing a sustainable regulatory framework that ensures high safety while supporting innovation is still a long way off.

Xu Man et al. (2021) concluded from expert consultations that the MDRS pilot effectively optimized resource allocation, creating new opportunities for medical enterprise innovation and accumulating experience in implementing corporate responsibilities. Zhao Yang et al. (2021) analyzed the pilot work of the MDRS, indicating that while it improved the quality and safety of medical devices, it also stimulated industry vitality, achieving initial success. Zheng Xiaomei et al. (2022) found through research and document interpretation that since the implementation of the MDRS, Jiaying has seen a significant increase in medical device production enterprises and registered medical products. The policy benefits have led to a rapid clustering and high-end development trend in the medical industry. Su Gui et al. (2023) studied the MDRS pilot in Hunan through on-site inspections of contracting companies, showing that while the MDRS stimulated innovation in the medical device market, it also presented risks, requiring further system improvement. Huang Wei et al. (2023) concluded from regulatory analysis and institutional research that cross-regional contracted production under the MDRS broke regional limitations and promoted resource optimization, achieving high-quality development of the medical industry but also introducing new regulatory

challenges. Xing Bingbing (2022) found through literature analysis, field research, and comparative analysis that while contracted production under the MDRS brought benefits, it also introduced risks.

3. COMPARATIVE ANALYSIS BEFORE AND AFTER THE IMPLEMENTATION OF THE MDRS

3.1 Medical Device Registration and Production Licensing

Before the implementation of the MDRS, the 2017 version of the "Regulations on the Supervision and Administration of Medical Devices" stipulated in Article 27: "The instructions and labels of medical devices must indicate the name and address of the manufacturing enterprise, the production address, and contact information." This requirement did not extend to medical device registrants and filers, implying that only manufacturing enterprises could apply for medical device registration licenses. At the same time, to apply for production licenses, manufacturing enterprises had to submit corresponding proof and the registration certificate of the medical devices they produced, binding registration and production licensing together and making them inseparable. This created long approval cycles and cumbersome processes, increasing time and costs for enterprises, delaying the timely market entry and supply of medical products, stifling the innovation vitality of the medical industry, and seriously affecting the normal order and stable development of the medical device market.

After the implementation of the MDRS, medical device registration and production licensing were decoupled. The "Administrative Measures for the Registration and Filing of Medical Devices" (No. 47) clearly states that "applicants and filers must be entities capable of assuming corresponding legal responsibilities." This means that the roles of registrants and filers are no longer restricted to manufacturing enterprises. Medical device registration applications and production licenses can now be handled by different entities, fundamentally changing the traditional model of production before registration. This greatly mobilized the enthusiasm of medical enterprises and research institutions. The MDRS also introduced new options for contracted production: medical device registrants can choose to apply for production licenses themselves after obtaining product registration certificates and becoming manufacturing enterprises, contract out production to other manufacturing enterprises, or use another registrant's product registration certificate to apply for production licenses, thus becoming a contracted manufacturing enterprise. This lays the foundation for the transformation of medical enterprises and highlights future development directions.

Decoupling registration and production licensing broadens the market entry threshold, promotes participation from more enterprises, increases market competition, and drives high-quality development in

the medical industry.

3.2 Contracted Production

Before the implementation of the MDRS, contracted production of medical devices was a common production model, providing convenience and flexibility to some extent. However, traditional contracted production also had drawbacks and risks. The 2017 version of the "Administrative Measures for Production Supervision" stipulated that generally, domestic registrants or filers could only contract one manufacturing enterprise to produce a particular product at a time, and the contracted enterprise had to have the corresponding production license or Class I medical device production filing. Additionally, non-innovative medical device samples could not be contracted for production. Limited numbers of contracted parties and high market entry thresholds led to low enthusiasm for contracted production, with many medical enterprises handling registration and production themselves, consuming significant time, money, and effort, and making it difficult to optimize resource allocation, hindering the healthy development of the medical industry.

After the implementation of the MDRS, stricter regulation and norms for medical device contracted production were introduced, bringing new opportunities and driving industry development.

The 2021 version of the "Regulations" states: "Medical device registrants and filers may produce medical devices themselves or contract compliant enterprises to produce them." The MDRS expands the number and range of contracted parties, accelerating product market entry and production. Registrants and filers, no longer confined to being manufacturing enterprises, can contract out production, and the contracted parties can use the registrant's product registration certificate to apply for production licenses or filings. Clear division of labor and reasonable resource integration further develop the medical industry.

The MDRS breaks the traditional bond between product registration and production, allowing non-manufacturing enterprises to register first and then produce, streamlining processes and speeding up market entry. Compared to traditional contracted production, the MDRS requires less from both parties, enabling a single contractor to work with multiple contracted parties, optimizing resource allocation and fostering cooperation, thereby stimulating innovation in the medical industry.

4. IMPACT OF THE MEDICAL DEVICE REGISTRANT SYSTEM ON THE MEDICAL INDUSTRY

4.1 Stimulating Enterprise Innovation

With the continuous advancement of medical technology and the growing demand for medical care, the medical device industry has become a hotbed of innovation. The implementation of the Medical Device Registrant System (MDRS) has provided

strong support for the release of enterprise innovation vitality. As an important management system in the medical device industry, the MDRS not only standardizes market order and ensures patient safety and rights but also promotes product technology innovation and progress, tapping the innovative potential of medical enterprises, thereby promoting the healthy development of the medical industry. The system stimulates the cultivation of innovation awareness, encouraging registrants to continuously engage in technological R&D and product improvement to meet market demand. The system enhances technological innovation capabilities by decoupling product registration from production licensing, allowing registrants to focus more resources and effort on technological advancements and innovation, leading to the launch of market-competitive innovative products. The system also drives market competition and industry development, widening market entry thresholds and increasing competition levels, where only those registrants with innovation capabilities and competitive advantages can survive and thrive. Therefore, through market competition, the MDRS indirectly promotes technological innovation and product upgrades in medical enterprises, facilitating coordinated industry development.

4.2 Innovation Project Approval and Authorization

The 2021 "Regulations" state that to promote the market launch of innovative medical devices, the country has further refined the medical device innovation system, prioritizing the development of innovative medical devices, which enjoy priority review and approval. Additionally, the regulations encourage medical institutions to conduct clinical trials for innovative medical devices, offering commendations and rewards to units and individuals making significant contributions to innovative medical device research. Using 2021 as a benchmark, from 2014 to 2020, the National Medical Products Administration approved 99 innovative medical devices for market launch, whereas in 2022 and 2023 alone, the number reached 116. The significant increase in the approval of innovative medical devices highlights the strong support for innovation projects. Specifically, in 2022, the number of innovative medical devices approved increased by 57.1% compared to 2021, better meeting the public's need for high-quality medical devices. In 2023, China's medical device registration management was further strengthened, improving technological levels and significantly increasing the quantity and quality of innovative products, reflecting a positive trend in the industry's development[1].

4.3 Optimization of Resource Allocation

Before the implementation of the MDRS, China practiced a "bundled" system for medical device production and registration licenses. While this mode achieved standardized product management and

played a positive role in ensuring product safety and effectiveness during the early stages of the industry's slow development, its shortcomings became increasingly apparent with social progress and technological advancements. Inefficient resource allocation led to "malnutrition" in the industry's development. Following a four-year pilot, the implementation of the MDRS in June 2021 broke this rigid situation, allowing diverse resource allocation choices and releasing new development potential. The MDRS separated registration and production licensing, distinguishing registrants and filers from production enterprises, significantly lowering market entry thresholds and simplifying registration processes. The MDRS allows medical enterprises to focus on their core businesses, leveraging their strengths and fostering a cooperative spirit. Registrants can concentrate on R&D, investing resources in designing innovative products and tackling technological challenges, while production entities can focus on improving product quality, allocating more resources to the production process and quality control. This system promotes reasonable division of labor and optimal resource allocation, accelerating product approval and market entry, ultimately benefiting the public.

4.4 Ensuring Product Quality and Safety

The "Regulations" stipulate that medical device registrants and filers must establish a lifecycle quality management system to ensure the safety and effectiveness of medical devices. Safety precedes effectiveness, indicating that the primary goal of the medical industry is product safety, prioritizing public interest.

4.4.1 Medical Device Registration and Filing

The "Administrative Measures for the Registration and Filing of Medical Devices" (No. 47) stipulate: "Applicants and filers must establish and maintain a quality management system appropriate to their products, and ensure its effective operation." This requirement indicates that quality and safety assurance will run through the entire lifecycle of the product, from R&D to after-sales and potential recalls.

Firstly, the MDRS mandates that registrants assume legal responsibility for the safety and effectiveness of their products during the R&D and registration processes, fundamentally reducing the possibility of risks. Secondly, the strict and detailed registration process, along with stringent quality requirements, serves as a barrier against substandard products, adding an extra layer of protection for quality and safety. Thirdly, technical reviews and approvals ensure that the product design, production processes, and quality management systems meet all necessary standards.

While registration is just the first step, maintaining dynamic quality management systems and inspection mechanisms is crucial for continuous quality and safety assurance.

4.4.2 Production of Medical Devices

The "Administrative Measures for Production Supervision" (No. 53) stipulate: "In addition to the registrant's and filer's responsibility for the quality and safety of medical devices, contracted production enterprises must establish and maintain a quality management system in accordance with the requirements of the 'Good Manufacturing Practice for Medical Devices' and ensure its effective operation."

Firstly, a comprehensive quality management system must be established. From raw material procurement to processing, assembly, and quality inspection, medical devices go through multiple procedures from initial components to finished products, and any slight error can lead to substandard product quality. The aim of establishing a quality management system in production enterprises is to ensure that the production process meets relevant regulations and standards, guaranteeing product quality and safety.

Secondly, strict control over production processes must be maintained. Production enterprises should develop detailed standard operating procedures (SOPs)[2], adopt advanced production technologies and equipment, and establish rigorous product quality control and inspection systems to ensure that the production process runs smoothly and that product manufacturing is stable and controlled, preventing quality issues caused by process instability.

Thirdly, personnel training and management must be strengthened. Production enterprises should establish strict personnel management systems and provide systematic training to ensure that production personnel have the necessary operational skills and quality management knowledge, and comply with production procedures and quality management requirements, thereby safeguarding the safety and quality of medical products.

4.4.3 Market Supervision of Medical Devices

Market supervision is another effective means of ensuring product quality and safety. On May 1, 2022, based on the "Regulations," the State Administration for Market Regulation issued and implemented the "Administrative Measures for Production Supervision" and the "Administrative Measures for Operation Supervision." These measures comprehensively enforce the MDRS, detailing regulatory actions and optimizing supervision methods.

Firstly, the establishment of a medical device information disclosure platform makes the production, operation licensing, filing, and supervision information transparent and accessible. This transparency allows the public to compare and evaluate different products, making informed choices, while also subjecting enterprises to public scrutiny. This ensures that enterprises strictly comply with relevant regulations and standards during the production and operation processes, thereby safeguarding product quality and safety.

Secondly, the establishment of a comprehensive product traceability system ensures that medical device registrants, filers, production, and operation enterprises can trace back to the product's registration date, production batch, sales destination, and other relevant information. In the event of quality issues, this traceability facilitates effective recall and ensures the safety and quality of the products. It protects the health and safety of patients and promotes the harmonious development of the medical device industry.

Overall, market supervision under the MDRS strengthens the regulatory framework, enhances transparency, ensures traceability, and reinforces public and regulatory oversight, thereby maintaining high standards of product quality and safety in the medical industry.

5. CONCLUSION

A major highlight and breakthrough of the MDRS is the adoption of the decoupled registration and production licensing model, breaking the identity constraints of registrants, promoting enterprise transformation, stimulating innovation vitality, broadening market entry thresholds, and reshuffling market layout. The new contracted production model under the MDRS allows multiple partnerships and cross-regional production, increasing product output, breaking regional limitations, fostering cooperation, and optimizing resource allocation. Registrants and filers bear full lifecycle quality responsibility, ensuring the safety and effectiveness of products. The MDRS has invigorated the medical industry, aiding high-quality development.

However, the MDRS also faces challenges such as ensuring complete and accurate registration information, overcoming obstacles in cross-regional production supervision, and balancing contracted production with intellectual property protection. Small and micro enterprises, with insufficient funds and weak competitiveness, may find it challenging to enter the medical device market and sustain subsequent development. The MDRS presents both opportunities and challenges. To address these issues, regulatory authorities can enhance supervision and review procedures, establish information-sharing platforms, and sign intellectual property confidentiality agreements. Providing professional registration consulting services and financial subsidies can mitigate the MDRS's impact on small and micro enterprises. Strengthening registrant training mechanisms and government supervision can further improve and optimize the MDRS.

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Tess: A Protagonist Confronting Crisis of Faith

Yang Weifan

College of Foreign Languages and Literature, Northwest Normal University, Lanzhou Gansu Province, China

Abstract: Tess of the d'Urbervilles is Thomas Hardy's most renowned work, yet it was highly controversial upon its publication. Tess, as the protagonist of this novel, holds significant discussion value across any era. This paper examines the three crises of faith that Tess faces, contrasting her responses with those of typical male characters in the book, analyzing the causes of these crises and the possibilities of overcoming them. By exploring different interpretative angles, this paper aims to restore Tess's tragic nature and assess the meaning of purity for both Tess as a character and for modern society.

Keywords: Thomas Hardy; Tess; Crisis of Faith

1. INTRODUCTION

Tess of the d'Urbervilles is the twelfth novel published by Thomas Hardy. Through the protagonist Tess, Hardy strongly condemns the moral and ethical constraints of the Victorian era. The novel tells the tragic story of a beautiful country girl, Tess. Coming from a poor family, Tess was seduced and impregnated by Alec at a young age, facing gossip and scorn from those around her. After her infant child died, Tess endured mental anguish and then regained her strength, finding work at a dairy farm. There she met Angel, and they fell in love and decided to marry. On their wedding night, Tess revealed her past misfortunes to Angel, who failed to understand and abandoned her. Tess worked and lived alone in hardship. Later, misfortune struck again when her father died, plunging her family into economic distress. Alec reappeared and promised to take care of Tess's family, leading Tess to become his mistress. Filled with remorse, Angel returned from Brazil seeking his wife's forgiveness. Upon seeing her husband again, Tess, hating Alec for his deceit, killed him during a quarrel. In the end, Tess was arrested, tried, and executed by hanging.

In 1891, after being rejected by several magazines, Thomas Hardy began serializing Tess of the d'Urbervilles in *The Graphic* and published it as a novel in December of that year. Despite facing severe criticism upon its release, the novel achieved commercial success, bringing Hardy significant income. Tess of the d'Urbervilles was one of Hardy's latest works of fiction, and soon after its publication, Hardy transitioned from writing novels to focusing on poetry. Tess is one of Hardy's most passionately created characters. The controversies surrounding her at the time of publication, and her subsequent role as a lens through which to view the Victorian era, provide

endless interpretive possibilities. Hardy's inspiration for Tess came partly from witnessing the execution of a woman named Martha Brown, who was hanged for murdering her husband when Hardy was 16. Another inspiration came from Hardy's encounter in 1889 with the wife of the renowned British sculptor Hamo Thornycroft at a social event. Hardy described her as "the most beautiful woman in the world" and said she was "the one I thought of when I wrote Tess of the d'Urbervilles." [1] These sources of inspiration combined to form Tess, a beautiful woman beset by troubles and gradually worn down by her struggles.

2. THE CRUSHING WEIGHT OF IDENTITY FANTASIES AND FAMILY DISINTEGRATION

In the course of Britain's historical development, it is often said that periods under a queen's rule were times of great prosperity. Correspondingly, there were two "golden ages" in British history: the 16th century under Elizabeth I and the Victorian era in the 19th century. During the Victorian era, the rapid onset of the Industrial Revolution propelled Britain to the pinnacle of the world. However, while this period was marked by splendor, its prosperity did not directly benefit every British citizen. Economic development advanced British society but also widened the gap between social classes. Compared to the common people, the aristocracy not only had financial advantages but also deeply ingrained class notions that tightly bound reputation and status to their lineage. This naturally engendered awe and aspiration among the commoners toward the nobility.

The misfortune of Tess's family began from this awe and aspiration. Tess's father, John Durbeyfield, was a peddler who one day encountered a parson on his way home. The parson addressed him as "Sir John" and informed him that he was a descendant of a noble family, once wealthy but now fallen into decline. Despite the family's decline, this did not diminish John Durbeyfield's fantasies about his identity; he believed he had inherited the bloodline of his ancestors and thus adopted the airs of nobility. When his wife, Joan, suggested that Tess seek help from their noble relatives, he opposed it on the grounds that, as a direct descendant of the noble name, he should not stoop to seek help from others. This sense of self-respect made it difficult for Tess to refuse her mother's request, leaving her with no choice but to agree.

The hope for a good marriage was also the expectation placed on Tess by the Durbeyfields. Before Tess set off, they hoped that her noble connections would bring her

a good marriage; after she returned disgraced, they hoped Alec would become her husband. Despite their poverty, her father's alcoholism, and her mother's snobbishness, the family should have been a place of trust and reliance for Tess. Instead, Tess became an ornament for the family, a commodity whose tradeable value, in her parents' eyes, lay in her appearance. When a family starts to commodify its members, the stability of family bonds becomes extremely fragile, as trust, once lost, is hard to regain. Her father's identity fantasy was the primary cause that broke the family, and this fantasy-driven strong self-identification seemed worthless to outsiders. After his death, the Durbeyfields could not inherit property and had to move out, emphasizing repeatedly that the past could not return. Consequently, the family's position in Tess's heart changed; since seeking noble connections, she was no longer the girl she once was, and the family became a burden she could not shake off.

3. HOW MORALLY GOVERNED FEMALE BODIES STRANGLE LOVE

Victorian moral values considered female chastity the highest standard for judging a woman's purity and morality. To those living in the Victorian era, marriage was seen as a divine reward for those who adhered to socially traditional moral customs. Therefore, women were required to be virgins before marriage; a woman who lost her virginity was deemed immoral and fallen. This standard was entirely male-centered, based on patriarchal cultural values. The absolute physical purity demanded of women was a pressure and a severe expectation. [2] As Simone de Beauvoir states in *The Second Sex*, "One is not born, but rather becomes, a woman." [3]

In *Tess of the d'Urbervilles*, Alec is depicted by Hardy as a character from a dark world, a hunter driven by desire, with Tess becoming his prey. Alec's seduction left a stain on Tess's body, causing her to be ostracized by her community and lose the possibility of marrying someone else. In contrast, Angel, who appears later, is adored and represents positive qualities, as his name suggests. From the perspective of character depth, Angel is more layered than Alec, allowing us to see how he opposes tradition while paradoxically being trapped by it.

One of the most profound scenes in *Tess of the d'Urbervilles* is Tess's confession on her wedding night. On that night, the light associated with Angel dims and turns to darkness. If Alec is the perpetrator of evil deeds, Angel is the one who opposes the moral values head-on. However, he is closer to the dark side of morality than anyone else. He fails to notice the moral values ingrained in his consciousness, leading him to reject Tess's plea for forgiveness: "forgiveness does not apply to the case!" [4]

Tess's pursuit of love is always driven by her inner self. Her idealization of men is built on tolerance, and her admiration for Angel borders on unshakable faith, directly linked to her inferiority complex and belief in

pure goodness. She is willing to rationalize everything Angel does to her. Ironically, this trait leads her to confess to Angel and continuously attract Alec, who gradually closes in on her and ultimately conquers her. In love, Tess's greatest passivity lies in her constant attraction to men around her. In Hardy's writing, her body sends out signals inviting others, evolving into a threat beyond her control and rejection. Alec reveals this threat, while Angel, momentarily letting her forget it, kills her hopes for love.

Powerless Rebellion and Fate's Fatal Joke

Tess of the d'Urbervilles is imbued with rich religious symbolism, containing nearly seventy references, allusions, and images from the Bible. Hardy uses biblical culture, both overtly and covertly, to enhance the novel's expressiveness and cultural significance. Tess's boldest act of defying religious constraints is baptizing her illegitimate child despite the church's rules. Hardy subtitled the novel "A Pure Woman," indicating his skepticism of societal and religious institutions.

In the 2007 film *Secret Sunshine* by director Lee Chang-dong, the protagonist, Shin-ae, courageously visits the murderer of her son in prison, only to find that he has converted to Christianity and believes that God has forgiven him. Shocked that God had granted forgiveness before she herself could decide to forgive him, Shin-ae's beliefs crumble, and she abandons those who care for her and the religion that encourages forgiveness. Interestingly, a similar scenario occurs in *Tess of the d'Urbervilles*. Alec's transformation is a crucial part of the novel, making his character more complex. Alec's change comes after heeding the advice of old Mr. Clare, deciding to become a preacher, sincerely believing he can clear away others' confusion.

When Alec encounters Tess again, he expresses a verbal apology, believing he has received God's forgiveness. Tess, however, expresses distrust: "You, and those like you, take your fill of pleasure on earth by making the life of such as me bitter and black with sorrow; and then it is a fine thing, when you have had enough of that, to think of securing your pleasure in heaven by becoming converted!" Unlike Shin-ae, Tess's resistance is always weak, as if she inherently believes she is in the wrong. Alec exploits this, making her go from offense to defense. When Alec scolds her for looking at him strangely, she stammers an apology. Fate's manipulation of Tess is gradual. Both Alec and Angel always have opportunities to turn back, but when Tess decides to submit to so-called fate, it lays the groundwork for the next tragedy. In her most difficult times, with no news from Angel, Tess yields to Alec's demands and becomes his mistress, seemingly conforming to worldly rules and believing in fate's plan for her. Angel's return is fate's fatal joke on her. Regardless of her belief in fate, it ultimately eliminates her, with death being the only solution to fate's ultimate problem for her.

4. HOW MEN ESCAPE THE CRISIS OF FAITH AND TESS'S CHANCE FOR SELF-SALVATION

Throughout long-term historical development, it is an undeniable fact that men have held higher discursive power than women in establishing societal rules. This is true in both Eastern and Western societies, in both ancient and modern times. The degree of discursive power directly reflects men's strong desire to control women and the duality that manifests when setting standards. When male-established rules are applied in reality, unfairness arises because, from a judicial perspective, it is absurd if a man's role is both judge and litigant.

The inheritance system built around bloodlines serves as a strong barrier for men to protect their interests. Tess's father, as the head of the family, is a lazy, idle, and irresponsible man. It is not hard to imagine what kind of trials a woman would face if she behaved like Tess's father. In response, men's most effective solution is to maintain their position as judges, placing women within their property domain, becoming commanders who women must obey or be marginalized.

After learning that he is a descendant of nobility, Tess's father exhibits a sense of superiority that transcends class. He uses his limited experience to imagine his deserved status and his meager wealth to fulfill his power fantasies. In the novel, Tess's father's greatest worry is that his ancestors have perished and fallen into decline. Facing this "crisis of faith," he irrationally wraps himself in self-respect. In a family where no effort is needed to be the head, he can always enjoy privileges and dismiss the crisis of faith.

Double standards are the inevitable result of male-dominated societal rules. In times when only men participated in rule-making, such duality was taken for granted. However, as women's economic status and independent consciousness rise, double standards are no longer acceptable. During Hardy's time, when he wrote *Tess of the d'Urbervilles*, gender issues had not yet become a social focus. After learning about Tess's past, Angel's reaction is one of numbness to the shattered truth, goodness, and beauty he once believed in. Hardy spent much effort crafting Angel as a character with pioneering spirit. Yet, when faced with thorny gender issues, Angel loses his pioneering shine because, after all, he remains a man. While women are becoming defined as women, men continue to define themselves as the arbiters of women. It is clear that

Hardy still holds hope for Angel, as he chooses to escape this crisis rather than confront it.

Contemporary readers of *Tess of the d'Urbervilles* might choose Alec over Angel as a partner for Tess. Indeed, from a modern perspective, it is hard to understand why Tess's rejection of Alec is so resolute. Despite the hardships in love and marriage, and Alec's seemingly selfless attempts to please her, Tess should logically alter her attitude, even if not responding with love, at least in a more reasonable manner.

Discussing Tess's potential for self-salvation solely from the character in the book, the answer is inevitably negative. Tess is an extreme combination of inferiority and responsibility, compliance and independence. These conflicting traits could theoretically avoid irreconcilable attributes if well-differentiated. Unfortunately, Tess often fails to overcome inferiority through responsibility and confuses compliance with independence. This creates Hardy's portrayal of a pure woman—Tess. Her purity does not deliberately exclude complexity. The most primitive goodness manifests in her, making her unique, precious, and pure, yet incompatible with reality.

Does Tess's failure in self-salvation render purity meaningless? The answer is also negative. Purity, regardless of time or place, represents a goal we must strive for. Even if it is a task we acknowledge as unattainable, a world pursuing deceit, evasion, suspicion, and profit over all forms of impurity would be more despairing than the one depicted in "1984." From this perspective, Hardy's harsh treatment of Tess and his decision to ultimately execute her reveals his near-total loss of hope and trust in the world he lived in.

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Interpreting the Theme of Humanity in *The Invisible Man* from the Reader-Response Criticism Perspective

Ma Wenxia

College of Foreign Languages and Literature, Northwest Normal University, Lanzhou, Gansu Province, China

Abstract: Reader-Response Criticism, which became prevalent in American literary criticism in the 1970s, refers to a literary theory that values the reader's experience of reading and the reader's interpretation of a text. Reader-Response Criticism emphasizes reader-contentedness and the fact that the meaning of any text is never unique and fixed, because readers will find different values in different times according to different contexts. Herbert George Wells' *The Invisible Man*, published in 1897, is one of his masterpieces of science fiction, full of scientific interest, and at the same time, it provokes readers to think about the negative effects of scientific and technological development on society and human problems. This paper will interpret the human issues in *The Invisible Man* in the context of Reader-Response Criticism, in order to bring readers a deeper and more multi-faceted view of *The Invisible Man*.

Keywords: Reader-Response Criticism; *The Invisible Man*; Human Nature; Thematic Interpretation

1. INTRODUCTION

Iser pointed out that "in creating a work, the writer gives it a certain amount of undefined meaning and gaps; in the process of reading, these undefined nature and gaps send out a kind of call and invitation to the reader, attracting him or her to imagine and fill them in."^①(Hu, 2009: 23) In *The Invisible Man*, this kind of undefinition and blankness is also reflected in many ways, such as the theme and the ending of the novel. According to Iser, "The more gaps and undefined meanings a work contains, the more readers will be able to engage with the work and explore the potential meanings of the work, provided that enough information is provided."^② (Hu, 2009: 23) *The Invisible Man* is a novel in which the expression of thematic meaning gap and undefined characteristics gives readers space for reflection. Wells was good at popularizing scientific knowledge and reflecting it through his novels, which was also the reason for the popularity of his science fiction.

The Invisible Man, published in 1897, is his most widely circulated and popular work. The novel

describes the story of Griffin, a talented and brilliant physicist, who finally invented invisibility after a lot of hard work. However, because of Griffin's selfishness and delusion, this great invention did not become a scientific pioneering work, nor did it benefit himself and human society. Instead, it brought about his own destruction. The storyline of the novel is relatively simple compared with other novels, but what Wells wanted to convey to the readers is not only the progress of science and technology but also the relationship between science and technology and human ethics and morality, and it is worthwhile for the readers to learn and reflect on the human nature issues reflected in the novel.

2. THE OPPRESSION OF HUMANITY BY THE DARK CAPITALIST SOCIAL SYSTEM

In the late 19th and early 20th centuries, Britain was in a period of social change, and the changes that had been brought about by science and technology since the Industrial Revolution were unforeseen by many people. And *The Invisible Man* was a work accomplished against this background. Xu Keming pointed out: "In Wells's works, the bold and unrestrained fantasies about the future of mankind are combined with the sharp criticism of the monstrous ugliness of the modern capitalist social system in which the author lives."^③(1956: 48) In the creation of *The Invisible Man*, Wells also arranged it in the same way. The author's feelings towards the main character Griffin were complicated. On one hand, he severely exposed and condemned Griffin's crimes, showing readers his selfish, cold-blooded, violent and extreme character; on the other hand, he praised Griffin's intelligence and sympathized with his destiny between the lines. The author's most direct intention is to let the readers see the root of the tragedy of the genius physicist Griffin - the capitalist social system.

Griffin does not hesitate to give up his career as a university lecturer and pursued scientific and technological inventions almost obsessively, utilizing optics, physics, medicine, biology, chemistry and other disciplines, and inventing a method to make the refractive index of the human body consistent with that

① Hu Jing. Theoretical Research on the Meaning Blanks and Uncertainty of Iser's Text[D]. Shandong: Shandong University, 2009.22-24.

② Hu Jing. Theoretical Research on the Meaning Blanks

and Uncertainty of Iser's Text[D]. Shandong: Shandong University, 2009.22-24.

③ Xu Keming. Wells's *The Invisible Man* [J]. Popular Science. 1956, (09): 48.

of the air - invisibility. The position of science in the development of society and the progress of human civilization is indisputable, but how can scientists get along with society? As a genius physicist, Griffin is at odds with the society in which he lives. Without the support of scientific research funds, he goes to the extent of robbing his father's money, and loses his father as a result, bearing the infamy of stealing and killing innocent people. Whether science and technology can serve and benefit mankind depends to a large extent on the social system, and the capitalist social system does not provide any guarantee and support for Griffin's research work. In the poor living conditions, he can only keep secret alone to carry out the difficult invention. It must be said that the capitalist social system does persecute human nature, and it is precisely this kind of life and social environment that makes him hostile to the capitalist social system. So, he begins to work against the society, and finally becomes an extremist who is intent on establishing a reign of terror.

3. MAN HIMSELF CAN BE INVISIBLE, BUT "CIVILIZATION" CANNOT

What happens when scientists are just scientists, without human emotion, without empathy with the world, without humanity? Griffin, an albino himself, is a gifted and studious man who is obsessed with experimenting with the art of invisibility. In order to study invisibility, Griffin does whatever he can, robbing his father's money. And, facing the fact that his father shoots himself because of the loss of money, he does not have the slightest sense of guilt. He captures the white cat, the only companion of the old lady downstairs, to do experiments. Afraid of being discovered the secret of his invisibility, he deposits the notebook of his experiments in the post office, dismantles the instruments and equipment, and sets fire to his rented house. When he is again in a situation where he was short of money, he starts stealing and found a homeless man to be his puppet, who becomes a storage place for the stolen goods, and threatens the homeless man with violence to comply with him. Later, he goes so far as to hurt and even kill others, disregarding his family and the lives of others, creating all kinds of horrors as he wished, and carrying out evil plans in a frenzied manner, all of which are inhumane. The root of all this is his pursuit of privilege. As he puts it, "To do such a thing would transcend magic. And I beheld, unclouded by doubt, a magnificent vision of all that invisibility might mean to a man--the mystery, the power, the freedom." ^①(Wells, 1983: 83) crazy and out of control behavior made his former colleague Dr. Kemp reports him. They are both engaged in scientific research; Kemp chooses to report Griffin because he realizes that any behavior must

And the price he pays for his quest for power and invisibility is constantly running and hiding, unable to live a normal life.

His greed, anger, and brutality escalate, creating conflicts wherever he goes, becoming the center of public opinion, the headline of newspapers, and the object of people's fear. He is invisible through invisibility, but only to himself, not to anything other than himself, including his crimes and "civilization." Wandering the streets, Griffin does not experience the power of invisibility. No matter how cold the weather is, he cannot wear any clothes on his body, because clothes cannot be invisible. Because he is invisible to others, he is nearly trampled and run over by carriages on many occasions. Invisibility facilitates theft, but money cannot be invisible, and stacks of bills appear in the air, causing people to scramble for them. Even though he steals from convenience stores, wears clothes, a hat, sunglasses, a fake nose, a fake beard, a bandage on his chin, lives in a remote area,^② (Wells, 1983) and tries to avoid communicating with outsiders, there is no way to act like a normal human being in his strange attire; no matter what he does, he cannot hide from the dogs barking and biting, be injured and bleed, or get dirt on his feet. Invisibility can only hide himself, but not his crimes. Because of his own selfish interests, he becomes pitiful and hateful, shameless and brutal, and for the sake of his own interests, he loses his humanity and wants to conquer the city and rule the people with terror. In a world without humanity and rationality and without moral control, far from benefiting people, the results of science can jeopardize society, and the selfishness and sins of human nature may lead a talented scientist to degeneration and destruction. The author here also pulled people's beautiful fantasy of invisibility back to the cruel reality. People do think of all the convenience brought by invisibility, but they have never thought that it is also a kind of misfortune.

4. THE GREED AND ABSURDITY OF HUMAN NATURE IN THE FACE OF THE DESIRE FOR PROFIT

Kemp and Griffin are both scientists, but the difference in moral consciousness makes them take different paths in life. In the novel, the establishment and communication of the concept of life is also a very important key point. Such a contrast makes the plot of the novel take a natural and reasonable turn, and at the same time, it also gives readers a vivid sample in the expression of human nature. Griffin's

have a restraint mechanism, otherwise it will cause a big mess; whether a person is a scientist or whatever, once the behavior is fearless and without limits, it is self-evident what consequences will bring.

^① H.G.Wells.*The Invisible Man*[M].Bantam Classic edition,1983:83.

^② H.G.Wells.*The Invisible Man*[M].Bantam Classic edition,1983.

As for Kemp, the author seemed to portray him as a positive character, but in fact it is not entirely so. While recognizing Kemp, the author also revealed his contempt for him. The first half of the novel appears all kinds of characters, but Griffin does not explain his identity and invisibility to anyone, preferring to bear people's misunderstanding and incomprehension, the reason is that he believes that those ordinary people cannot understand the invisibility of the technology of the forefront; he believes that only like Dr. Kemp, such as attainments in the medical field of the university classmates, is his best partner, so he will be the invention of his own history and circumstances. That is why he told Kemp the whole story of his invention. For whatever reason, Griffin trusts Kemp unconditionally and considers him the perfect "accomplice". The secret of Griffin's invisibility means that Kemp knows Griffin's weaknesses and how to deal with him, so he joins forces with the police to capture Griffin. However, at the end of the novel, it is revealed that Kemp is not impartial in reporting Griffin, he also has the idea of taking Griffin's achievement. After Griffin's death, he keeps on prying from the tramp Marvell about the secret of invisibility, which makes him a villain who betrays his friend in a way. And about the tramp? He has become an innkeeper on the back of the invisible man's money and stories. Griffin's tragedy has not warned him, and he has taken Griffin's notebook for himself, scrutinizing the secrets of invisibility and dreaming dreams of a life of eternity; however, it was clear they have killed Griffin together. Wells showed the desire for invisibility, or the temptation of invisibility, as a symbol of man's greedy pursuit of freedom from the rules of physics, and the greed, selfishness and coldness of human nature in the face of desire for profit is exposed here.

5. LOSS OF HUMAN EMOTIONS IN THE CONTEXT OF SOCIAL DISENGAGEMENT

Griffin himself suffers from albinism and is predictably discriminated against by the society of his time. "His obsession with the invention of invisibility, and his isolation from the outside world, led to a loss of human emotion."^①(Wang, 2015: 82) He lives in a slum, with no friends and no contact with the outside world, and studies invisibility day and night to fulfill his desire for absolute freedom and power. When he needs to try out the potion he develops, he chooses the white cat of the old lady living alone downstairs to do the experiment, and the pain of the cat under the effect of the drug as a test subject does not provoke his sympathy at all. He is bent on seeing the invisibility

spell succeed in the cat's body, so he continues to bury himself in his experiments, with no ripples in his heart. And he does not seem to realize that the cat was also alive, and he have not thought about the special significance of this cat for the old man who lived alone. He never thinks about the special significance of the cat to the old man who lives alone, nor does he ever think about it.

Griffin has no human feelings for cats (animals), nor does he have feelings for his father (human). When trapped in the situation of no funds to support the invisibility research, he even robs his father's money. This behavior also directly forces his father's death, but his father's death does not arouse his sense of human emotions. When he talks about his father's funeral, he only says lightly: "I went to bury him. My mind was still on this research, and I did not lift a finger to save his character."^②(Wells, 1983: 84) With the success of the invisibility spell, Griffin becomes a complete invisible man, "My limbs became glassy, the bones and arteries faded, vanished, and the little white nerves went last."^③ (Wells:90) At this point, he considers his quest for absolute freedom is fully realized. As a result, "he began to shed the bonds of human morality, but not only his body, but, more importantly, his ethical identity as a scientific researcher."^④(Liu, 2010: 92) After researching the invisibility technique, he seems to have completely lost his mind; when there are no moral constraints, people will become dangerous and irresponsible. The evil factor lurking at the bottom of human nature starts to work, so he has the evil idea of establishing a terrorist regime, and at this time, he completely gets rid of all the constraints of human morality and openly fights against the society and the enemy, which results in the tragedy that he is killed by the collective.

6. EXTREME EGOISM AND THE PHILOSOPHY OF "SUPERMAN"

According to Nietzsche, superman is the most capable of enduring pain and rising from it, and the most suffering genius is the most promising one. Griffin as a young genius physicist, although talented, is poorly dressed and living in poor conditions. Material difficulties do not make him give up; he studied harder, willing to dedicate himself to scientific experiments, often working until dawn. He has the tenacity of an ordinary person: "I was alone; the laboratory was still, with the tall light burning brightly and silently. In all my great moments I have been alone." (Wells, 1897: 82) In this loneliness, Griffin does everything he can to overcome the difficulties of his experiments, and for three years, he has developed a potion of invisibility.

edition,1983:90.

^④ Liu Neng. Ethical Analysis of Wells' science fiction novel *The Invisible Man*[J], Literary Education (Part 2), 2010, (09): 92-93.

^① Wang Xiaohui. Analysis of will in *The Invisible Man* [J]. Foreign Literature Research. 2015, (03): 80-86.

^② H.G.Wells.*The Invisible Man*[M].Bantam Classic edition,1983:84.

^③ H.G.Wells.*The Invisible Man*[M].Bantam Classic

To this extent, Wells' s Griffin can be considered a "superman", but his scientific achievements stop there. According to Nietzsche, superman is absolutely free and selfish. Griffin's purpose in studying invisibility is neither to utilize it for the benefit of the people nor to contribute to the field of science. All his purposes are self-serving, and he believes that invisibility can bring freedom, power, and convenience to a man. When he becomes invisible himself, he is pleased with himself. He says, "I felt as a seeing man might do, with padded feet and noiseless clothes, in a city of blind. I experienced a wild impulse to jest, to startle people, to clap men on the back, fling people's hats astray, and generally revel in my extraordinary advantage."^①(Wells, 1983: 93) He experiences the unique advantage that invisibility gives him, and uses it to steal, threaten and even harm innocent people. Later, when he stumbles into Kemp's house, his extreme egoism is maximized, and things go from bad to worse. He changed his original plan, believing that one man's power was too limited to rob or hurt more than a few, and he began to analyze the fact that stealth was particularly useful in killing people: "I can walk round a man, whatever weapon he has, choose my point, strike as I like".^②(Wells, 1983: 113) In Nietzsche's view, everyone has a "will to power", and the strong manifest themselves in conquest and creation, advocating a "superhuman" dictatorship. Griffin believes that invisibility was an advantage in killing, and he thinks that killing by invisibility was an advantage, not realizing that killing was a dehumanizing act. He also suggested to Kemp to kill judiciously and establish a reign of terror: "He must issue his orders. He can do that in a thousand ways---scraps of paper thrust under doors would suffice. And all who disobey his orders he must kill, and kill all who would defend them."^③(Wells, 1983: 114). In the face of Kemp's betrayal, he becomes enraged and hurts the innocent. At this moment he is completely blackened, losing his humanity in the face of profit and turning superman into an extreme.

7. CONCLUSION

Reader-response criticism has a profound influence on contemporary literary criticism; reading is an interactive process between readers and texts. There are a thousand Hamlets according to a thousand readers. The theme of a literary work should be different from person to person, and there is no fixed and unique understanding. We should abandon the only central idea understanding of the reference book,

and we should boldly put forward our own understanding which is different from the only solution of the reference book. In this sense, Wells's science fiction is also a kind of "philosophical novel." His works always insinuate the society and politics of the time through the society in fantasy, and the whole is full of the future destiny of human society.

Wells used science fiction to reveal to the readers the conflict between science and technology and human morality. Science and technology are also a double-edged sword, the use of which will promote the progress of human civilization; the use of which will distort human nature and seriously affect society. Invisibility itself is not a problem but driven by the desire for profit. Griffin is obsessed with all the ugly, criminal activities because of invisibility. When others cannot see you, you can always abide by the moral line; this is really a test of humanity. A gentleman is careful not to cheat in the dark. Wells portrayed Griffin as a victim of the system and a rebel, thereby insinuating that the root cause of evil is the social system. In the epilogue of the novel, Marvell researches the secret of invisibility, which on one hand signifies that science and technology will continue to develop along with the development of the society; on the other hand, it also signifies that after the death of Griffin, there will be thousands of "Griffins" who will go through the fire for the sake of profit and desire, which is human nature.

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edition,1983:113.

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A Multidimensional Reading of Identity: An Example from *Everyday Use*

Ma Wenxia

College of Foreign Languages and Literature, Northwest Normal University, Lanzhou, Gansu Province, China

Abstract: Identity is a complex and diverse concept in contemporary society. It involves the individual's sense of identification with the group to which he or she belongs, as well as his or her status and role in society. The formation of identity is influenced by a variety of factors, including culture, society, history and personal experience. Alice Walker's novel *Everyday Use* demonstrates a multidimensional interpretation of identity by depicting the identity journey of the main character. This paper aims to explore the multiple dimensions of identity and its impact on individual lives and social relations by analyzing the characters, plot development and cultural background of Alice Walker's novel *Everyday Use*. Through in-depth study and interpretation, we can better understand the importance and significance of identity.

Keywords: Alice Walker; Identity; Racial Identity; Cultural Identity

1. INTRODUCTION

Identity is a topic of great concern in contemporary society. People's sense of their own identity and other's both have an important impact on individuals' psychological health and social interaction. Alice Walker's novel *Everyday Use* explores multiple dimensions such as race, gender, and class by depicting the identity of the main character.

First of all, the mother and the youngest daughter, Maggie, reconnect with their cultural identity through the use of their grandmother's household items in their daily lives. These belongings, including traditional crafts, food, and clothing, represent the African American culture to which she belongs. Through her close contact with these objects in her daily life and learning the technique of quilt-making, Maggie gradually recognizes her cultural roots and finds her cultural identity. Secondly, the novel also describes the dilemma of the protagonists' identity in a multicultural society. They live in an ethnically and culturally diverse society, with their identities as African Americans, women, mothers, wives and so on. In this interweaving of multiple identities, when faced with identity challenges and conflicts, they need to find a balance between their different identities while maintaining their cultural identity. In addition, both

Maggie and her mother have experienced discrimination and oppression as members of the black community, which makes her feel inferior and confused about her cultural identity. However, through communication and support from other people who are also discriminated against, the protagonist gradually realizes that her cultural identity is something to be proud of and hold on to, and fights for equality and respect for her cultural identity.

2. CULTURAL IDENTITY

2.1 Alice Walker's Cultural Background

Alice Walker's cultural background is crucial to understanding the issue of identity in her work *Everyday Use*. Walker grew up in the rural American South, a region that played an important role in mid-twentieth century American society. Her family was African American and experienced an era of racial segregation and discrimination, which had a profound impact on her identity. As a female writer, Walker's position and experience in a patriarchal society also had a significant impact on her identity. Her works often explore women's rights, freedom and self-identity, which is closely related to her cultural background. In addition, Walker is also a black female writer, and her works often deal with issues of racial and cultural identity. According to Yi Caihong, "Walker has a deep understanding of and concern for the African-American history and culture, and her racial, gender and cultural identities are explored and expressed in her works, which gives her works a unique perspective and depth in exploring issues of identity."^①(2019: 100)

2.2 Mother and Maggie's Cultural Background and Cultural Identity

Cultural identity refers to the individual's sense of identification and belonging to the cultural group to which he or she belongs, and Zhang Xiaoqin pointed out that "in the process of cultural identity, the self-consciousness of the subject of cultural identity plays a crucial role."^②(2017: 29) Cultural identity is an important theme in *Everyday Use*. The novel explores the multiple dimensions of cultural identity by depicting the family background, social environment and personal experiences of the main characters. The importance of cultural background plays a key role in the multidimensional interpretation of identity. In this

① Yi Caihong. The Natural Image of *The Bluest Eye* from the Perspective of Ecofeminism [J]. Peony, 2019, (05): 99-101.

② Zhang Xiaoqin. Cultural Identity in African American literature [J]. Journal of Jilin Radio and TV University, 2017, (01): 29-30.

novel, cultural background plays an important role and has a profound impact on the identity of the mother and Maggie. The novel depicts a social environment full of race, class and gender differences, which together shape the cultural identity of the protagonist. Through the protagonist's upbringing and interactions with her family and community, the novel explores the importance of cultural background on identity.

Cultural background is the cornerstone of identity. Maggie, her sister, and her mother live in an African-American family, a family that lacks a male role. However, the mother in the novel is different from the traditional black mothers in that she is not a subordinate mother in the family, but a black woman who can take on the same work as men. As "I" introduces herself in the novel, "In real life I am a large, big-boned woman with rough, man-working hands,"^③ (Alice Walker, 1984: 24) and adds, "I was always better at a man's job." (Alice Walker, 1984: 26) Her mother is hardworking, kind and optimistic, and Maggie's grandmother and aunt taught and instilled in her black cultural values and traditions. This cultural background gave her a clearer understanding of her own identity. The three protagonists of the work are all black women. But when facing the impact and discrimination of white culture, they have different attitudes and positions. The "bainu quilt" in the work is a symbol of the black national cultural tradition. Regarding the choice of the "bainu quilt", the grandmother, mother and Maggie are proud of their own culture, and they can firmly stick to their cultural identity. Dee received higher education in the city and was deeply influenced by white culture. She even deliberately imitated white people in many aspects, putting the cart before the horse, and ultimately lost her true African-American cultural heritage. Xu Yanling believed that "Walker here praises the hard work, wisdom and spiritual pursuit of black women, and praises black women's sense of responsibility for maintaining their own traditional culture and consciously inheriting black culture. At the same time, she also expressed her recognition and appreciation of black culture, A focus on black women at the bottom of society."^④(2013: 40)

There is a strong connection between the cultural background of the mother and Maggie and their identity. They experience racial discrimination and identity confusion in their lives. In the white-dominated society, Maggie feels different, but with the influence of her grandmother, mother, and other women of the same race who have the qualities of simplicity and hard work in their daily lives, Maggie

is made aware of the pride and sense of belonging that comes with her cultural background. Through the interaction with her family and community, Maggie gradually accepts and recognizes her cultural identity, which enables her to face the challenges of the outside world with more confidence. Zhao Lihua pointed out that "the cultural identity of African Americans has a unique complexity. It encompasses African culture, which has been largely forgotten due to distance in time and space and racial oppression, the positive culture created by African Americans in the New World, and the negative and traumatizing culture they have developed in the racist context of white slavery, segregation, and discrimination."^⑤(2005: 71) Finally, the novel shows readers the importance of cultural background to identity through the story of mother and Maggie. It reminds us that cultural background is not only a label of one's identity, but also an important part of one's self-identity and self-worth. Only through a deep understanding and acceptance of one's own cultural background can one truly find one's own identity and position oneself in a multicultural society.

3. RACIAL IDENTITY

3.1 Racial discrimination and oppression

Racial discrimination and oppression are important aspects of racial identity, which is one of the main issues in *Everyday Use*. The novel depicts the discrimination and oppression that Maggie's African-American community faced in the early 20th century South. Through Maggie's personal experiences and the stories of her family and community, the novel demonstrates the impact of racial discrimination and oppression on individual and community identity.

Racial discrimination and oppression have a profound effect on the identity of individuals and communities. As African Americans, Mother and Maggie grew up in a highly racialized society. They experienced many instances of racial discrimination, including being viewed as "an inferior" by the white community and being subjected to violence and injustice. Not only do they have to cope with external discrimination and oppression, but they also have to face internal pain and struggle to find self-identity and self-esteem. As they gradually realize the sufferings and struggles experienced by their own racial group and the importance and value of their racial identity, they are inspired by their pride and strong belief in themselves and begin to feel a strong sense of identification with their own racial identity. They began to resist discrimination and oppression and to seek equality and respect. This resistance and quest for equality is not only an affirmation of individual identity, but also an

^③ Alice Walker. *Everyday Use* [M]. Rutgers University Press New Brunswick, New Jersey, 1944.

^④ Xu Yanling. A Brief Analysis of the Image of Black Women in *Everyday Use* [J]. Youth, 2013, (24): 40.

^⑤ Zhao Lihua. Escaping from the Painful History and Root-Seeking in African Culture---Reflection on the African--Americans' cultural identification From *Everyday Use* [J]. Journal of West China Normal University (Philosophy and Social Sciences Edition), 2005,(04):70-73.

affirmation of identity and solidarity with the African American community as a whole.

3.2 Grandmother's Racial Identity

The grandmother in the novel is an African American whose racial identity has a profound impact on her life and experiences. Through the description and recollection of the grandmother, we can explore her identification and understanding of her racial identity. Grandmother is portrayed in the novel as a strong and proud black woman. She has experienced all kinds of injustice and discrimination, but she never gives up on her racial identity. She maintains her racial identity by sticking to her values and traditions and by connecting with other black communities. She was proud of her black identity and passed it on to her offspring. Grandmother's racial identity was also closely tied to her family and community. She defined her identity through traditional Black family values and cultural traditions. She plays an important role in her family by passing on the values and traditions of the black community. Her racial identity is not only on a personal level but also closely tied to the community and culture to which she belongs. By exploring Grandma's racial identity, we can better understand the impact of racial identity on individuals and society. Grandma's experiences and identity demonstrate the complexity and diversity of racial identity. Her story also serves as a reminder to respect and value each person's racial identity and the importance of it to an individual's self-identity and social relationships.

3.3 The Importance and Dilemma of Racial Identity

Racial identity is important at both the individual and societal levels. For individuals, racial identity is an important part of the construction of their identity and sense of identity. It can help individuals understand their own cultural background, historical heritage, and social status, and thus form their own values and worldview. However, racial identity also faces some difficulties and challenges. First, racial identity may lead to discrimination and prejudice. In a multicultural society where inequalities and injustices exist between different races, racial identity may become a symbol of discrimination and exclusion. Secondly, racial identity may limit individual freedom and choice. Sometimes, individuals may be bound by social expectations and stereotypes of their racial identity and find it difficult to break free from these constraints to pursue their true interests and potential. In addition, racial identity may also lead to internal conflicts and contradictions. Individuals may face different expectations and values from families, communities, and friends of different racial backgrounds, leading to confusion and ambivalence about racial identity. This internal conflict may have a negative impact on an individual's mental health and social relationships.

4. CONCLUSIONS

With a multidimensional interpretation of Alice Walker's *Everyday Use*, we can see that identity is a complex and diversified concept. Through recalling and exploring her grandmother's daily necessities, the protagonist gradually recognizes her own family history and cultural inheritance, thus forming an understanding of her own identity. By analyzing the experiences of the protagonist in the work, we can see that identity is a dynamic process of construction. According to Bao Xinyuan, "Walker deeply realized the unfair treatment of black people in the American society and used the three women in *Everyday Use* to portray the different states of mind of the black people in the social movement at that time in order to get the attention of the black people and pass on their own cultural system." (2014: 240) The protagonist gradually discovers her connection with her grandmother in her memories and explorations, and thus re-conceptualizes her own identity, which is not static but evolves and reconstructs itself with the passage of time and experience. Therefore, we need to pay attention to the changes and development of individuals in different stages and environments. Through the interpretation of the work, we can see that identity not only is an individual's inner experience but also has important social significance. The protagonist not only finds her own sense of belonging through the realization of her own identity but also connects with her family, community and culture. Identity should not only focus on the individual level but also take into account the influence of the social and group levels.

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A Review of Research on English Affixes Knowledge

Luo Yamin

Northwest Normal University

Abstract: Knowledge of affixes is fundamental to reading and vocabulary development. For foreign language learners, knowledge of affixes can help comprehend language materials rich in vocabulary, improve the ability to analyze and use vocabulary, and expand vocabulary, especially derivatives; for teachers, a large amount of knowledge of affixes can guide students to learn vocabulary and memorize vocabulary by comparing the old and new affixes. This paper sorts out the definition and classification of affixes, reviews the related literature on affix knowledge and affix knowledge learning, summarize the strengths, characteristics and shortcomings of others' research, and put forward the future research direction. The article aims to study middle school English learners' receptive and productive derivational knowledge and the impact of derivational morphology instruction, and tries to characterize middle school English learners' derivational knowledge in terms of the receptive and productive mastery level of affix knowledge.

Keywords: Knowledge of Affixes; Receptive; Productive; Derivational Knowledge; Derivational Morphology

1 INTRODUCTION

The knowledge of affixes, as an important means of forming English words, is of great significance to vocabulary learning. By learning affixes, English learners can not only understand and memorize words better, but also recognize and spell unfamiliar words through the rules of word formation, effectively expanding their vocabulary. Understanding the development of affix knowledge is important for researchers, teachers and students because it can reveal the process of vocabulary learning and the role of affix knowledge in grammar and reading, and even affect the overall level of English learners.

English affix is a kind of combining morpheme in English morphological construction, which cannot exist or be used independently. It is often attached to the front or back of some free morphemes, and sometimes embedded in the middle of other morphemes, and has only additional meaning and grammatical function, without any lexical meaning (Zhou, 2000).

Affixes can be categorized into flexion affixes and derivational affixes. Derivational affixes are affixes attached to the end of the word stem to indicate different grammatical relations, such as plural, tense,

possessive, comparative, or superior (Zhou, 2000). For example, in the word "books", "-s" is an affix indicating that "books" is the plural of the word "book"; in the word "colder", "er" is an affix indicating the concept of degree comparison.

Unlike flexion affixes, affixes that are added to the stem to form new words are defined as derivational affixes. This method of forming a new word is called derivation and the new word formed is called derivative. Depending on the position of the affix, derivational affixes are categorized into prefixes and suffixes. When an affix is placed at the beginning of a root word, the affix is a prefix, whose main function is to change the semantics of the root word, but prefixes usually do not change the word class of the root word. For example, when the prefix "un-" is added to the root word "friendly", it changes the semantics of "friendly", but not its word class. It is still an adjective. Of course, there are many exceptions, such as "unearth", "enlarge" and "prewar". If an affix is added to the end of a root word, the affix is a suffix whose main function is to change the word class of the root, but sometimes it can also change the semantics of the root.

1.1 Prefixes

Prefixes are usually added at the beginning of the word stem and their main function is to change the semantics of the root word. Mao Donghui (2011)[1] classifies prefixes into ten categories according to their semantics, which are:

(1) Negative prefixes

Negative prefixes can be used to express the reverse side meaning of original words, which are especially suitable for adjectives.

(2) Reversative prefixes

Reversative prefixes can be used to express having the opposite behavioral effects or functions to the original words and they are usually used to build verbs.

(3) Pejorative prefixes

Pejorative prefixes can combine with adjectives, nouns or verbs to form new words, which can be used to describe something is faulty or somewhat unsuccessful. These prefixes conclude: mal-, mis-, pseudo-, etc.

(4) Prefixes of degree or size

Prefixes of degree or size can be used to express different degrees in character or nature between the base word and the new word, which are normally added to adjectives.

(5) Prefixes of attitude

“anti-” can be added at the beginning of some nouns or adjectives to express the meaning of “opposition”, “resisting” such as antiwar means “opposed to war”; anticancer means “used in the treatment of cancer”. “counter-” means “opposite”, “oppose”.

(6) Locative prefixes

Locative prefixes have the function of expressing location when added to some nouns, verbs and adjectives.

(7) Prefixes of time and order

A relationship of time or order between base words and new words is produced when such kind of prefixes are added to some base words.

(8) Number prefixes

Prefix “bi-” means “two” or “double” -- the most widely used prefix among number prefixes in English.

(9) Miscellaneous neo-classical prefixes

Miscellaneous neo-classical prefixes can be understood from two aspects: (1) such kind of prefixes are not more enough to be classified; (2) they are formed long time ago, whose lexical meaning are extended with the development of the society.

(10) Conversion prefixes

The primary function of prefixes is to change the lexical meaning of the base word, usually not changing the word class of the base word, while the main function of suffixes is to change the word class of the base word.

1.2 Suffixes

Suffixes are usually added at the end of the word stem, and their main function is to change the word class of the base word, so you can guess the word class of a certain word based on the suffix, for example, you can assume that the word “bookish” is an adjective because it has an adjective suffix “-ish”. Suffixes can be divided into four categories in English: noun suffixes, verb suffixes, adjective suffixes, and adverb suffixes.

2. KNOWLEDGE OF AFFIXES

Tyler and Nagy (1989) point out that lexical knowledge seems to be multifaceted[2]. They categorized it into lexical semantic knowledge, syntactic knowledge and distributional knowledge. Lexico-semantic knowledge is the recognition that words have complex internal structures and that two or more words may share a common morpheme. This is the knowledge that “create” is related to “creator” and “me” is not related to “meter”. This is the knowledge that “create” is related to “creator” and “me” is not related to “meter”. Syntactic knowledge is the knowledge that derived suffixes mark the syntactic category of a word. For example, syntactic knowledge is the implicit knowledge that “regularize” is a verb because it is suffixed with “-ize” and “regulate” is a noun because it has the suffix “-ion”. Distributional knowledge is related to the restriction of stem and suffix conjugation. For example, “-ness”

is used for adjectives but not for verbs, so in English, “quietness” is a true word while “playness” is not.

Nation (1990) listed a variety of receptive and productive knowledge (Schmitt & Meara, 1997)[3] that a person must have to fully master a word. Specifically (1) the spoken form of a word. (2) The written form of a word. (3) Grammatical behavior of words. (4) Collocational behavior of words. (5) Frequency of use of words. (6) Stylistic constraints of words. (7) The conceptual meaning of a word. (8) Association of a word with other related words.

In 2001, Nation presented a detailed and specific framework that involves many factors. Vocabulary knowledge includes spoken forms, written forms, phrases, forms and meanings, concepts and referents, associations, grammatical functions, collocations, and usage restrictions. From Nation's lexical framework, the “form” of a word can encompass a wide range of aspects, from word class to morphological features. In this sense, knowledge of affixes is an important part of vocabulary knowledge. It plays an important role in reading and vocabulary development; knowledge of affixes may help determine learners' ability to read new words. Knowledge of affixes is considered an important aspect of vocabulary knowledge.

Linda D. Jarmulowicz (2001) stated that affixes contribute significantly to children's vocabulary expansion in the early and middle elementary grades. Affixes have a very predictable effect on the primary stress of the word stem to which they are attached (Jarmulowicz, 2002)[4]. Knowledge of affixes determines learners' ability to read new words (Nagy et al, 1993)[5]. It plays an active role in the development of the English language. It not only has a long history, but also is an effective method of word formation in English. It has been used throughout the history of English language development. A language teacher with knowledge of affixes will be able to select, categorize and systematize the language material that students need to master, thus facilitating their comprehension and retention.

A good knowledge of affixes is particularly useful for teachers because it provides a tool to help students guess and memorize the meaning of new words by comparing them with previously learned affixes. The study of affixes will help teachers to solve one of the difficulties in teaching English vocabulary; teachers can teach vocabulary based on affixes, which will help students to master extended vocabulary through the meaning of affixes. In order to learn and use English vocabulary correctly, advanced learners should have basic knowledge of affixes. When learners come across an unknown or uncommon word or figure out the pronunciation of a new word with an accent change suffix, the position of the main accent will not be ambiguous. It helps learners expand their vocabulary and improve their ability to analyze and use English words. It helps learners to

expand their vocabulary by reading materials containing unfamiliar words.

3. AFFIX KNOWLEDGE LEARNING

3.1 Relationship between affix knowledge learning and vocabulary breadth

According to Schmitt and Meara's (1997) empirical study, the correlation between receptive derivational suffixes and vocabulary size is weak[6]. The study also explored the relationship between knowledge of affixes and language proficiency. Two researchers tested learners' knowledge of affixes and associative meaning through receptive and output tasks. In the output task, they gave twenty test verbs and asked the subjects to write three associative meanings for each verb and all the suffixes that can be added to each verb[6]; in the receptive task, they also gave twenty test verbs but this time the subjects were asked to select three associative meanings for each verb from four options and all the suffixes that can be added to each verb from fourteen suffixes. After one year of study, subjects' productive and receptive knowledge of affixes increased by 47% and 66%, respectively, with annual growth rates of 5% and 4%, respectively. The study also showed that affix knowledge was correlated with associative meaning knowledge and vocabulary size; associative meaning knowledge was correlated with vocabulary size and second language proficiency, but affix knowledge was not correlated with subjects' TOEFL scores. In conclusion, Schmitt and Meara's study showed that affix knowledge was correlated with vocabulary size. Another study that has had a significant impact on this topic comes from Mochizuki and Aizawa (2000), who also found that knowledge of affixes correlates with vocabulary size, echoing the findings of Schmitt and Meara (1997)[7].

3.2 The order of affix acquisition

To answer this question, Mochizuki conducted an empirical study on the acquisition of affixes by second language learners. Prior to this study, Schmitt and Meara also did related studies, but Mochizuki used a different approach to test learners' knowledge of affixes. According to him, the main function of prefixes is to change the lexical meaning of the root word, while the corresponding function of suffixes is to change the lexical category of the root word. That is, if a person knows the lexical meaning of a prefix, then he or she can be said to know the prefix; if a person knows the word class of a suffix, then we can say that he or she knows the suffix. He selected 26 prefixes and 56 suffixes from the list of affixes found in Umeda. In the prefix test, he gave three common derivatives containing the same test prefix and four word meanings for each prefix and asked the subjects to select the most appropriate word meaning for each prefix; in the suffix test, he gave three low-frequency words containing the same test suffix and four word classes and asked the subjects to select the correct word class for each low-frequency word. The test was administered to 127 first-year Japanese

undergraduates and the results showed that the acquisition rates of prefixes and suffixes were 63% and 65%, respectively. The study also found that prefixes and suffixes are understood differently for English learners and that there is an order in which affixes are acquired. Mochizuki noted that the existence of an order in which affixes are acquired suggests that some affixes are easier to acquire than others. In light of this, he also pointed out that the order of affix acquisition helps teachers to teach affixes in a systematic way. Two years later, Mochizuki and Aizawa conducted another study on this topic with 13 prefixes and 16 suffixes and came up with the exact acquisition order of these affixes.

3.3 Factors Influencing Affix Acquisition

Factors affecting the acquisition of affixes have been of interest to many researchers since the last century. So far, several factors have been found to influence affix acquisition.

Studies by two researchers have found that word frequency is an important factor influencing affix acquisition. Froster (1989) found that word frequency is a key factor influencing morphosyntactic and lexical processes in adults. In an empirical study, Jarmulowicz (2002) concluded that suffix frequency plays a role in children's stress judgments. The findings suggest that suffix frequency has an effect on children's knowledge of affixes and that the development of children's lexical representations may improve as suffix frequency increases[7].

Bertram (2000) conducted a study to answer the question of whether affix synonymy has the same effect on lexical processing not only in a word-rich language such as Finnish, but also in a word-limited language such as English. Affix synonymy here refers to a linguistic phenomenon in which one affixed form has two or more lexical meanings.

Mochizuki and Aizawa (2000) summarized five possible factors that influence the order of affix acquisition: borrowing, instruction, frequency of affixes, frequency of derivatives containing affixes, and versatility of affixes.

The hypothesis of previous studies about the order of acquisition of affixes plays an important role in teaching English because if there is indeed an order, then it indicates that some affixes are easier to learn than others. English teachers can organize their instruction according to the difficulty of the affixes. Previous research on the order of affix acquisition has only provided a model for later researchers. In order to provide a theoretical basis for the teaching of affixes, more detailed studies are necessary.

Second, previous empirical studies provide different references on how to conduct such studies. For example, how to identify the subjects and test words; how to design the experiment; what tools to use; how to collect data, and especially how to analyze the data. The empirical studies by Schmitt and Meara, Mochizuki, Wu Xudong, and Chen demonstrated

different experimental tools or data collection methods. Although there are many shortcomings in their studies, these studies are theoretically and methodologically inspiring for future research in the field.

Third, previous studies have provided many hypotheses for affix acquisition, such as the order of affix acquisition and the relationship between affix acquisition and vocabulary size or second language proficiency, which provide a basis for future research. On the other hand, previous studies have shown that affix acquisition is a valuable topic that deserves attention but has been neglected for a long time.

Previous studies have made great achievements in many aspects, but there are still many shortcomings not only in theory but also in specific experimental operations. The main deficiencies are reflected in four aspects:

First, most studies on affix acquisition have focused on describing superficial phenomena in the learning process, so our understanding of affix acquisition is only some fragmented facts rather than a theoretical framework to support future research. As Mochizuki (1998) points out, "how knowledge of affixes develops remains unknown." More research is needed to explore the laws of affix acquisition to guide actual teaching.

Second, there are many limitations of previous experimental methods or designs. Previous studies have mainly examined affix acquisition as a whole, and, due to the limitations of the experimental design, experimental subjects, test words and many other aspects, scholars have not yet examined affix acquisition comprehensively. Different researchers have chosen different subjects from different places, so it is questionable whether or to what extent their findings can be generalized; most of the studies only chose one or a few dimensions of affixation to study,

so succeeding studies are expected to make breakthroughs in more dimensions; many of the test words used in the studies are high-frequency words, which can't reflect the actual situation of learner's affixation acquisition, so succeeding researchers should broaden the scope of their studies. Therefore, subsequent researchers should broaden the scope of test words.

Thirdly, many empirical studies on affix acquisition have focused only on receptive knowledge and neglected output knowledge, so more studies on output affix knowledge are needed in the future.

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An Overview of Frequency Effect on Language Acquisition

Ran E

Northwest Normal University, Lanzhou, 730070, Gansu, China

Abstract: This paper reviews the research on the frequency effect of usage-based approaches to language acquisition in authoritative core journals at home and abroad. Related research mainly focuses on two points: the relationship between frequency effect and construction acquisition, and the influence of frequency effect on the development of language ability. Existing studies reveal that these findings support the hypothesis of frequency effect on language acquisition, but the research on grammatical discourse and discussion from the cognitive concept level needs to be enriched.

Keywords: Usage-Based; Frequency; Language Acquisition

1. INTRODUCTION

The theory of usage-based approaches to language acquisition has opened up a new perspective and methodology in the field of linguistics, in which frequency is an important reference. Bybee (2006)[1] states that the input frequency of real discourse has an important influence on acquisition, and output frequency can reflect many laws of acquisition. Corpus, on the other hand, is a "sample of the real use of language system" and has the characteristics of "discovering laws by frequency". As a new perspective of linguistics, usage-based approaches have been widely used in second language acquisition and research on corpus teaching, and the concept of frequency has also been widely studied. Based on this, this paper reviews the core viewpoints of frequency, and then reviews and combs the research on the frequency effect of usage-based approaches at home and abroad.

2. REVIEW OF THE CORE VIEWPOINT

Usage-based approaches to language acquisition are completely different from generative linguistics. "It takes a cognitive perspective and holds that language competence is 'dynamic', 'situational' and 'embodied'."(Ellis 2008)[2]. The approach of usage-based is not a single theory, but an inclusive term, which includes several language research paradigms that attach importance to use and cognition. It regards language as a continuum from concrete to complex (Bybee, 2008)[3], in which vocabulary and grammar in the traditional sense are all included. Language knowledge is a combination of various forms and meanings, and it is individuals' experience

accumulated from the sum of various speech-use events in their lives (Behrens, 2009)[4], mainly in the development and progress of communication. The five basic concepts of the usage-based view are as follows: (1) The fundamental purpose of language is communication, and any natural language is always used in a context in which the choice of discourse construction is influenced by a series of contextual factors. (2) Context itself is a complex construction, which does not combine all dimensions without considering the subtle and interactive language mapping in a multi-dimensional context. (3) Language is acquired, and there is no innate language acquisition device. (4) The meaning of language not only comes from words but also from grammatical structure itself; (5) Language usage patterns (including collocation, class connection, and frequency) are very important for language learning (Tyler, 2010)[5].

Frequency is an important concept in usage-based theory. In recent years, many studies have focused on this concept and drawn rich conclusions, which greatly enriched the theory of usage-based approaches to language acquisition. language knowledge originates from language usage experience, language is acquired in the process of communicative use, and language knowledge acquisition is related to language exposure (Tomasello 2003)[6]. The acquisition of human language follows usage-based principles and language users construct grammar through frequent repetition of daily usages (Tomasello, 2003; Bybee, 2008; Ellis, 2012)[7]. Fluent correct and language use is not based on grammatical rules but is driven by specific frequencies and related examples in the brain. The connection between examples is constantly strengthened by frequency accumulation. In the process of learning, learners gradually abstract the language structure by analyzing the corresponding frequency distribution. Ellis demonstrates the frequency effect from different perspectives and states that frequency is the key to language learning because language learning is a kind of paradigm acquisition to a great extent. Abstract grammar rules do not refer to the skillful usage of knowledge, and language acquisition is mostly based on the memory of a large amount of language examples that the brain has contacted. Under the effect of frequency, the contact between simultaneous language components is constantly adjusted and strengthened, with the regularity is gradually presented, so that language

acquisition can be completed.

3. STUDIES ON FREQUENCY EFFECTS

3.1 Frequency and Construction Acquisition

Construction, the basic unit of language, is a complex of form, meaning, and function. Abstract construction refers to a schema formed by a large number of examples, which expresses definite meaning but is not a specific language unit. Since the development of construction grammar, there have been various schools and multi-directional development, but no matter which school, it adopts the language model based on use (Yang & Wang, 2018)[8]. There are many studies on the influence of frequency on construction acquisition under the framework of the usage-based theory. Zhong (2015) investigated the processing of English high-frequency idioms by Chinese intermediate English learners, which showed that learners had an advantage in processing high-frequency idioms, and with the increasing frequency of chunks, the response time and reading time showed a continuum pattern from slow to fast[9].

Zhang & Ma (2014)[10] investigated the different effects of two frequency distribution modes (skewed frequency and equal frequency) in language input on China students' acquisition of English abstract constructions and put forward corresponding suggestions for English teaching. Some studies have investigated the adult's learning of a second language by using the case method of longitudinal tracking for more than 2-3 years, showing that the development process of target structures such as interrogative sentences conform to the trajectory from concrete examples to abstract structures, and explicit teaching and explicit knowledge have an important impact on second language learning and use (Spoelman&Verboor, 2010; Eskildsen, 2012, 2015[11]; Roehr – Brackin, 2014)[12]. Other studies have investigated the factors that promote or hinder the cognitive processing of language construction, including the frequency of pictographs or the frequency of class symbols (Zhou, 2014)[13]. The results show that frequency significantly impact the acquisition of lexical and different frequency types have different acquisition effects, and the effect of a changing repetition is better than that of the single one. Xu's (2017) research investigated the influence of the frequency of signs, the frequency of words, and the prominence of the mapping between form and meaning in different acquisition stages on the acquisition of English passive constructions, which supports the hypothesis that the frequency effect and the salience of the mapping between form and meaning were affected by the usage-based language acquisition view and showed that learning experience and language characteristics jointly affected the acquisition of constructions[14]. Jash (2018) investigated the tendency of English learners in Germany and Chinese to judge the preposition of

relative clauses. The results showed that the subjects' judgment of relative clauses interacted with their mother tongue and English proficiency, and German learners were more likely to accept the front-end prepositions than China learners[15]. It was concluded that input frequency and cross-language similarity had a significant impact on the front or post-end prepositions of the second language. All the above studies verify the positive effect of frequency effect on the development of construction and enrich the theory of usage-based approaches to language acquisition.

3.2 Frequency and development of language competence

Empirical research on frequency effect widely investigates the influence of task repetition on various language skills such as listening, reading, speaking, and writing. Jensen&Vinther (2003) and Dai (2007) studied the influence of frequency on second-language listening comprehension. Ahmadian &Tavakoli(2011), Du&Zhang (2011)[16], and Zhou(2006, 2010) investigated the role of frequency in the development of oral English[17]. Gorsuch&Taguchi (2010) study the relationship between frequency and second-language reading; Zhou (2014) explore the influence of frequency on writing ability[18]. The results of these studies show that with the increase in frequency, the progress of various language skills are developed. Although the speed and path of development are different, the overall upward trend of language skills is the same.

A large number of scholars have also studied the relationship between frequency and vocabulary acquisition. For example, Crossley et al. (2016) conducted research on vocabulary acquisition based on learners' oral corpus analysis. The results show that second language learners tend to repeat the words of English interlocutors, and words with low specificity, low familiarity, and lack of meaning show similar linear development in input and output, indicating that the input and output of the second language are highly connected. In the study of lexical collocation, some scholars have discussed the extreme function of frequency in the acquisition of English adjective-noun collocation (Durrant&Schmitt, 2008)[19], or studied the promotion of frequency to the acquisition of the collocation of "can" structure (Eskildsen,2008), or analyzed the acquisition factors of learners' collocation structure, and found that input frequency plays an important role in increasing second language sensitivity (Wolter&Gyllstad, 2013)[20]. Some scholars have studied the influence of English TV series on learners' vocabulary learning (Kusyk&Sockett, 2014), and the research results also support the role of frequency effect[22].

Some scholars have turned their attention from vocabulary to lexical chunks, exploring the influence of frequency on the acquisition of lexical chunks, finding that the increase in frequency can promote the progression of lexical chunk acquisition . This topic

emerged late, so there are few related studies. Moreover, Zhou (2014) investigated the effect of frequency and types of frequency on the acquisition of a lexical chunk, finding that frequency significantly influence the acquisition of lexical chunks. Some scholars have discussed the influence of frequency on the use of lexical chunks in second language reading and writing tasks (Zhou&Zhang, 2016)[23]. Zhou (2018) has investigated the influence of input frequency and output frequency on the acquisition of productive knowledge of second language chunks and concluded that there are significant differences in the influence of different frequencies of input and output on the acquisition of productive knowledge of second language chunks. His research helps deepen the understanding of explicit and implicit teaching and frequency effect, and also has some enlightenment to chunk teaching[24].

4. Conclusion

Judging from the number of research results, research at home and abroad is developing year by year, but foreign research is more abundant than domestic research results; In terms of research depth, the research in recent years has been deepened based on predecessors' conclusions. Because of the early rise of relevant theoretical research abroad, the scope of foreign research is broader and deeper, while domestic research is also deepening year by year. From the dimension of the research, there is more research on vocabulary and less on grammar and discourse. In addition, the existing language is mostly in form and meaning and rarely goes deep into the cognitive concept level (Zhang, 2023).

These findings support the hypothesis of frequency effect in the theory of usage-based approaches to language acquisition. On the one hand, the influence of frequency plays a positive role in the development of language construction, and high-frequency language construction has processing advantages and promotes the development of language construction. Language users construct grammar knowledge through frequently repeating usage of language. On the other hand, the increase in frequency help promote the development of various language skills. As the speed and path of progress are various, the holistic upward trend of language skills is unchangeable.

The usage-based approach of language acquisition emphasizes that language knowledge we need comes from language use, and the research object of language should be the language used in event discourse, not sentences or vocabulary. Discourse is produced by people's interaction in a specific context, while discourse is the actual language unit, both of which emphasize the practical use of language. The usage-based theory holds that the use of language is based on cognitive ability, hence if we only study it from the perspective of language form and meaning, the acquisition and error factors of language structure can not be fully explained and described. Only by digging

out the causes of learners' errors from the cognitive root and discussing them from the cognitive concept level can we find the fundamental solutions to some errors.

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Discussion on Radar Equipment that Can Be Used for Metal Pendant Detection of Stone Curtain Wall

*Hu Bingtao, Duan Yaru, Chen Kang, Pangsen, Zhang Xuwei, Li Chengfei, Bai Yu
Beijing Building Research Institute Co., Ltd.of CSCEC, Beijing, 100076, China*

Abstract: This paper introduces the principle, application status, technical challenges and future development direction of radar technology. With the wide application of building curtain wall, the safety detection of stone curtain wall metal pendant has become an important topic. Radar technology, with its characteristics of non-contact, strong penetration and high detection accuracy, shows great potential in the detection of metal pendants of stone curtain wall. The basic principle and classification of radar technology are introduced, then the application status of radar equipment in stone curtain wall metal pendant detection is elaborated, the technical advantages, existing challenges and solutions are analyzed, and the future development trend of radar technology in this field is discussed.

Keywords: Stone Curtain Wall; Detection; Radar Technology; Pendant

1. INTRODUCTION

With the development of building technology, stone curtain wall, as an important architectural decorative structure, has been widely applied in modern architecture. However, the stone curtain wall is used by the natural environment, construction quality and time and other factors, there are safety risks. With the growth of use time, the metal pendant behind the stone curtain wall may lead to safety risks due to improper installation, aging deformation and other reasons. The traditional testing methods are mostly destructive sampling, which is not only inefficient and uncomprehensive, so it is urgent to develop an efficient and non-destructive testing technology. In order to ensure the safety of the stone curtain wall, many scholars and engineers have carried out relevant research, and put forward a variety of testing and evaluation methods. With its unique advantages, radar technology has shown a broad application prospect in the detection of metal pendants of stone curtain wall.

Wang Yonghuan [1] proposed a safety evaluation method of stone curtain wall based on dynamic response. By applying the excitation signal, the response characteristics under the dynamic load, such as the frequency and vibration type, and then evaluate its safety performance. The method has the advantages of simple operation and quick detection speed, which provides a new idea for the safety

evaluation of stone curtain wall. Bao wang [2] introduced the application of laser vibration frequency method in the rapid evaluation of the safety performance of stone curtain wall. This method uses the laser ranging technology to measure the frequency change of the stone curtain wall under the free vibration state, and evaluates the safety performance by analyzing the relationship between the frequency and the performance parameters of the stone curtain wall. This method has the advantages of non-contact and high precision, suitable for rapid detection and evaluation of large-scale stone curtain walls. Li Xiaoyuan [3] et al. Through the overall inspection and inspection of a hotel exterior wall dry hanging stone curtain wall, put forward detailed safety testing points and rating suggestions. According to the "Civil Building Reliability Appraisal Standard", combined with the characteristics of stone curtain wall defects, the safety level of stone is evaluated. The research contents include stone facade layout drawing, stone appearance defect inspection, steel structure hardness inspection, steel keel weld inspection, anchor bolt tensile capacity inspection and infrared thermal imager detection, etc. This method has the advantages of comprehensiveness and systematization, which provides an important reference for the safety status detection and repair treatment of similar dry-hanging stone curtain wall structure.

The safety performance detection and evaluation methods of stone curtain wall show a trend of diversification and synthesis. The new detection methods such as dynamic method and laser vibration frequency method provide a new means for the safety evaluation of stone curtain wall. Radar technology, with its characteristics of non-contact, strong penetration and high detection accuracy, shows great potential in the detection of metal pendants of stone curtain wall.

2. PRINCIPLES AND CLASSIFICATION OF RADAR TECHNOLOGY

2.1 Radar technology principle

Radar is a technique for detection and ranging using electromagnetic waves. It transmits electromagnetic waves and receives their reflected signals, and determines the position, shape and material of the target. The radar system mainly includes the transmitter, transmitting antenna, receiving antenna,

receiver and processor. In the detection of metal pendants of stone curtain wall, radar technology penetrates the stone layer by transmitting high-frequency electromagnetic wave, receives the signal reflected back by the metal pendant, and then analyzes the state of the metal pendant.

2.2 Classification of radar technology

In the detection of metal pendants of stone curtain wall, the commonly used radar technology mainly includes millimeter-wave radar and ground-penetrating radar.

Millimeter wave radar: the radar system working in millimeter band has the characteristics of short wavelength, high frequency and strong penetration ability. Can penetrate a certain thickness of stone, the metal pendant for non-contact detection.

Ground-penetrating radar: a radar system using high-frequency electromagnetic wave for underground detection. The distribution and structural characteristics of the underground medium are inferred by transmitting high-frequency electromagnetic waves to the underground ground and receiving their reflected signals. In the detection of metal pendants of stone curtain wall, GPR is mainly used to detect the interface between metal pendants and stone, and the condition of the defects and corrosion inside the metal pendants.

3. APPLICATION PRINCIPLE OF RADAR EQUIPMENT IN THE DETECTION OF METAL PENDANTS OF STONE CURTAIN WALL

3.1 Millimeter-wave radar detection

3.1.1 Composition and working principle of the system

The millimeter wave-based stone curtain wall metal pendant detection system usually includes battery pack, power conversion module, signal source module, millimeter wave transmitting module, millimeter wave receiving module, signal processing module and main control module. In addition, it is equipped with a horizontal array antenna for the transmission and reception of millimeter wave signals.

When the millimeter-wave radar detection system is working, the untransmitted signal with preset characteristics is first generated by the signal source module, which is amplified by the millimeter-wave transmission module and then transmitted to the curtain wall through the antenna array. After the millimeter wave penetrates the stone layer, it is reflected back to the receiving antenna by the metal pendant, and then collects and transforms the signal by the millimeter wave receiving module into a digital signal. The signal processing module filters, enlarges, demodulates the received signals, extracts effective information and generates a perspective image. The main control module is responsible for controlling the whole detection process and transmitting the processing results to the display equipment for the operator to view.

3.1.2 Technical advantages

Nondestructive testing: in the case without damaging the stone curtain wall, to avoid the disadvantages of traditional destructive sampling.

Efficient and comprehensive: can realize the mass detection of a large area of stone curtain wall, improve the detection efficiency.

High precision: through the advanced signal processing technology and imaging algorithm, to achieve the accurate measurement of the position and state of the metal pendant.

High safety: the testing equipment itself has no radiation radiation risk and is harmless to the human body and the environment.

3.2 Ground penetrating radar detection

3.2.1 System composition and

The GPR detection system also includes the transmitter, transmitting antenna, receiving antenna, receiver and processor. Different from millimeter wave radar, the transmitting antenna and receiving antenna of ground penetrating radar are usually designed in order to better adapt to different detection scenarios.

When detecting the ground exploration radar, the transmitting antenna emits high frequency electromagnetic wave to the stone curtain wall, and the electromagnetic wave spreads in the stone layer and reflects when it encounters the metal pendant. After being received by the receiving antenna, the reflected signal is converted into an electrical signal through the receiver and transmitted to the processor for processing. After the processor filters, enlarges, A / D conversion, it generates radar image for operator analysis.

3.2.3 Technical advantages

Depth detection: can detect the metal pendant under the stone layer and its state.

High resolution: By selecting the appropriate antenna and frequency parameters, we can achieve a high detection resolution.

High flexibility: the parameters such as antenna spacing and detection depth can be adjusted according to the detection requirements.

4. TECHNICAL CHALLENGES AND SOLUTIONS

4.1 Technical challenges

Although radar technology has shown great potential in the detection of stone curtain wall metal pendants, it still faces some technical challenges:

Signal attenuation: the high-frequency electromagnetic wave attenuates when penetrating the stone layer, affecting the detection depth and accuracy.

Multipath effect: electromagnetic waves propagating in the stone layer may produce multiple reflection and refraction, leading to signal distortion and interference.

Noise interference: Environmental noise and electromagnetic interference may affect the reception and processing of radar signals.

Complex data processing: The data processing and analysis of radar images requires high computing power and professional knowledge.

4.2 Solution

For the above technical challenges, the following solutions can be proposed:

Optimize radar parameters: select appropriate transmission frequency, antenna spacing and detection depth to reduce the influence of signal attenuation and multipath effect.

Advanced signal processing technology: multi-channel Kalman filter, adaptive filtering and other advanced signal processing technology are adopted to suppress noise interference and improve signal quality.

Synthetic aperture radar imaging algorithm: the synthetic aperture radar imaging algorithm is used to process the radar images to improve the imaging resolution and clarity.

Intelligent detection system: develop intelligent radar detection system and automatic data processing software to realize the intelligence and automation of the detection process.

5. FUTURE DEVELOPMENT TREND

With the progress of science and technology and the deepening of research, the application of radar technology in the detection of stone curtain wall metal pendants will be more and more extensive. The future development trend mainly includes the following aspects:

Technology fusion: combine radar technology with other nondestructive testing technologies to form a multi-technology joint detection system to improve the comprehensiveness and accuracy of detection.

Intelligent development: develop intelligent radar detection system and automatic data processing software to realize the intelligence and automation of

the detection process.

Cost reduction: through technological innovation and scale production, reduce the cost of radar equipment to make it more widely used in practical engineering.

Standardization development: formulate and improve the relevant standards and specifications of radar detection technology to promote its application and development in the field of engineering testing.

6. CONCLUSION

Radar technology, as an efficient and non-destructive detection means, has shown great potential in the detection of metal pendants of stone curtain wall. Through continuous technical innovation and application practice, radar equipment will gradually become an important tool for the safety detection of stone curtain wall. In the future, with the continuous development and improvement of technology, the application prospect of radar detection technology in the field of stone curtain wall will be broader.

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