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CONTENTS

Study on the Migration Behavior of MgO in Magnesium Fluxed Pellets

HUA Ze-yi[1], BAI Jia-pei[1], YANG Ai-min[2], LI Jie[1,*], LIU Wei-xing[3]
[1]School of Metallurgy and Energy, North China University of Science and Technology, Tangshan 063210, Hebei, China;
[2]College of Science, North China University of Science and Technology, Tangshan 063210, Hebei, China;
[3]Comprehensive Test and Analysis Center, North China University of Technology, Tangshan 063210, Hebei, China
[*]Corresponding Author.

Abstract: In order to study the mechanism of MgO migration in the roasting process of magnesium fluxed pellets, roasting experiments, microscopic morphology and mineral composition analysis were used to study the influence of roasting temperature and MgO content on the migration behavior of MgO and to reveal the migration behavior of MgO in magnesium fluxed pellets. the results showed that with the increase of MgO content, the low temperature decomposition of Hematite led to the increase of magnetite content, and some of Mg^{2+} entered into magnetite to form Mg-containing magnetite due to the homogeneity, and a small part reacted with magnetite to form magnesite. As the roasting temperature increased, MgO mainly entered the spinel phase, magnetite content increased, hematite content first increased and then decreased, and magnesia-bearing magnetite and magnesite increased. In addition, when the roasting temperature was 1250℃, at w(MgO) was 1.16%, the hematite crystal shape changed from auto crystalline to semi-auto crystalline and heterocrystalline, the hematite recrystallization grew up to connect into sheets, and the hematite and magnetite connected crystals well, and the compressive strength could reach 2679N.

Key words: Magnesium Fluxed Pellet; Mgo Migration Law; Liquid Phase Generation; Microstructure

1. INTRODUTION

As a pillar industry in China, the steel industry has made a prominent contribution to our national economic development. However, with the introduction of some national policies and the limitation of ecological and renewable resources, it has prompted that blast furnace smelting must take corresponding measures to increase production while reducing material and energy consumption [1-2]. As an important part of modern steel production, the blast furnace ironmaking process contains a certain percentage of pellets in the burden structure, which has a uniform particle size compared to sinter, making the blast furnace stock column with high void ratio, good permeability and ore reduction rate, while pellets are easy to transport and store [3-5]. Therefore, the proportion of its use in the blast furnace charge structure is gradually increasing. While increasing the proportion of pellets into the furnace, in order to maintain the basicity of slag, to protect the performance of iron-containing raw materials, and to facilitate the separation of slag and iron, the basicity of pellets should be improved, as a carrier of magnesium flux, so the prospect of fluxed pellets is promising [6-10].

Due to the high silica content of mineral powder in eastern Hebei province, it will make the pellets bonded and affect the permeability of blast furnace. But with the addition of MgO flux will hinder the generation of liquid phase, so the research for high-silica magnesium fluxed pellets should be vigorously developed. Li Jie et al. [11-13] studied the effect of MgO content on the properties of magnesium fluxed pellets, and the results showed that with the increase of MgO content, the compressive strength of raw pellets increased, the falling strength decreased, and the metallurgical properties were better, but too high MgO content would lead to serious bonding phenomenon. Qiangjian Gao et al. [14] studied the effect of MgO on the oxidation process of Fe3O4 and calculated the relationship between the oxidation rate and time of Fe3O4 for magnesium fluxed pellets and standard acid pellets based on the core model of unreaction. Gao Xiang [15] systematically studied the state of Mg and Al occurrence state and transport law in the sinter formation process to reveal the influence of Mg and Al on metallurgical properties. A large number of researchers [16-18] have concluded that the addition of moderate amount of MgO can effectively control the generation of liquid phase amount. However, there is no detailed description of how the migration of MgO at the microscopic level affects the liquid phase of pellets, and there are fewer studies on the effect of the change of liquid phase on the metallurgical properties of pellets, so a lot of researched are needed.

The article mainly uses raw material of Tangshan high-silica iron ore concentrate, and studies the influence of MgO content and roasting temperature on the migration law of MgO. Finally reveals the influence relationship on the compressive strength of pellets through the migration law of MgO, which provides theoretical and technical support for the determination of pellets.

2. EXPERIMENTAL RAW MATERIALS AND SCHEME

2.1 Raw material

The iron ore powder used in the experiment is M and Y iron ore powder, and the flux agent are dolomite powder and limestone powder, the specific chemical composition is shown in Table 1.

Table 1 The chemical compositon of raw materials(%)

Raw material	TFe	FeO	SiO_2	CaO	MgO	Al_2O_3	LOI
M iron ore powder	66.47	26.40	6.37	1.80	1.06	0.88	-3.06
Y iron ore powder	67.01	25.20	6.16	1.05	0.94	0.79	-2.48
Limestone powder	-	-	3.20	49.60	1.20	1.13	42.62
Dolomite powder	-	-	2.16	29.90	20.16	0.98	42.44
Bentonite	-	-	56.23	4.59	2.56	12.12	11.92

As can be seen from Table 1, the iron concentrates used for pelletizing have an iron grade of 65% or more, and the silicon content of iron concentrates are higher than 5.0%, which are high silicon powder; in addition, the content of MgO is 1.06% and 0.94% respectively, which is a small difference.

2.2 Experimental methods

The experiments on the sintering characteristics of iron ore powder under different ratios of M powder and Y powder conducted by the group in the early stage showed that when the ratio of M powder to Y powder was 8:2, the crystalline strength and bonding phase strength were higher, and the crystalline bonding strength of mixed iron ore powder was high, and the resulting liquid phase bonding phase strength was high, which was conducive to the increase of pellet strength. Therefore, the pellets were dosed under the optimal iron ore powder ratio of M powder to Y powder of 8:2, and the MgO content was adjusted by adding dolomite powder on the basis of basicity of 1.0. the pellets were dosed according to the experimental raw material ratios in Table 2, and the pellet making and roasting experiments were carried out.

Table 2 Experimental scheme(g)

Dolomite powder proportion	0.0%	0.5%	1.0%	1.5%	2.0%
M iron ore powder	80.00	80.00	80.00	80.00	80.00
Y iron ore powder	20.00	20.00	20.00	20.00	20.00
Limestone powder	10.95	10.62	10.29	9.95	9.61
Dolomite powder	0.00	0.56	1.12	1.69	2.25
Bentonite	0.80	0.80	0.80	0.80	0.80

The MgO content was adjusted by dolomite powder with 0% ~ 2.0% and a gradient of 0.5%, and the MgO content was calculated to be 1.00%, 1.16%, 1.25%, 1.35% and 1.44% for different dolomite powder adding amounts. After mixing, pelletizing, drying, preheating, roasting, homogenizing and cooling processes were carried out in sequence, in which pelletizing was carried out by a Φ500×150 mm disc pelletizing machine, and roasting was carried out in a vertical roaster with about 1 kg of raw pellets in the basket each time. the specific roasting system was as follows: drying temperature was 300 ℃ for 10 min; preheating temperature was 900 ℃ for 10 min; roasting temperature was 1225℃~1350 ℃ for 15 min; homogenization and cooling at 1100 ℃ for 20 min; after roasting, the specimens were measured for compressive strength and microscopic mineral analysis to determine the optimum roasting temperature.

The effect of different MgO content and roasting temperature on the chemical composition of Magnesium fluxed pellets was then analyzed by electron microprobe. the effects on the mineral composition and elemental species and contents of Magnesium fluxed pellets were also studied by combining the tests of polarized light microscopy and X-ray diffraction analysis, and the migration law of MgO in the minerals under different conditions, and the effects on the compressive strength were studied by combining microscopic analysis.

3. ANALYSIS OF EXPERIMENTAL RESULTS

3.1 Effect of *w*(MgO) on the migration law of MgO

The mineral composition, microstructure and elemental composition of the pellets were analyzed by X-ray diffraction, polarized light microscopy and electron probe tests to study the effect of changing the MgO content on the migration law and the occurrence state of MgO in different minerals. the effect of different dolomite powder contents on the compressive strength of pellets was also determined to determine the optimum MgO content.

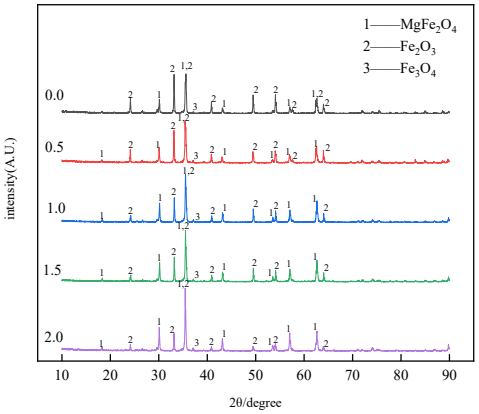


Figure 1 X-ray diffraction of the magnesium fluxed pellets at 1350℃

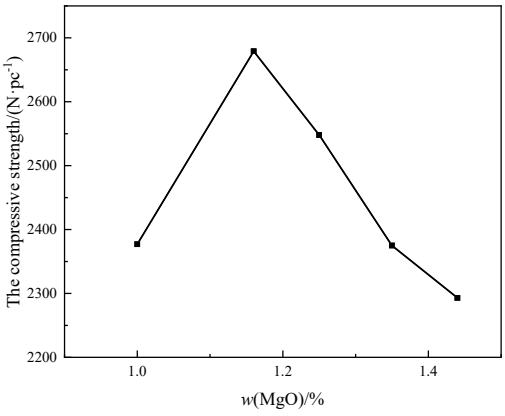


Figure 2 Effect of *w*(MgO) on the compressive strength of pellets

The XRD phase analysis of fluxed pellets with different dolomite powder content is shown in Figure 1. With the increase of dolomite powder content, the peak intensity of magnetite is low and the change is weak but has a tendency to increase, hematite content increases, and magnesite peak intensity which is similar to hematite also gradually increases, indicating that the oxidation

reaction has started, and the higher the MgO content, the faster the reaction rate.

At this roasting temperature, the addition of MgO makes the magnetite cannot be fully oxidized, while most of MgO enters into the magnetite at the same time, which makes the magnetite structure more stable, and then promotes the formation of magnesium-containing magnetite. Besides, a small portion of MgO reacts to form magnesioferrite at this stage, that is magnesium ferrite ($MgO\text{-}Fe_2O_3$), and magnesioferrite has a high melting point of 1580-1610 ℃ [19], which does not form a liquid phase at the roasting temperature, thus hindering the generation of high-temperature liquid phase. Combined with Figure 2, the compressive strength tends to increase and then decrease with the increase of MgO content. the compressive strength was higher at 1350 ℃ when dolomite powder was added at 0.5%, that is *w*(MgO) was 1.16%. This is due to the fact that as the mass fraction of MgO increases, the mass fraction of magnesite in the slag phase of the pellet increases, resulting in a higher melting point, which is less likely to form a liquid phase during roasting, and the solidification ability between the grains decreases, thus reducing the compressive strength of the roasted pellets.

In order to verify the above MgO content distribution in magnetite and hematite during roasting, electron probe analysis was performed on fluxed pellets with different dolomite powder contents to study the chemical composition of magnetite and hematite phases and to analyze the variation of the percentage content of MgO in magnetite and hematite phases. the electron probe images of hematite and magnetite are shown in Figures 3 and 4, respectively.

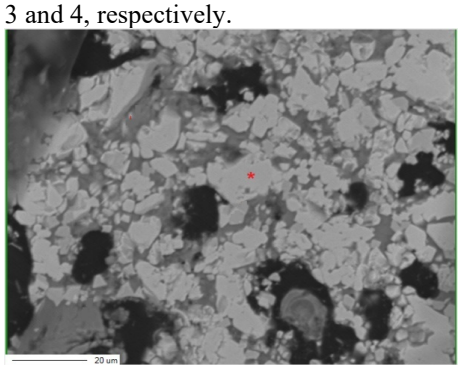


Figure 3 Hematite electron probe image(×1000)

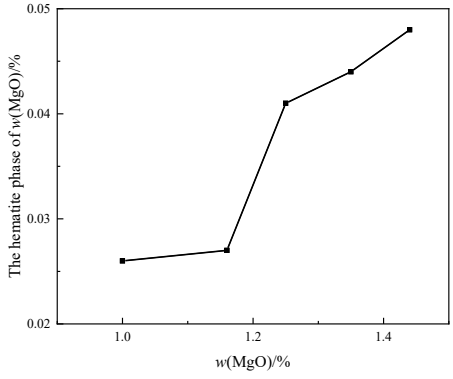


Figure 4 Variation of MgO content in hematite phase

As can be seen from Figure 3, the quantitative elemental analysis of the hematite mineral using the electron probe can be carried out to obtain the main elemental composition of the mineral, which can then be converted to the different chemical compositions and corresponding contents in the mineral at different dolomite powder contents. the chemical composition in the hematite phase is also analyzed by electron probe, as shown in Figure 4. As the MgO content in hematite is very small, the MgO content in hematite shows a gradually increasing trend with the increase of MgO content in the raw material, indicating that the added MgO is partially transferred to the hematite phase during the roasting process to form the magnesioferrite phase.

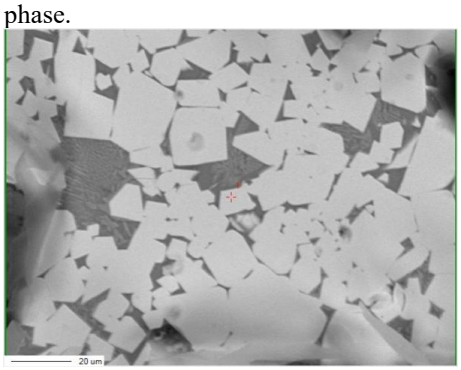


Figure 5 Magnetite electron probe image(×1000)

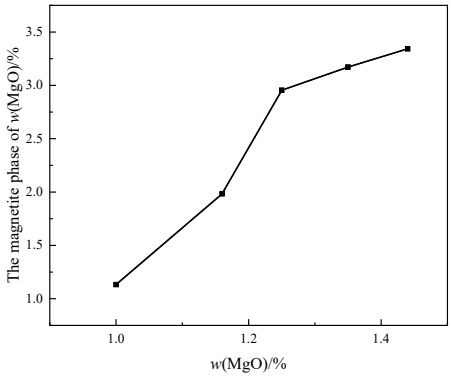
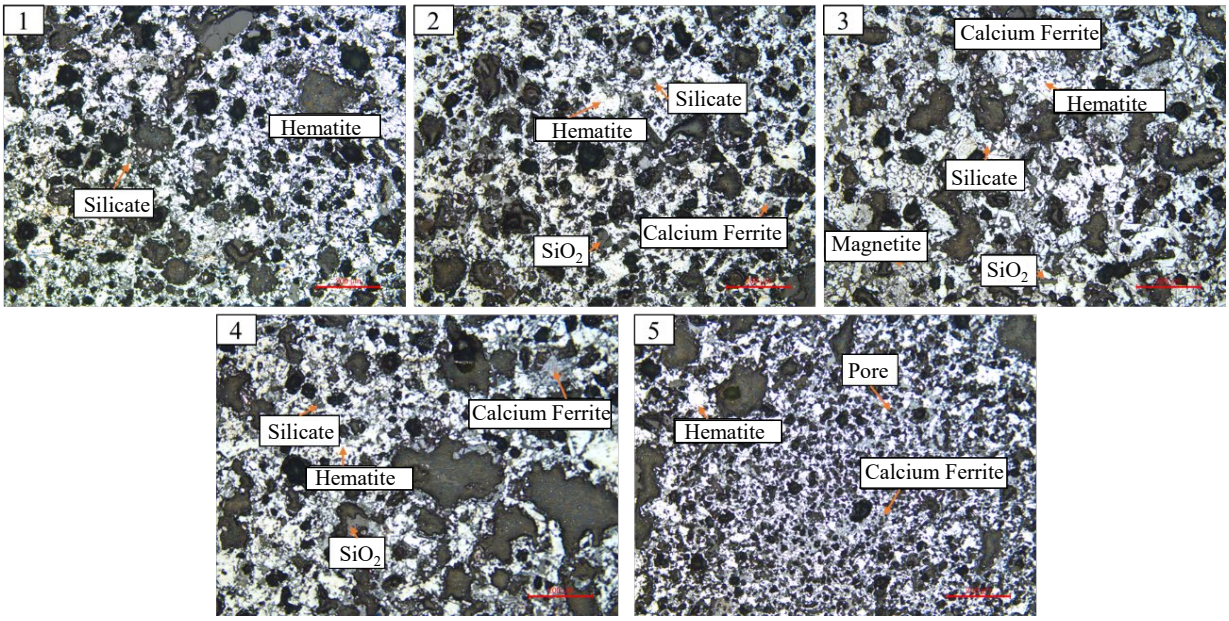


Figure 6 Variation of MgO content in magnetite phase

Electron probe analysis was performed on the magnetite phase, and the MgO content in magnetite corresponding to the MgO content in different pellets was plotted as shown in Figure 6, with the increase of MgO content in magnesium fluxed pellets, the MgO content in magnetite phase also increased continuously, and the MgO content in magnetite was much higher than that in hematite, and at the same dolomite powder content of 0.5%, MgO content of the hematite was only 0.026%, while the MgO content in magnetite is 1.984%. Magnetite belongs to the spinel group and has an equiaxed octahedral crystal shape. the radius of Mg^{2+} is smaller than that of Fe^{2+}, and homogeneity occurs. Mg^{2+} takes the place of Fe^{2+} in magnetite without changing the crystal structure. With the entry of Mg^{2+} the magnetite lattice structure becomes more stable, thus preventing the transformation of magnetite to hematite

from occurring. the microscopic mineral phase of magnetite was observed by polarized light microscopy, and the color of magnetite was brown. the magnetite in the pellet keeps increasing with the increase of MgO content. Although Mg^{2+} occurs homogeneously into the magnetite lattice, it cannot be distinguished under the polarized light microscope and still appears as the morphological characteristics of magnetite, which is magnesium-bearing magnetite.



1-*w*(MgO) = 1.00%; 2-*w*(MgO) = 1.14%; 3-*w*(MgO) = 1.25%; 4-*w*(MgO) = 1.35%; 5-*w*(MgO) = 1.44%.
Figure 7 Effect of different MgO contents on microscopic mineral phases of pellets (reflected light × 100)

The microscopic mineralograms after roasting with different dolomite powder contents were analyzed by polarized light microscopy as shown in Figure 7. From Figure 7(1), it can be seen that the magnesium fluxed pellets are mainly dominated by hematite, and the hematite mainly exists in the form of authomorphic and semi-authomorphic crystals. From Figure 7(2), it can be seen that with the addition of MgO, the hematite grains change from autocrystals to semi-autocrystals and other crystals. the increase of MgO inhibits the production of low melting point materials and promotes the reaction between Ca^{2+} and Fe_2O_3, so a small amount of calcium ferrate phase is generated. the small amount of calcium ferrate phase exists mainly at the edge part of hematite grains, while the pellet is mainly solid-phase solidified, and the small amount of liquid phase strengthens the crystal bond connection between hematite grains, so the compressive strength becomes higher.

From Figure 7(3), it can be seen that Mg^{2+} enters into the magnetite lattice due to the homogeneity of Mg^{2+} and Fe^{2+}, which makes the magnetite lattice structure more stable and leads to the transformation of magnetite to hematite less easily, so the hematite content will be relatively reduced. Due to the insufficient oxidation of magnetite, the continuous crystallization becomes poor, which leads to the reduction of compressive strength of pellets.

From Figure 7(4), it can be seen that due to the increasing MgO content, the liquid phase content inside the pellet increases, resulting in the hematite grains being wrapped by the liquid phase, which hinders the recrystallization connection between the hematite grains and the pellet strength decreases. the increase in the amount of liquid phase leads to some quartz residue and the pores become larger. From Figure 7(5), it can be seen that the liquid phase content is high and connected in a network, and the pores are small and numerous and uniformly distributed in the pellets, and these phenomena lead to a significant decrease in pellet strength. And the glassiness increases with the increase of MgO content.

Comprehensive XRD, electron microprobe and polarized light microscopy analyses show that the metallic phase of magnesium fluxed pellets is mainly hematite phase with the addition of MgO. the increasing magnetite phase is mainly due to two parts: first, with the increase of MgO content, Mg^{2+} enters the magnetite lattice to replace Fe^{2+} in the occurrence of homogeneity, so that the magnetite lattice structure is more stable, preventing the oxidation of magnetite into hematite recrystallization and growth, forming a large amount of magnesium magnetite. Secondly, due to the increase of MgO content, the reaction between MgO and Fe_2O_3 is promoted in the roasting process, so a large amount of magnesite phase is generated, the melting point of magnesite is high not easy to become liquid phase. Mg^{2+} into the magnetite lattice, the lattice structure does not produce changes, so magnesite-containing magnetite and magnetite are similar in microscopic morphology is not easy to distinguish. With the addition of MgO inhibits the generation of low melting point substances and promotes the migration rate of Ca^{2+}, which makes it easier to react with Fe_2O_3 within the pellet to form the ferrite phase, thus increasing the pellet strength.

However, with the addition of large amount of MgO, the liquid phase will gradually increase and have many and uniform pores, and too much liquid phase will connect into sheets and wrap the hematite, which hinders the recrystallization of hematite. Therefore, the MgO content is not easy to be too high, and the right amount of MgO is better for the compressive strength of pellets.

3.2 Influence of roasting temperature on the migration law of MgO

The composition of magnesium fluxed pellets were analyzed by X-ray diffraction at different roasting temperatures when 0.5% dolomite powder was added, binary basicity $R_2 = 1$ and roasting time of 15 min. Then, the MgO content of the minerals were analyzed by electron microprobe measurement at roasting temperatures of 1250℃ and 1350℃ to determine the percentage of MgO in each mineral and to study the effect of roasting temperature on the percentage of MgO in the minerals.

X-ray diffraction analysis of the samples was performed to obtain the X-ray diffraction patterns at different temperatures in Figure 8. the analysis was performed by Jade software and it was obtained that the diffraction peak of Fe_2O_3 increased continuously and the hematite content increased continuously as the temperature increased from 1225℃ to 1300℃. However, at 1325℃ to 1350℃, the diffraction peak of Fe_2O_3 decreases, the hematite content keeps decreasing, and the magnetite content increases. This is because the oxygen concentration is low in the high temperature environment, Fe_2O_3 undergoes slag phase consolidation and partly decomposes into Fe_3O_4. When the temperature rises to 1250 ℃, there is unreacted SiO_2 in the minerals, which is because the calcium-iron garnet phase and silicate phase generated at low temperature undergoes decomposition reaction as the temperature rises, and the decomposed CaO reacts with Fe_2O_3 to form calcium ferrate phase, while part of SiO_2 does not further reaction to produce calcium silicate phase, a small amount of liquid phase resulting in the highest compressive strength of pellets at 1250℃. In addition, SiO_2 will be precipitated during the crystallization process. In the high temperature range, a large amount of magnesium magnetite phase is generated, and the ferromagnesite phase increases as the temperature rises.

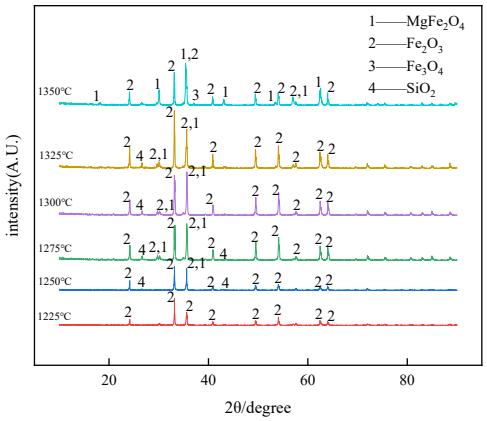


Figure 8 X-ray diffraction of different roasting temperature

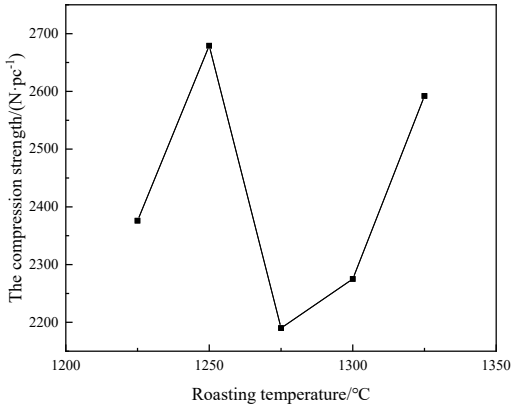
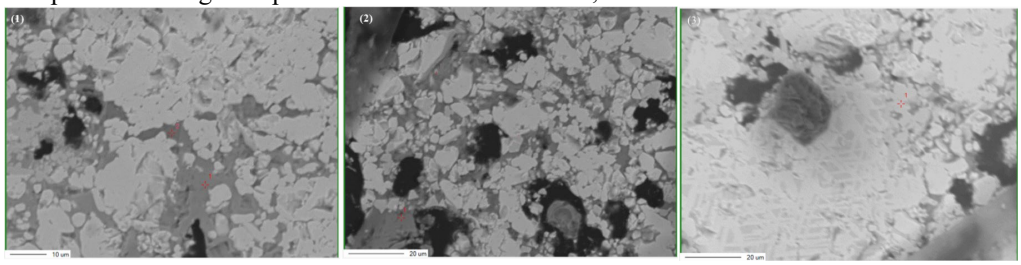


Figure 9 Effect of roasting temperature on the compressive strength of pellets

For the above-mentioned different roasting temperature of the main magnesium-bearing phases appeared in the electron probe determination, different phase composition of MgO content is determined and analyzed as follows.



(1)-1-Andradite phase; (1)-2-feldspar phase; (2)-1-calcium silicate phase; (3)-1-spinel phase.

Figure 10 Electron probe image of the phase containing magnesium (×1000)

Figure 10 shows the electron probe images of the Mg-containing phases. the MgO content in different phase compositions was determined by electron probe at 1250℃ and 1350℃ for the main Mg-bearing phases as shown in Figure 11.

Combining the changes of MgO content in different Mg-bearing phases at 1250℃ and 1350℃, it can be concluded that the MgO content in spinel phase minerals gradually increases with the increase of temperature, where the higher the temperature the higher the proportion of MgO content in magnetite phase, the poor recrystallization of hematite oxidation,

and the MgO in spinel minerals is mainly occurred in the hematite phase. In the feldspar phase with the increase of temperature the proportion of MgO is less, and the content of magnesium feldspar is reduced, and the strength of iron feldspar is higher. In contrast, the proportion of MgO in the andradite phase and silicate phase did not change significantly, and the magnesioferrite phase gradually increased with the increase of temperature, and both the Mg-containing magnetite phase and the magnesioferrite phase were high melting point phases.

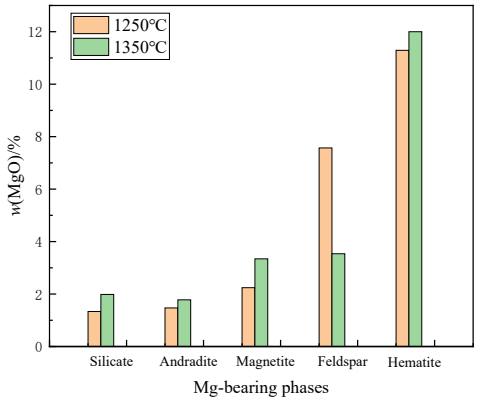
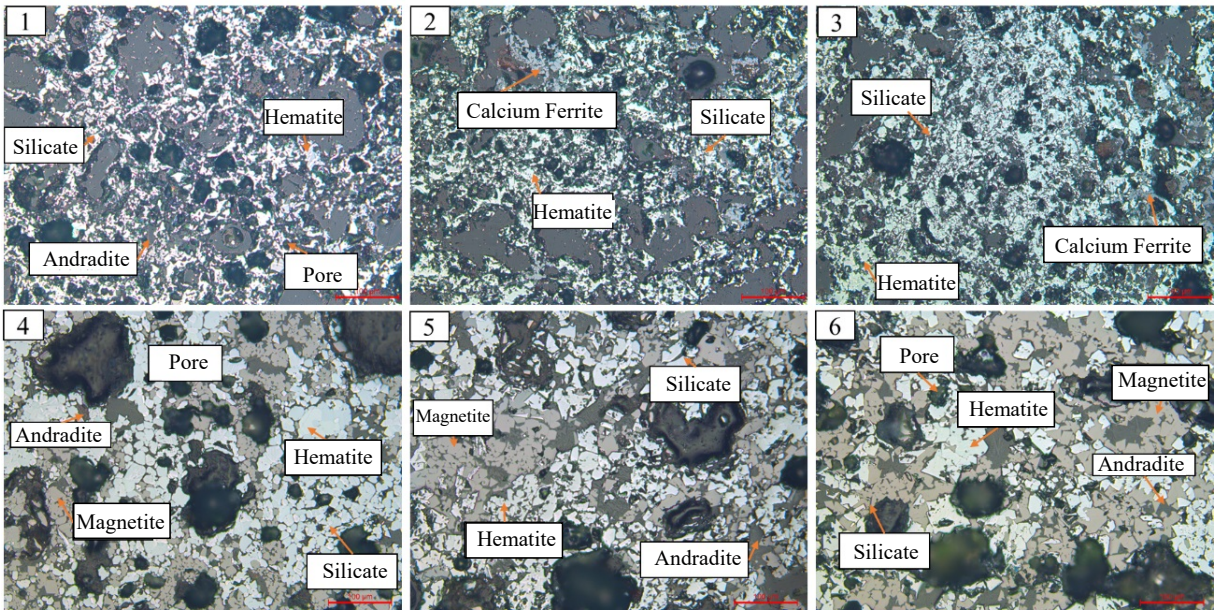


Figure 11 MgO content of different phases at 1250℃ and 1350℃

In order to further identify the relationship between roasting temperature and pellet microstructure, the pellets were analyzed by polarized light microscopy for microscopic mineral phases, and the results are shown in Figure 12.

The microscopic mineralograms after roasting at different temperatures were analyzed by polarized light microscopy as shown in Figure 12. the hematite gradually increased and was evenly distributed with a tight structure when the temperature increased from 1225℃ to 1275℃. From 1300℃ to 1350℃, the hematite gradually decreased and the grains became larger, and the magnetite gradually increased and the grains also became larger, and the structure was loose. From Figure 12(1), Figure 12(2) and Figure 12(3), it can be seen that hematite at 1225℃ is poorly connected with crystals and hematite is mostly present as autocrystals, while at 1250℃ and 1275℃, hematite is mostly other-shaped crystals with good crystal bonding. As shown in Figure 12(2) and Figure 12(3), there is a calcium ferrate phase generated, and the liquid phase bonded phase is mainly silicate phase and calcium ferrate phase. the liquid phase is less generated and uniformly distributed outside the hematite grains, which strengthens the crystal bond connection and increases the consolidation strength. As shown in Figure 12(4) and Figure 12(5), the hematite grains become larger, the amount of liquid phase increases with the increase of temperature, and the pores become larger. And the excessive liquid phase bonding phase separates the hematite grains and inhibits the recrystallization growth of hematite grains.



1-1225℃; 2-1250℃; 3-1275℃; 4-1300℃; 5-1325℃; 6-1350℃.

Figure 12 Effect of different temperatures on the microscopic mineral phases of pellets (reflected light × 100)

As shown in Figure 12(6), the magnetite content increases due to the decomposition of hematite at high temperature to produce magnetite, Mg^{2+} and Fe^{2+} occur in a homogeneous manner, making the magnetite lattice structure stable and the internal stress becomes stronger will offset some of the pressure. And as the hematite content decreases, the calcium ferrate phase decreases and some of the hematite recrystallizes and grows to connect into sheets.

In summary, the compressive strength is higher at roasting temperatures of 1250℃, 1275℃ and 1350℃. the liquid phase bonding phase is mainly low melting point silicate phase and calcium ferrate phase, and the solid fusion reaction between MgO and hematite

produces high melting point magnesioferrite phase, which inhibits the generation of low melting point ferrate phase; and Mg^{2+} easily migrates into the magnetite lattice, which stabilizes the magnetite lattice structure and inhibits the growth of hematite recrystallization; however, with the increasing temperature, the connection between magnetite grains grows, which increases the compressive strength.

4. CONCLUSIONS

(1) With the addition of MgO, the further oxidation of magnetite was hindered, and Mg^{2+} entered the magnetite lattice to replace Fe^{2+} to occur in the homogeneity, so that the magnetite lattice structure then stabilized, and a large amount of Mg-containing magnetite is formed. Part of MgO reacts with Fe_2O_3, magnesioferrite phase is generated, which has high melting point and not easy to become liquid phase.

(2) With the increase of MgO content, the hematite grains turn into semi-automorphic crystals and heteromorphic crystals from autocrystals, the grains show irregular state, the grains become lamellar tightly connected, the pores between the particles become rounded, the porosity decreases, when the MgO content is 1.16%, the highest compressive strength of pellets.

(3) At the roasting temperature of 1250℃, 1275℃ and 1350℃, with the increase of magnesioferrite and Mg-containing magnetite, the generation of low melting point ferrite phase is inhibited, and a small amount of liquid phase plays a role in strengthening consolidation, and hematite and magnetite crystallized well, the compressive strength is higher, especially when the roasting temperature reached 1250℃, the compressive strength of pellets could reach 2679N/pc.

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The Application of Mechatronics Technology in Mechanical Engineering and Its Trend Prospect

Wujun Zeng
College of Mechanical Engineering, Hunan University of Arts and Science, Changde, Hunan, China

Abstract: Mechatronics technology in the process of modern industrial production belongs to the emerging technology, which is mainly the integration of machinery and microelectronics technology, improve the efficiency, quality and precision of industrial production, at the same time, with the improvement of the development level of computer technology, driving the further development of mechatronics technology; When mechatronic integration technology is applied to mechanical engineering, it can effectively improve the intelligent and humanized level of engineering. Therefore, relevant enterprise leaders need to organize professional and technical personnel to carry out in-depth research and innovation on the technology, so that it can be more fully integrated into mechanical engineering, and lay a solid foundation for the healthy development of modern industry. the following is mainly the application and development trend of mechatronics technology in mechanical engineering analysis and exploration.

Keywords: Mechatronics technology; Mechanical engineering; Application development

1. THE SPECIFIC OVERVIEW OF ELECTROMECHANICAL INTEGRATION TECHNOLOGY

Under normal circumstances, the so-called mechatronics technology is mainly information technology, microelectronics technology and mechanical technology organic integration together, technical personnel can also use the technology to design and manufacture modern automatic production equipment, provide great convenience for modern industrial production, replace manual operation, and ensure the quality and precision of related products; When mechanical and electrical integration technology is applied in the production and construction process of mechanical engineering, it can effectively improve the intelligent level of mechanical equipment, control and reduce the energy consumption of equipment operation, save the enterprise's own cost, improve economic benefits, and promote the healthy development of the enterprise itself and the industry as a whole [1].

2. THE PRACTICAL APPLICATION OF MECHATRONICS TECHNOLOGY IN MECHANICAL ENGINEERING

2.1 Numerical control machine tools

When mechatronics technology is applied in mechanical engineering, CNC machine tools belong to one of the common types, which is mainly made of digital module technology and electronic computer and other advanced technology integration into the processing and manufacturing equipment, improve the efficiency and accuracy of production processing; In daily work, technical personnel can also use electromechanical integration technology to strengthen the transformation of CNC machine tools, the original defects and deficiencies of equipment to correct and eliminate, reduce processing errors, in order to improve the economic and social benefits of the enterprise.

2.2 Mechanical engineering monitoring

Usually, when mechanical equipment is in production and operation, due to the influence of the equipment itself or the surrounding environment and other factors, it is easy to produce fault problems, resulting in the deviation of product processing quality and precision; In order to avoid these problems, enterprise leaders can organize technical personnel, the application of mechanical and electrical integration technology, for mechanical equipment to give automatic monitoring function, to ensure that when the equipment operation process fault, monitoring system can be found in time, and to the operator issued early warning information, after the technical personnel for detection and maintenance, To provide protection for the equipment itself and the overall benefit of mechanical engineering.

2.3 Mechanical precision control

Mechatronics technology has a strong precision control function, therefore, mechanical processing enterprises can be applied to mechanical engineering, economic case processing of engineering parts, reduce the error of parts operation, so as to improve the accuracy of engineering operation; On the other hand, the operation of mechanical engineering and internal equipment will be subject to personnel error and error phenomenon, which is mainly due to the shortcomings of the professional quality, technical ability and standard consciousness of the operators themselves, the daily operation process does not strictly follow the requirements of the standards; By strengthening the application of electromechanical integration technology, it can replace the operator to control the operation process of equipment, realize automatic production and processing, and effectively avoid the occurrence of error phenomenon.

2.4 Packaging machinery

Packaging machinery is one of the common equipment in modern mechanical engineering, but because of the

complex structure of packaging machinery, it is easy to break down in daily operation, and the difficulty of fault maintenance is high, if not handled in time, it is easy to affect the overall benefit of the project; Therefore, technicians can make use of the application of mechatronics technology to carry out real-time monitoring and automatic control of packaging machinery, realize the automatic production of products, avoid the error caused by personnel operation error and product precision deficiency, improve the yield of mechanical products, and further promote the improvement of economic and social benefits of related enterprises [2].

2.5 Mechanical arm

In addition, when the mechatronics technology is applied in mechanical engineering, the mechanical arm is also one of the common types. In daily work, the application of the mechanical arm can carry out accurate control of the processing equipment, and carry out dynamic supervision and accurate adjustment of the equipment processing speed and process. Compared with manual operation, the manipulator can operate normally in high temperature and strong acid and alkali environment, and is less affected by adverse environment. It can effectively increase the efficiency and accuracy of production and processing, so as to realize 24h operation of the production line.

3. THE DEVELOPMENT TREND OF MECHATRONICS TECHNOLOGY APPLIED IN MECHANICAL ENGINEERING

3.1 Miniaturization trend

In the past, due to the influence of technical level and other factors, the volume of all kinds of equipment and parts is larger, thus limiting the scope of application of these equipment, and with the rise of the level of science and technology, the volume of all kinds of components is shrinking, driving the volume of related equipment to shrink, gradually to the micro, micro field development, therefore, in the mechanical and electrical integration technology research and development innovation, the trend of miniaturization is one of the important development directions, realizing MEMS integration and micromechanical technology, promoting the progress and development of mechanical engineering and enterprise as a whole.

3.2 Intelligent trend

In the development process of modern mechanical engineering production, mechatronics technology and artificial intelligence technology integration, thus giving birth to CNC machine intelligence and robot, which can simulate artificial intelligence, reasonable judgment of the operation of mechanical equipment, adjust its running state; Therefore, in the process of R&D and innovation of mechatronics technology, technicians can strengthen its development to the direction of intelligence, improve the depth of integration of artificial intelligence and mechatronics technology, to provide guarantee for the intelligent development of mechanical engineering.

3.3 Networking trend

In addition, in the study of the development trend of electromechanical integration technology, technical personnel can also network as the research direction, mainly because network technology in modern social operation occupies a very important position, and all walks of life operation and People's Daily life has a close connection, and when the emergence of new technology or products, It can be popularized to other regions or countries through network computing; Combined with the application of network technology, remote monitoring and control can be carried out on the production and processing process of mechanical products. Electromechanical integration products are used as the terminal to ensure the efficiency of equipment operation and further improve the overall development level of mechanical engineering and the industry [3].

4. CONCLUSION

To sum up, with the continuous improvement of the level of modern science and technology, a large number of advanced technology and equipment used in the industrial production process, driving the application and development of mechatronics technology, and because mechatronics technology has a number of advantages and characteristics, has been used by a large number of enterprises in the process of mechanical engineering construction, improve the level of development in the field of mechanical engineering; On the other hand, the leaders of relevant enterprises also need to organize technical personnel to deeply study the application of mechatronic integration and understand its advantages and disadvantages. On this basis, they can carry out research and innovation, develop towards the trend of miniaturization, intelligence and networking, and provide convenience for the later mechanical engineering construction and industrial production. Thus promote the development level of industry and society as a whole.

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On the Application of Garment Structure in Garment Design

Yanfang Duan
Eastern International Art College, Zhengzhou University of Light Industry, Zhengzhou, Henan, China

Abstract: At present, all industries and fields are in rapid development. the fashion design industry has changed with the change of people's ideas and quality of life in recent years. In the fashion design work, how to choose the clothing structure reasonably, reflect different shapes and design concepts has become a difficult problem. From the perspective of fashion design, the structure of clothing plays a vital role in it. How to combine clothing reasonably in fashion design is the key problem to be solved at present. Based on this, this paper simply analyzes the application of clothing structure in clothing design.

Keywords: Fashion design; Clothing structure; Function

1. INTRODUCTION

At present, fashion design has become the most concerned work of the society, which determines whether people are satisfied with their own clothes. Then, in fashion design, the application of clothing structure has become an essential link, which can fine divide the overall modeling structure involved, and intuitively display the relationship between the shape, quantity and details of each detail part of the clothing and the overall clothing, so as to facilitate the modification and adjustment of the deficiencies, and reduce the use of costs, so as to obtain the best results at the lowest cost. Let an increasing number of clothes, modeling is more and more perfect, to meet people's diverse needs, showing our country's customs and culture.

2. CLOTHING STRUCTURE AND CLOTHING DESIGN

The so-called structure of clothing is actually the organic combination of each detail of clothing according to its function and structure, and ultimately improve the beauty of clothing. However, as the whole garment is divided into different parts, and the style, design method and structure of each part are also different, which increases the complexity and complexity of the combination and brings difficulty to the design work to some extent. Then, in actual costume design, designers must accurately grasp the characteristics and integrity of clothing structure, and understand how to put decorations on each part to appear beautiful, so as to achieve the ultimate goal of costume design and meet people's diverse needs [1]. Generally speaking, the accuracy of clothing structure will affect clothing design to some extent, so designers must pay attention to the quality of all aspects of clothing design, such as clothing material purchase, quality inspection, cutting design and sewing, etc., which are key factors to determine the beauty of clothing. Therefore, No matter what kind of cut the designer chooses, he must ensure the precision of sewing, sewing, only in this way, to ensure the uniform sewing line and the beauty of the clothing.

3. THE ROLE OF COSTUME STRUCTURE IN COSTUME DESIGN

3.1 Show the curve of the human body

Today, with the rapid development of society, economy and technology are also moving forward, people's living standards continue to improve, more and more high requirements for clothing, no longer just a simple warm based, more is the shape and structure of clothing, in today's changing day, clothing has become strange, put forward more requirements for function. Then in the fashion design, the clothing structure can be used to reflect the main role of the clothing structure through the internal structure line, such as darts, dividing lines, pleats, etc., are commonly used in the fashion design of the internal structure line, can make the clothing look more three-dimensional. If these structural lines are applied to clothing design, they can play different roles, such as in the waist and buttocks, which can perfectly show the curve of the human body and modify the figure. At the same time, the application of clothing structure to clothing design can also play a good decorative role. the pleats can be used to fold the cloth reasonably and sew along the marks to form a variety of lines, which can make the original plain clothing more attractive and gain more praise. In addition, for costume design, the increase of lines is undoubtedly the icing on the cake, which can improve the sense of art, hierarchy and space of clothing, bring people a bright, fresh and elegant feeling, and better meet modern people's pursuit and diversified needs for beauty of clothing [2].

3.2 To meet the needs of human movement

The application of structural line, not only can perfectly show the curve of the human body, but also can meet people's needs for sports, the design of many sport-related clothing, starting from the human body structure, the first accurate measurement of the human arm length, leg length, waist circumference, chest circumference, hip circumference and the movable joints, reasonable application of structural line, and the joint should also leave enough space for activity, So that people will not feel tight when wearing clothes, enhance people's sense of experience.

3.3 Improving the comfort level

In addition to the above aspects, deepening the application of clothing structure in clothing design is

also helpful to improve the comfort level. In today's era, people's quality of life has been significantly improved, and they attach great importance to comfort in the aspect of wearing clothes. Comfort must be the premise of clothing when showing human curves and meeting the needs of human movement. In this regard, designers should not only rely solely on the clothing structure to improve the comfort level, but also combine the clothing structure with pleats, so that the clothing design can guarantee the comfort level while taking into account other characteristics.

4. THE SENSE OF DESIGN IN CLOTHING INTERNAL STRUCTURE DESIGN

4.1 Enhance creativity

With the development of the Times, the field of fashion design has a relatively rapid development, and in fashion design, designers are also increasingly concerned about the structure of clothing, and the structure of clothing is deeply applied to the fashion design. Scientific and reasonable fashion design can not only improve the overall beauty and comfort of clothing, but also reflect the buyers' aesthetic concept and social status to a certain extent, which makes the fashion design more creative. At present, the competition in fashion design is fierce. By enhancing the creativity of fashion design, it can help to improve the competitiveness of designers or enterprises. Not only that, by improving the creativity of clothing design, can produce a strong appeal to consumers, for example, in the suit design, the cuff of the unique design, so that it can form a unique feature with other suits, which can attract the attention of consumers.

4.2 Structural design in characteristic clothing

In the application of clothing structure, attention should be paid to the rationality of the application of clothing structure. In addition to some ordinary types of clothing design, clothing should also be combined with special clothing, so that it can produce a different sense of beauty and reflect a different feeling. For example, the zhongshan suit in our country, which can see the wearing characteristics of an era and contains rich cultural information, the zhongshan suit can integrate the design aesthetic feeling and historical culture into a piece of clothing only through its distinct structure design and unique style. For example, Japanese kimono, Korean and Korean clothing, all have a strong historical background, but also in the structure of its clothing design has a very distinct characteristics, so that people have a unique feeling. In a word, costume structure is the soul of costume design. Therefore, in actual costume design, attention should be paid to costume structure and new design ideas should be incorporated into it to further promote the innovation and development of costume design [3].

5. CONCLUSION

To sum up, there is a very fierce competition in the fashion design industry at present. From the practical analysis, the application of the fashion structure should be actively strengthened in the fashion design, and the beauty of the fashion design should be enhanced through the fashion structure, so that it can reflect the sense of design. In this paper, the relationship between costume structure and costume design is briefly analyzed, and the function of costume structure in costume design is discussed. Clothing design needs to rely on clothing structure, and clothing structure needs to rely on clothing design to present, it can be said that the two complement each other, not isolated, clothing structure should be deeply applied to clothing design, so as to promote clothing design can be more design sense and innovation. I believe that with the continuous development of costume design, the cognition of costume structure will gradually deepen.

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Explore the Concept of Green Design in Modern Environmental Art Design

Miyu Fan, Gang Qin
School Of Art and Design, Lijiang Institute of Culture and Tourism, Lijiang, Yunnan, China

Abstract: With the development of social economy, the problem of environmental pollution is becoming more and more serious. In order to improve the situation, it is necessary to strengthen the implementation of the green concept. the implementation of the green design concept in the modern environmental art design helps to promote the developmnt of modern environmental art, alleviate the original serious pollution problem, so as to create more economic and ecological benefits. This paper will discuss the concept of green design in modern environmental art design.
Keywords: Modern environmental art design; Green design concept

1. INTRODUCTION

At present stage, the ecological environmental problems of our country urgently need to be solved, such as acid rain, water pollution and other problems, seriously endangering the quality of the ecological environment, but also affecting the human health, therefore we should strengthen attention to the green design concept. In order to promote the development of modern environmental art design, it is necessary to attach importance to the application of green design concept. By giving full play to the role of green design concept, it can help alleviate the current severe environmental problems, so as to promote the sustainable development of modern environmental art design.

2. THE PRINCIPLE OF GREEN DESIGN CONCEPT

In modern environmental art design, relevant designers should master the application principle of green design concept, so as to give full play to the role of green design concept, to improve the quality of environmental art design, promote the development of modern environmental art design has a positive impact.

2.1 The principle of economy

With the more and more serious environmental pollution, the shortage of resources is not easy to ignore. In order to control this situation and alleviate the increasingly scarce shortage of resources, we should adhere to the principle of saving, so as to deal with ecological imbalance, resource depletion and other problems. For relevant designers, they need to uphold the concept of modern environmental art design and implement the principle of saving in order to achieve the unity of art and environmental protection.

2.2 The Principle of Nature

At present, all sectors of society attach great importance to the problem of environmental degradation. In order to solve this problem, it is necessary to maintain the harmonious coexistence between human and nature, which is also advocated by the concept of green design. Therefore, modern environmental art designers should adhere to the principle of nature, taking into account whether there is any behavior damaging nature in environmental art design, if so, they should adjust and optimize in time to avoid the natural environment being affected, so as to ensure the environmental protection of modern environmental art design scheme. For example, relevant designers need to follow the concept of green design, try to adopt simple and generous design methods, abandon luxury, exaggeration and other design methods, which is conducive to saving resources and protecting the ecological environment.

2.3 The principle of moderation

At present, our country advocates the moderation principle. the principle is to save resources and reduce resource waste. Therefore the modern environmental art design should follow the moderation principle. In the design process, relevant designers can adopt economical design schemes to reduce excessive waste, which is helpful to guide consumers and encourage them to gradually develop a sense of frugality, so as to achieve good design effects.

2.4 The principle of comfort

Art design is to meet the needs of consumers and promote consumers to enjoy life in a comfortable environment, so modern environmental art design should follow the principle of comfort. the implementation of green design concept is conducive to providing comfortable design space for the public, making modern environmental art design more comfortable, and promoting the long-term development of modern environmental art design [1].

3. THE IMPLEMENTATION OF GREEN DESIGN CONCEPT IN MODERN ENVIRONMENTAL ART DESIGN

In modern environmental art design, we should strengthen the understanding of the concept of green design, master the relevant design principles before implementing the concept of green design, in order to implement the concept of green design, so as to create an environmental protection and safe environment for consumers. To this end, this paper will put forward the following implementation strategies:

3.1 Improve the utilization rate of resources

For the implementation of the concept of green design, the utilization rate of resources should be improved first, the waste of resources should be reduced, and relevant designers should be encouraged to design environmental art schemes scientifically and reasonably,

so as to enhance the utilization value of resources and alleviate the phenomenon of resource shortage. Therefore, modern environmental art designers should have the consciousness of saving, the reasonable use of construction materials, can not waste at will, so as to alleviate the phenomenon of resource shortage, and truly realize the harmony between man and nature.

3.2 The use of green materials

At the present stage, with the rapid development of society and economy, various industries have an increasing demand for resources. Large-scale exploitation of resources is often adopted, resulting in an increasingly serious shortage of resources. Therefore, the concept of green design should be applied in modern environmental art design, the concept of green and environmental protection should be adhered to, and the use of renewable and recycling green and environmental materials should be strengthened, and the use of non-renewable resources should be reduced, so as to alleviate the shortage of resources and maintain the ecological balance [2].

3.3 Putting people first

Modern environmental art design should adhere to the principle of people-oriented, taking into account the economic conditions and living standards of the public, the public demand and environmental art design integration, in order to design high-quality environmental art design scheme, help to meet the needs of the public. Therefore, relevant designers should consider whether the public needs and suits, try their best to present natural and safe art design, and constantly optimize the original environmental art design scheme to ensure that the design scheme is more environmentally friendly, so as to reduce the impact on the public body and effectively improve the design safety.

3.4 Pay attention to the coordination of artistic design

To integrate the concept of green design into modern environmental art design, we should pay attention to the coordination of art design, achieve this goal by implementing the coordination between human and nature, and constantly improve the environmental protection of environmental art design scheme, so as to meet people's needs and reduce the impact on the ecological environment, so as to promote the long-term development of modern environmental art design industry. When selecting raw materials, designers should consider whether they are environmentally friendly, reduce the use of non-renewable resources, and do a good job in environmental protection to avoid serious pollution of ecological environment, so as to ensure that environmental art design works meet the current development needs [3].

3.5 Enhance the professional ability of designers

For modern environmental art design, the professional ability of designers is of great significance. If the professional ability of designers cannot be guaranteed, the quality of the entire artistic works will be affected, and thus the concept of green design cannot be fully implemented. In this regard, relevant designers should have a positive awareness of learning, strengthen the study of green design concept, realize the importance of harmonious coexistence between human and nature, and adopt low-carbon, environmental protection and other strategies to continuously optimize the original modern environmental art design scheme, so as to make modern environmental art design more environmentally friendly and safe, so as to reduce the pollution to the ecological environment. Constantly improve the safety of modern environmental art design, but also to meet the needs of consumers.

4. CONCLUSION

With the development of social economy, the problem of environmental pollution needs to be solved in time. In modern environmental art design, how to design a reasonable scheme has practical significance, because it is related to the development of future generations, so we should strengthen the study of green design concept. the implementation of the concept of green design is helpful to improve the environmental protection and safety of modern environmental art design scheme, so that the concept of green design can play an effective role, and thus provide a guarantee for improving the artistic and environmental protection of the design scheme. In this regard, relevant designers should strengthen the study of green design concept, and then apply it to modern environmental art design scheme, in order to contribute to the development of relevant fields in our country.

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Thinking On Teaching Innovation of Chemical Instrument and Automation Course in Higher Vocational Colleges

Jie Li
Zibo Vocational Institute, Zibo, Shandong, China

Abstract: Higher vocational colleges are the main position of training skilled talents, according to the students learn to develop a clear talent training program, the launch of targeted skills training. the course of chemical instrumentation and automation specifically involves the professional knowledge of different disciplines such as physics and chemistry, which puts forward high requirements on students' thinking logic ability and practical operation ability. Therefore, higher vocational colleges should formulate feasible talent training programs based on students' development conditions to better guarantee the quality of talent training. Based on this, this paper focuses on the innovation of chemical instrumentation and automation course teaching in higher vocational colleges for reference.

Keywords: Higher vocational colleges; Chemical instrumentation and automation; Course teaching; Innovation

1. INTRODUCTION

Chemical instrumentation and automation is a compulsory course for chemical majors in higher vocational colleges. It is a comprehensive application subject integrating automatic control, instrumentation, instruments and computers, which puts forward high requirements for students' thinking development and practical operation ability. This subject requires students to develop their professional operation skills such as chemical testing and automatic control system on the basis of mastering theoretical knowledge of chemical engineering, and carry out targeted education around practical ability. However, in the specific teaching process, there will still be many problems in the teaching of this kind of courses, so it is necessary to put forward the corresponding innovative measures according to the current teaching situation, and further improve the classroom.

2. APPLICATION AS THE MAIN BODY, ENRICH THE TEACHING CONTENT

For students majoring in chemical engineering in higher vocational colleges, the course of chemical instrumentation and automation specifically focuses on the theoretical knowledge of the expression structure, principle installation and later maintenance of the detector. In terms of skills, I need to master the composition, operation and complex control systems of simple control systems, so that I can find corresponding jobs in the future employment process and truly give play to my own advantages. Nowadays, in most higher vocational colleges, the number of chemical instrument and automation courses is small, which is in obvious conflict with the professional knowledge learned in this course. For this phenomenon, teachers need to improve the content of the course in the specific teaching process. In terms of theoretical teaching, the structure, working principle and application of instruments with obvious representativeness, applicability and universality are given priority. In accordance with the principle of theoretical knowledge education, more opportunities are created for practical teaching and practical projects are appropriately increased [1]. For example, when learning the knowledge point of "Chemical testing instruments and maintenance", the teacher chooses two commonly used instruments among each kind of testing instruments to focus on the explanation, and guides the students to use cooperative learning or independent learning for deep understanding of the rest of the content. When learning the knowledge point of "Chemical Pressure Detection", the teacher will focus on the structure, working principle, selection, installation and application of the elastic pressure gauge, so that students can truly grasp the knowledge point of this course. Then, the students were introduced to the main piezoresistive, capacitive and other common sensors, intelligent pressure transmission and pressure testing instruments. In the concrete practical teaching process, the teacher took the "disassembly and assembly of spring tube pressure gauge" experiment as the main learning content in the class, so that the students could intuitively understand the structure principle of elastic pressure gauge and the operation process of elastic components during the learning period. When learning the knowledge of "Chemical temperature detection", the structure principle, installation, application and maintenance of thermocouple and thermal resistance thermometer are taken as the teaching content, and the detailed explanation through practice is helpful for students to grasp the knowledge quickly. In the knowledge of "chemical level detection", the differential pressure level transmitter is mainly explained. In the process of learning chemical flow detection, the differential pressure flowmeter and rotor flowmeter are explained. Other detection instruments can guide students to self-study for deep exploration and cultivate students' interest in learning. For example, when learning the knowledge of "display instrument", the teacher combines theoretical learning with the

structure and working principle of the digital display table, and uses practical teaching to clarify the experimental objectives and content, so that students can proficiently learn to apply the intelligent digital display instrument after employment. In reality, the number of applications of analog display instruments has gradually declined, and even they have been eliminated in the industry and stopped production. Therefore, teachers mainly understand the content of this part, and a brief overview is enough. As for the new display instrument, which is a virtual instrument formed by the integration of display instrument and computer technology, teachers in this stage still focus on a brief overview, and the rest of the learning content is still independent learning, which effectively improves students' independent thinking ability. In the lesson of "Simple Control System", the parameter setting of simple control system and the operation of production process are taken as the learning focus, which is combined with practical teaching activities to cultivate students' practical operation ability and application ability.

3. PRACTICE BASED, INNOVATIVE TEACHING MODEL

Chemical instrumentation and automation is a course that must be studied by chemical majors in higher vocational colleges. It has strong practicality and can be widely used in daily life and production. Enriching teaching content takes practice as the main body, and teaching mode in order to achieve content cohesion, teachers should focus on practice teaching. In the specific teaching process of chemical instrument and automation, the teaching mode of integrating science and practice is always emphasized [2].

The integrated teaching mode combines theory teaching with practice teaching, constantly learns theory and practice skills in the specific teaching process of professional courses, takes students as the main object, takes practice as the main line of course teaching, and implements the application effectively under the influence of practical training project-driven tasks through the correct guidance of teachers. In order to complete the integration of practical teaching objectives, greatly improve the practical level of the post.

The teaching and training integrated teaching mode is a new teaching mode that combines teaching with production and engineering practice. Specifically, it closely integrates the theoretical teaching content and post requirements, integrates the classroom, practice factory and practice workshop, so that students can truly feel the working atmosphere in the process of exercise, completely breaks through the traditional teaching mode, and better cultivates students' practical ability. When learning the course content of chemical instrument and automation, it is divided into multiple learning objectives, and task-driven method is used to complete the learning tasks and quickly achieve the learning objectives.

For example, when learning the knowledge of "rotor flowmeter", the teacher stimulated students' interest through experiments in order to make students fully involved in classroom teaching: "When the glass rotor flowmeter is fixed and the blower is used to supply air at the entrance, the float will have the flow rate of wind, and then the discharge rate is far from the height of the float. This simple experiment can effectively mobilize students' desire for knowledge. At this time, they will take the initiative to participate in the experiment. According to the observation and continuous analysis of the phenomenon, they will understand the working principle of the rotor flowmeter. Therefore, this experimental teaching method can not only shorten the classroom teaching time, but also achieve ideal teaching effect and help students intuitively understand the content [3].

4. CONCLUSION

To sum up, the courses of chemical instrumentation and automation have a large amount of information, complex theories and few courses, which put forward high requirements on students' practical ability, resulting in students unable to truly understand the learning content in class, and it is difficult to realize the integration of theory and practice. In order to accelerate the comprehensive reform of higher vocational colleges and meet the needs of the society for talents, this paper mainly carries out deep innovation and reform on the teaching of chemical instrument and automation course, specifically around the production technology of enterprises, post skills and other aspects, from the teaching methods, practical teaching, evaluation methods, school-enterprise cooperation and other aspects of the corresponding optimization countermeasures. It is hoped to provide reference for the teaching reform of chemical engineering majors in other higher vocational colleges.

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Application And Research of Movie Technology in the Tv Advertising

Na Li
Zibo Vocational Institute, Zibo, Shandong, China

Abstract: With the sustained development of commodity economy, TV advertising is no longer a simple commercial behavior, but it has become a mirror of real life, an important means of advertising medium, and even an artistic creation. They optimize the characteristics of products and enhance people's purchase desire by displaying specific information such as the color, shape, structure and performance of products with movie technology.
Keywords: Advertisement; Medium; TV advertising; Movie technology

1. THE CONNOTATION AND NECESSITY OF FILM AND TELEVISION TECHNOLOGY

Film and television technology could reconstruct and assemble a large number of pictures and sound materials shot in the film by selection, edit, and decomposition, etc., and finally complete a coherent, smooth, clear meaning, clear theme and artistic appeal. In the process of filming film and television works, a large number of materials will be obtained, and after selection, trade-offs, decomposition and splicing, it will become a work of art that can express the central idea, the content is coherent and smooth, and it is an artistic appeal, which is a re-creation of the shooting work. the process of editing the advertising film is the process of forming the advertising film. the editor edited and formed some fragmented material, and finally used the advertising film to show it in an orderly manner. A rhythmic advertising film requires the full cooperation of all parties, according to the planning as the model, the material as the torso, the dubbing, soundtrack, narration as the glue, and then the post-packaging embellishment.

In the process of film and television works, we will shoot each shot according to the script, but a single shot is like a word, which has its own meaning, but it cannot express the story and cannot become a complete work. the emergence of editing makes each shot can be freely combined into complete content according to the director's needs, in addition, editing can also help the director supplement film and television content, for the material that has not been shot due to objective factors, it can be cut into the feature film through the post-shoot. Film and television works express ideas through editing, and after the filming of the content materials of film and television works, different forms of splicing can be carried out according to the different theme ideas of different film and television works in the editing process, and the different assembly order also directly affects its meaning. Develop and promote innovation in film and television works. the emergence of film and television editing allows us to break through the boundaries of time and space and create new time and space in the filming process, which greatly promotes the expansion of innovative thinking of film and television workers, so that they can give full play to their imagination, and constantly promote the development of film and television works art.

2. THE SIMILARITIES AND DIFFERENCES BETWEEN FILM EDITING AND TV EDITING

2.1 Similarity: Any film and television work is composed of the selection and splicing of lens materials, so the similarity between film and television editing lies in the requirements for lenses. First of all, both film and television shots should choose lenses that conform to the audience's thinking and visual laws. Secondly, the lens should be more effective, not only can fully carry the entire work, the idea that wants to be conveyed, but also allow the audience to get the greatest visual satisfaction, both the lens is the lens effect that both film and television pursue. Finally, the choice of film and television lenses should be consistent, that is, the style of the lenses in the same film and television work should be the same.

2.2 Differences: First, the film editing effect can be more changeable, so that the film can be more vivid on the movie screen; More close-ups are retained in TV clips, allowing people to feel the psychology of characters and the details of things changing on the small screen. Secondly, the film editing span is relatively large and the pace is relatively fast; the TV clip is slower, the content is more detailed, and there is no noticeable jump. Finally, film editing is usually more imaginative, with fewer requirements and restrictions, and TV editing is more rigorous and regular because it is closer to daily life and has more contact with the public.

3. PRINCIPLES FOR EDITING TV COMMERCIALS

The post-editing of TV commercials is subject to the following guidelines:

3.1 Marketing, marketing is the purpose of TV commercials, excellent advertisements even in the process of post-editing, should adhere to the idea of marketing products, only fully explore the highlights of the product, can make the advertising film shine.

3.2 Layer rationality, in the process of editing TV commercials, it is necessary to pay attention to layers of rationality and organization, the lens display of the entire advertising film needs to be coherent, and the expression process should be reasonable, in order to be

able to produce an advertising film with clear ideas and clear context.

3.3 Creativity, in the process of making TV commercials, not only planning needs to be creative, but also editing. the creativity of the post-editing is mainly reflected in the assembled shots, as well as the dubbing soundtrack and the resonance with the picture and the narration.

3.4 Shock, an excellent advertising film, need to pay attention to the perfect combination of the picture and dubbing soundtrack, because the unique rhythm can enhance the audience's visual shock, high-quality pictures can catch the audience's eyeballs, in order to make the audience have a deeper touch, to bring a deep impression.

In layman's terms, a TV commercial is a video, a commercial marketing video with visual beauty and depth of thought. the later editing packaging is mainly for the display of the advertising film to be reflected in a form that is more in line with the audience's appreciation and interest.

4. Editing skills for TV commercials

4.1 The transition of TV advertising pictures is natural. Because of the short content and short time of TV commercials, every shot is extremely precious, and whether the coordination of each shot is appropriate directly affects the effect of advertising. Under normal circumstances, when the lens and the lens are connected, it is necessary to connect static and dynamic, not only to have good continuity of action, but more importantly, not to make the upper and lower lenses have large chromatic aberration and too large content jump.

4.2 Highlight the color of the picture. the colors we see on the TV are different from the computer, usually the brightness of the color displayed by the TV is higher, which will make the product lose its realism, so this situation can only be avoided through post-editing. Through the appropriate software curve to adjust the picture to gray, according to the gray degree, further adjust the brightness of the picture, not too saturated, not too distorted.

4.3 Pay attention to the principle of product authenticity. the audience's acceptance of the product is mainly determined by the acceptance of advertising in the heart. Therefore, when editing the post-advertising campaign, we must grasp consumer psychology, edit reasonably and scientifically according to the scope of audience acceptance, and try to keep it true on the basis of the original advertisement, and do not exaggerate the publicity.

To sum up, it is the ultimate goal of TV advertising to arouse customers' desire to buy by reflecting the shape, structure, performance, color, and use of the product. TV advertising is an important means to disseminate commodity information and promote the circulation of goods. With the continuous development of the commodity economy, TV advertising is no longer a simple commercial behavior, but has become a mirror of real life, an important means and medium of advertising communication, and even an artistic creation.

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Research On the Construction of Professional Skill Societies and OTP Mode Of Innovation and Entrepreneurship Education

Wen Li
Zibo Vocational College, Zibo, Shandong, China

Abstract: Innovation and entrepreneurship education in colleges and universities has become an important measure to promote "mass entrepreneurship and mass innovation". College student associations are the main carriers of college campus culture, and in the context of "mass entrepreneurship and innovation", it is of important practical significance and broad development space to carry out innovation and entrepreneurship education by relying on college student associations. This paper puts forward the construction of professional skilled community to solve the problems existing in the construction of the community, and advocates based on professional skilled community, community members of student team as the carrier, with innovation entrepreneurship competition and teachers research project for driving university innovation entrepreneurship education "community-team-project" three order mode, through the Zibo vocational college accounting research social practice application, verify the OTP third order mode in the positive role of innovative entrepreneurship education development in colleges and universities.

Keywords: Innovation and entrepreneurship; Community; And OTP third-order model

1. RESEARCH MEANING

Innovation and entrepreneurship education in colleges and universities excavates students 'entrepreneurial consciousness, cultivates students' ability of self-development ability, and makes students have the ability and psychological quality to engage in practical activities through innovation and entrepreneurship education and training, and finally achieves a kind of education of job change to job creation. College associations are mass organizations composed of students voluntarily to meet their personal interests, and they carry out activities according to the constitution of the associations. Associations are an important carrier of campus cultural activities and a leader of the second topic of colleges and universities. the characteristics of spontaneity, interest and creativity are in common with the quality required by innovation and entrepreneurship education in colleges and universities. Therefore, how to give full play to the function of associations to serve college students' innovation and entrepreneurship education is a subject that we must face.

2. RESEARCH STATUS

Ling Lin (2017) believes that university professional associations are voluntary student organizations formed by universities with the background of professional knowledge and based on students' professional interests. As an effective carrier of the second classroom in colleges and universities, professional associations play an important role and significance in driving students' enthusiasm for learning, broadening the scope of knowledge, cultivating innovation and entrepreneurship ability, enhancing employment competitiveness, and enhancing the awareness of social service. Bian Xiaojie and Bai Lingting (2017) analyzed the characteristics of university student associations, especially entrepreneurial associations, and explored effective ways to carry out innovation and entrepreneurship education by relying on college student associations. Pan Baoli and Liu Hanwang (2018) believe that university student associations should base on the talent training mode, pay attention to the training of students' professional skills, innovation, entrepreneurial practice ability, and build professional skilled student associations. the professional and skilled student associations established by school-enterprise cooperation have unique advantages in cultivating application-oriented, innovative and entrepreneurial talents.

3. BUILD PROFESSIONAL AND SKILL-ORIENTED STUDENT ASSOCIATIONS, AND BASED ON THIS, ESTABLISH A THREE-LEVEL INNOVATION AND ENTREPRENEURSHIP EDUCATION DEVELOPMENT MODEL OF "ASSOCIATION TEAM PROJECT".

First of all, we first conducted a questionnaire survey on the current situation and existing problems of innovation and entrepreneurship education in China. According to the results of the questionnaire survey, the current situation and existing problems of university associations are summarized, mainly including the following aspects: (1) the community autonomy is poor, the community construction funds are insufficient; (2) students lack of innovative spirit, professional guidance is not enough attention; (3) the community management system is not perfect, the internal order is chaotic; (4) the community organization structure is loose, the lack of sustainable development ability.

For the problems of college community, we put forward to establish professional skilled community, for a subject, professional or a research direction has a common interests of students voluntary organization together, hire professional teachers as instructors, practice, communication and seminars, through the self

organization and management, autonomous learning, self exercise, the mastery of professional knowledge and the formation of professional skills into the community activities, make the community members from interest to the ability to cultivate, form the enterprise actual needs of comprehensive quality.

The role of professional skill-based societies in the development of innovation and entrepreneurship education in colleges and universities is mainly reflected in the following aspects:

Including but not limited to: (1) promote students 'professional study; (2) enhance the competitiveness of employment; (3) strengthen students' self-management; (4) cultivate the spirit of innovation and entrepreneurship; (5) improve the social professional service ability.

The idea of developing innovation and entrepreneurship education in colleges and universities based on professional and skilled associations, including but not limited to: (1) strengthening the construction of social organizations and improving students 'comprehensive quality; (2) introducing market competition mechanism to cultivate students' entrepreneurial consciousness; (3) encouraging the development of entrepreneurial organizations and improving entrepreneurial service mechanism; (4) establishing characteristic community positions based on entrepreneurial practice activities.

The mode of carrying out innovation and entrepreneurship education in colleges and universities by relying on professional skilled associations, including but not limited to: (1) organizing college students' entrepreneurship competitions through the platform of professional skilled associations; (2) transmitting entrepreneurship education knowledge through professional skilled associations; (3) simulating the entrepreneurial environment of virtual enterprises through professional and skilled associations activities.

Innovation entrepreneurship education "community-team-project" (OTP) third mode first understand its connotation, specifically: O refers to Organization (community), T refers to the Team (team), P refers to the Project (project), which is based on professional skilled community, innovative entrepreneurial team as the carrier, to innovative entrepreneurial projects for driven innovative entrepreneurship education mode.

Second, to construct the framework of the OTP third-order mode

The OTP third-order model creates a platform for innovation and entrepreneurship development for students by organizing and carrying out various innovation and entrepreneurship activities. In this process, the most important thing is to give full play to the main role of professional and skilled societies, and take the associations as the main organizers and managers of innovation and entrepreneurship activities. In the process of promoting the practice of innovation and entrepreneurship of college students, the associations can play a positive role in stimulating students 'innovation and entrepreneurship willingness, improving students' innovation and entrepreneurship quality and cultivating students' innovation and entrepreneurship ability.

The club encourages students to set up independent teams according to their own interests and professional characteristics. the team is a goal-oriented and cooperative organization to complete the work. the team implements student self-management, that is, the instructor authorizes the team leader to lead the team members to complete the study and research. the team can give full play to the initiative, combined with the team itself and develop a practical management system.

In the OTP third-order model, the project plays an indispensable driving role, and the innovation and entrepreneurship competition and the scientific research projects of the instructors have become the cultivation points of students' innovation and entrepreneurship ability. Combine students 'ability training and teachers' scientific research projects, make teachers rich experience and solid professional knowledge and students 'creative thinking complementary advantages, while guiding students' independent thinking with the teacher's explanation, to project as a driver and gripper, make the students' innovative entrepreneurship ability for deeper improvement. Finally, the guarantee mechanism of OTP third-order model is constructed from three aspects of entrepreneurial resources, entrepreneurial ability and team mechanism.

College community in the school culture education, practice education process as an extremely important role, student community to enhance students 'basic quality, cultivate students' innovation consciousness, improve students' practical ability has an important role, university innovation entrepreneurship education should rely on good, good, develop good student community especially professional skilled community, to maximize the community power to promote innovative entrepreneurial talent cultivation in colleges and universities.

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Application Of Regional Characteristic Cultural Elements in Packaging Design of Agricultural Products

Huang Chuhan, Jia Liu, Zhu Leshan
College Of Humanities and Arts, Liaoning University of Science and Technology, Benxi, Liaoning, China

Abstract: With the improvement of living standards, consumers pay more and more attention to the aesthetic feeling of packaging when purchasing products. Therefore, the packaging design of agricultural products needs to cater to this consumer psychology and improve the packaging design. Applying regional characteristics and cultural elements to the packaging design of agricultural products can improve consumers' awareness and willingness to buy agricultural products. On the basis of regional characteristic cultural elements, this paper explores the possibility of integrating regional characteristic culture into agricultural product packaging design.

Key words: Agricultural products, Packaging design, Regional characteristics

1. ADVANTAGES OF REGIONAL CHARACTERISTIC CULTURAL ELEMENTS APPLIED IN AGRICULTURAL PRODUCT PACKAGING DESIGN

1.1 Helping to shape the cultural value of agricultural product brands and establish brand advantages

In the process of commodity sales and promotion, packaging design plays an important role, but the packaging design of some agricultural products is not professional enough, not recognized, and low competitiveness. In order to solve these problems, the regional characteristic cultural elements are combined with the packaging of agricultural products, so that agricultural products have obvious characteristics, form distinctive identity, and promote the formation of agricultural product brand image, Improve consumers' sense of identity and credibility of agricultural products, and build local brands with strong market competitiveness.

1.2 It helps to shape the cultural value of agricultural product brands and establish brand advantages

The function of agricultural product packaging design is not only to display the product appearance characteristics, but also to give the product a deeper cultural connotation. Combine the regional characteristic cultural elements with the packaging design of agricultural products, display the regional characteristic cultural elements with lines, patterns and other ways, reflect the unique cultural characteristics and connotation of agricultural products, not only beautify the product appearance, but also enhance the brand culture of agricultural products themselves, and enhance the product identification. [1]

Now, in the fierce market competition environment, if the sales of agricultural products want to occupy a place, we must strengthen the brand culture construction and enhance the brand cultural value of agricultural products. In this process, the integration of regional characteristics and cultural elements into the packaging design of agricultural products will help consumers to have a sense of identity and belonging to the regional culture displayed in the packaging, establish brand advantages for agricultural products, and promote the sales and brand development of agricultural products.

1.3 Help to promote the development and dissemination of cultural resources with regional characteristics

China's regional cultural resources are rich and diverse, and regional culture has formed unique national characteristics and profound historical deposits in the long history. Integrating the regional characteristic cultural elements with the packaging design of agricultural products can attract consumers' attention and cognition to the characteristic culture of the product origin, which not only plays an important role in promoting the sales of agricultural products, but also plays an important role in inheriting, promoting and disseminating the regional characteristic cultural elements.

2. PROBLEMS IN THE APPLICATION OF REGIONAL CHARACTERISTIC CULTURAL ELEMENTS IN AGRICULTURAL PRODUCT PACKAGING DESIGN

2.1 Lack of innovation in packaging design

In the process of product packaging design, the design is often affected by the inherent thinking and inertia thinking, which makes the product packaging lack of identification, affects the purchase desire of consumers, and leads to poor sales results. Therefore, in the packaging design of agricultural products, we should not only make good use of the developed characteristic cultural elements, but also continue to innovate on this basis, using more vivid lines, patterns and colors to carry out innovative design. Display the cultural elements with regional characteristics to consumers more clearly to improve their purchasing desire.

2.2 Inappropriate application of cultural elements with regional characteristics

In the process of integrating regional characteristic cultural elements with agricultural product packaging design, some product designs cannot achieve the expected results, and the more important factor is that

the selection of regional characteristic cultural elements is not appropriate. Specific problems are as follows:

2.2.1 The color selection is unreasonable and the expression effect is not obvious. In the design process, the coordination of color selection is not paid attention to, which affects the aesthetics of packaging and is inconsistent with the aesthetics of consumers.

2.2.2 The regional characteristics are not obvious. For example, the common packaging of suantangzi for Manchu food in Northeast China is mostly transparent plastic bags with product name printed. For consumers who do not know the product, they cannot form a cultural understanding of the product. If the Manchu cultural elements of the Northeast are integrated into the design, the cultural connotation of the product can be perceived and the product can be deeply understood.

2.2.3 The characteristics of agricultural products are not taken into account. When designing packaging, designers sometimes overemphasize "culture", "history" and other characteristics, and randomly add some general cultural elements, which is difficult to highlight the unique regional culture of agricultural products. Therefore, in the process of product packaging design, we should pay attention to product characteristics, integrate regional characteristics and cultural elements with trade-offs, innovate design, and reasonably carry out color matching and pattern selection.

3. APPLICATION OF REGIONAL CHARACTERISTIC CULTURAL ELEMENTS IN AGRICULTURAL PRODUCT PACKAGING DESIGN

3.1 Enhance the innovation of packaging design

Innovation is the source and power of the development of product packaging design. On the basis of inheriting the cultural elements with local characteristics, we should innovate, uphold the concept of innovative development in the design, cater to the consumer's consumption needs and aesthetic needs, and give consumers a new visual impression.

For example, the packaging design of Wuchang rice in October paddy field fully reflects the unique characteristics of the region. the illustration design combines the natural landscape of the black land farmland with the deer growing in a good natural environment to highlight the product quality. the illustration style also caters to the aesthetic needs of current consumers and can attract consumers' attention to a certain extent.

3.2 Reasonable use of cultural elements with regional characteristics

In the process of packaging design of agricultural products, we should combine the characteristics of agricultural products with regional culture according to the packaging needs of agricultural products, and select appropriate local materials to ensure that the characteristics of agricultural products and local characteristics can be fully displayed. Use reasonable color matching and pattern selection to continuously integrate and innovate regional characteristic cultural elements, so as to make agricultural products have more profound cultural characteristics, improve the brand recognition of agricultural products, stimulate the spiritual and cultural resonance of consumers, win the recognition of consumers, and promote the sales of agricultural products.

4. CONCLUSION

To sum up, refining regional characteristic cultural elements, integrating agricultural product packaging design with regional characteristic cultural elements, improving the brand image and cultural value of agricultural products, displaying unique regional local culture, improving consumers' awareness and purchasing desire for agricultural products, and promoting the development of regional characteristic agricultural product packaging industry.

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Exploration And Analysis of the Cultivation of Students 'Health Core Literacy in the Epidemic Situation of Covid-19

Yuchang Liu
College Of PE, Taishan University, Taian, Shandong 271000, China

Abstract: Based on the comprehensive analysis of the new concept of health, this paper systematically discusses the basic connotation of health core literacy, the importance of cultivating health core literacy and its practical path are emphasized. the research thinks: the health is the person's basic right, is one kind of mental state. Physical Education and health core literacy is the character and key ability to form a healthy life, including the ability to exercise, health behavior, sports morality three aspects. Health core literacy is one of the three core literacy of human comprehensive development, is the foundation of life growth, is the core literacy of sports and health of the most important. We should improve the students' health core literacy by conceiving the cultivation goal, designing the cultivation scheme and constructing the cultivation system.

Keywords: Covid-19; Health; Core literacy; Cultivation

1. INTRODUCTION

Setting up moral cultivation is the fundamental task and practical requirement of the party in the new era. the key to carry out setting up moral cultivation is to develop students' healthy core literacy. [1] however, the physical and mental health of students in today's society is getting worse and worse. In particular, a sudden outbreak of Covid-19 at the end of 2020 has made students more aware of the vital importance of life safety and physical health, a deeper sense of the importance of core health literacy. Therefore, it is very important to clarify the concept of health core literacy, to understand the significance of the cultivation of health core literacy and to cultivate the concept of health core literacy of students in the context of covid-19 pneumonia.

2. NEW CONCEPT OF HEALTH

Health is not only the absence of physical disease, but also a state of mental and social well-being, meaning that a person is in a good physical, mental and social condition. [2] health plays an important role in personal growth and social development. Health is a basic right of people, health is the first wealth of life, and health is a kind of mental state. Everyone should be the first person responsible for his own health. the traditional view of health holds that"No disease is health", while the modern view of health stresses the whole health. Song Yifu, a modern health scholar, initiated the theory of"Health preserving thought", which shows that mental health is as important as physical health. the meaning of modern health is extensive and varied, including four aspects: physical health, mental health, social adaptability health and moral health. Social adaptation depends on physical and psychological quality, good mood can make the body in the best state, otherwise it will reduce or destroy some functions and cause disease. Changes in physical condition may lead to corresponding psychological problems. Physical defects and illnesses, especially chronic illnesses, often cause anxiety, depression, and other negative emotions that can lead to abnormal mental states. Moral Health is to require people to abide by social ethics and maintain fairness and justice.

3. CONNOTATION OF HEALTH CORE LITERACY

Health core literacy means that people acquire, understand, evaluate and apply health information in the process of receiving education and daily life, and gradually formed a person to adapt to the social health life must have psychological characteristics and determine their own health status of various capabilities. Including health professional knowledge, physical and mental health skills, health awareness habits. [3] in 2017, the Ministry of Education issued the curriculum standards for physical education and Health in ordinary senior high schools, which stated that the core elements of physical education and health include three elements: athletic ability, healthy behavior and physical morality. Sports ability is the basic condition of physical exercise, healthy behavior plays a key role in improving physical and mental condition, and sports morality can promote students' protection of deep sports. In 2018, this paper discusses and demonstrates a health-centered model of physical education and health curriculum reform in China, which is called"Theory and practice teaching seminar of Physical Education and health curriculum reform based on core literacy" organized by the all-china School Sports Federation. the model considers that the core literacy of Physical Education and health is acquired through the influence of environment and education based on innate genetic quality, including physical education and health knowledge, physical education and health awareness, physical education and health behavior, physical fitness level, physical education and health skills, sports and health quality, sports personality and habits and other aspects of the overall quality and quality.

4. THE SIGNIFICANCE OF CULTIVATING

STUDENTS' HEALTH CORE LITERACY IN THE EPIDEMIC SITUATION OF COVID-19 PNEUMONIA

4.1 Health core literacy is one of the three core literacy of students' all-round development

Whether it is education or physical education, to promote the comprehensive, healthy and harmonious development of students is its fundamental starting point and ultimate goal, scientific and cultural literacy, ideological and moral literacy and healthy core literacy are three basic elements to promote students' all-round development. In the case of covid-19, health core literacy is particularly important, and improving personal health core literacy is the necessary means to overcome the epidemic. the formation of individual health core literacy is an ever-changing process, which is the result of the interaction of individual, collective and society. Improving a person's core level of health is not an easy task, but a step-by-step process of continuous improvement. the ultimate goal of physical education and health curriculum is to promote the overall improvement of students' quality. It must adhere to the guiding ideology of"Health First", take making virtue and cultivating people as the basic task, and take the development of students as the center. Physical education teachers should not only disseminate health information, but also guide students to use health knowledge to improve individual behavior. This guiding ideology aims to improve students' health core literacy, fully tap the unique function and charm of sports, not only to teach students basic knowledge, basic technology and skill methods, also guide students to use a variety of knowledge and technology for physical exercise, and eventually form motor skills. At the same time, we should extend the teaching to the whole process of students' study and life, lay stress on cultivating students' sports and health consciousness, promote students to form the habit of sports participation, and guide students to understand the connotation, significance and value of health, consciously, actively, actively, consciously carry out physical exercise, the formation of a modern way of life, develop good habits of life. So that every student can experience the fun of learning, so as to enhance the physique, sound personality, temper will, truly achieve the moral, intellectual and physical all-round development, to meet the needs of the future society as a talent.

4.2 Healthy core literacy is the foundation of Students' life and growth

In the process of exploring the essence of education, there are many experts and scholars who take"Sacrificing life" as the mission of education. A scholar once pointed out that"If knowledge is not lighted by the candle of wisdom, then it is only an external influence, however extensive; if there is no life hidden in wisdom, then moving wisdom is nothing but the vagaries of wild fire. "[3] that is to say, the purpose of learning and education is to stimulate and nourish life, and the growth of life is also a process of spiritual cultivation and adaptation corresponding to knowledge, wisdom and other elements. the main purpose of"Education" without life growth is to destroy and injure life, to squeeze and poison the soul, to ignore and stifle the spirit. Of course, schooling depends on quality, on achievement and progress. However, many of the current education are eager to achieve rapid success, the whole student's learning life is naked"Do" problems and examinations, do not understand that the basis of students' life growth is physical and mental health, students did not pay attention to the cultivation of health core literacy. And the lack of physical exercise in today's society is an important cause of human health problems, especially in the context of covid-19, scientific and reasonable physical exercise is one of the most active and effective means to improve health and prevent and control epidemic situation. the goal of health education can not be realized without physical education. To carry out sports practice and health education activities effectively, to improve the effect of health promotion, and to grasp the foundation of Students' life growth, to enhance core health literacy.

4.3 Health core literacy is the most important core literacy in physical education

In 2014, the Ministry of Education issued the opinion on comprehensively deepening curriculum reform and implementing the fundamental task of building up morality and cultivating people, stating that promoting the healthy and all-round development of students is the key to building up morality and cultivating people, and that a core literacy system should be established, cultivate the core literacy of a discipline. the core literacy of physical education and Health in general senior high school is defined as three main fields: athletic ability, healthy behavior and sports morality. the healthy behavior is to improve the physical and mental health, adapt to the external environment, and gradually form a comprehensive performance of a good way of life. It can be seen that health core literacy in physical education and health teaching occupies a very important position, has become the most important core literacy of physical education. However, in the process of teaching, some PE teachers only pay attention to the explanation of basic knowledge and the transmission of basic skills, but neglect the formation and development of Students' health core literacy, neglecting the standard test of students' physical fitness and health, thinking that physical education is the education of Students' health knowledge, taking"Activity class" as the aim and allowing students to move freely, or thinking that physical activities are dangerous, under the pretext that the field, the equipment, the equipment are insufficient, the student is not interested, at will"Stops" should carry on the sports. Some physical education teachers only focus on a small number of top students, ignoring the secondary students and students to be gifted physical exercise. In order to change this situation, physical education should not only pay attention to the core status of students, but also guide students to cultivate sports hobbies, take part in sports exercises and establish

sports awareness. Through the scientific civilization health, Rich and varied and full of vitality of sports activities, reduce the pressure of students, cultivate students' emotions, purify students' minds. To guide students to strengthen the sense of responsibility for personal health, improve health, gradually develop good fitness habits and lifestyle, to form a positive, optimistic and cheerful attitude towards life. Maintain physical and mental health, improve the core of health literacy, to adapt to social development and lay a solid foundation.

5. THE CULTIVATION PATH OF HEALTH CORE LITERACY OF STUDENTS IN THE EPIDEMIC SITUATION OF COVID-19 WAS

5.1 The cultivation target of health core literacy was conceived

A goal is the direction of one's efforts and the expected result of what is to be achieved at each stage and finally achieved. [4] in order to cultivate students' health core literacy under the epidemic situation of covid-19 pneumonia, the first step is to define the target. the aim of cultivating students' health core literacy is to improve the level of physical fitness and sports skills, and to deepen the understanding of sports and health knowledge and skills To learn sports and healthy learning and its evaluation methods, to enhance the practical ability and innovative ability of sports; to form sports hobbies and expertise, to cultivate the consciousness and habits of lifelong physical exercise; to develop good psychological quality, to enhance interpersonal skills and sense of teamwork; to have health literacy, to build a healthy body, and to enhance the sense of social responsibility for the health of individuals and groups, gradually form a healthy lifestyle and positive, optimistic and energetic attitude towards life. CAN actively participate in school sports and health activities, master scientific exercise methods, develop good exercise habits, form basic health skills, learn self-health management; Stable, tolerant and open-minded, optimistic and cheerful, good at communication and cooperation, strong ability to adapt to the environment; concern for health, Cherish Life, Love Life, develop a healthy and civilized way of life, improve physical and mental health, improve the ability to survive and live.

5.2 To design a health core literacy development programme

The design of health core literacy program should master the basic knowledge of health, the principles and methods of promoting health, cultivate the skills of self-health management, and form good exercise habit and healthy and civilized life style. Secondly, master the knowledge of diet and nutrition related to health, understand the nutritional value of common food and reasonable diet structure, develop scientific and healthy eating habits; To understand the knowledge and methods of food selection and identification of food labels, to understand the different requirements of different intensities of exercise and study on nutrition, to understand the harm of bad eating habits to health, such as long-term drinking a large number of carbonated beverages, partial meals, do not eat breakfast, master the basic knowledge and methods of food safety and prevention of food poisoning. Finally, we should develop good health habits, improve the awareness and ability of disease prevention and control, prevent common sports injuries and accidents, master the knowledge and methods to eliminate sports fatigue, care for and respect others, in the face of conflict and conflict can control their own emotions, tolerance and understanding of each other, the right to deal with the relationship between competition and cooperation, with a positive sense of social responsibility.

5.3 Construct the cultivation system of health core literacy

The core quality of sports and health mainly includes three aspects: sports ability, healthy behavior and sports morality. In the construction of Students' health core literacy system, sports ability is the foundation of forming healthy behavior and sports morality, and developing students' sports ability is the foundation of constructing sports and health class. In teaching activities, monotonous and repetitive exercises should be avoided, and teachers should take into account the actual situation of students, including their basic physical qualities and understanding abilities, as well as their own ability level, we should follow the basic principles of physical education, choose scientific and reasonable teaching methods, so that students at different levels can participate in physical education and health activities, guide students to successfully complete their learning tasks, and improve the level of physical health. In addition, it is helpful to cultivate students' interest in sports, make them pay more attention to sports and health study, and improve their sports ability.

6. CONCLUSION

The cultivation of students' health core literacy should be guided by the socialist core values and scientific sports health concept, take the basic task of establishing morality and cultivating people, and adhere to the guiding ideology of”Health first”, to create a”Closed-loop model” of scientific movement, not forgetting the original intention of students' health, shouldering the heavy responsibility of students' health. Take the student happiness as own duty, for realizes the student body and mind health, the human and the society mutually promotion and the harmonious development makes the due contribution.

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Research On the Construction Of Grid Service System For College Students' Employment Guidance In the New Era

Qingfang Ren
Taishan University, Taian, Shandong, China

Abstract: With the acceleration of the process of popularization of higher education in China, the number of college graduates is growing rapidly, and the employment situation for college students is getting worse and worse. In light of this, colleges and universities have carried out employment guidance work for graduates. However, for one reason or another, the employment guidance service system of many colleges and universities has failed to play its proper role, and there are still various drawbacks and problems. Therefore, it is very necessary to make an in-depth analysis of the current grid service system of college students' employment guidance and create a comprehensive and effective employment guidance service system.

Keywords: College students; Employment guidance; Grid service system; Build

1. INTRODUCTION

With the continuous expansion of the enrollment scale of colleges and universities, the number of college graduates has obviously expanded sharply in recent years, which has caused more and more employment pressure for college students to a certain extent. As a result, at present, colleges and universities in China are generally facing a very prominent problem, that is, the problem of difficult employment of college students. As we all know, the employment of college students has become a hot issue of concern to the whole society. the employment of college students is a complex system project, which is related to the harmony and stability of the country and the survival and development of schools. However, in order to guarantee the smooth employment of college graduates, each university must build a set of effective college student employment grid service systems, so as to promote the smooth and satisfactory employment of college graduates.

2. THE CURRENT SITUATION AND PROBLEMS OF THE EMPLOYMENT GUIDANCE SERVICE SYSTEM FOR COLLEGE STUDENTS

2.1 At present, the employment guidance service system for college students is not perfect, with single content and narrow coverage, which is difficult to meet the needs of college graduates for employment guidance services in the new era.

It is mainly shown in the following aspects: Firstly, most of the work contents involved in the employment guidance service system are very broad and general technical or empirical employment guidance, which fail to effectively guide and deal with various problems encountered by graduates in job selection and employment, and teachers are often laborious and superficial, which simply cannot meet the personalized needs of college students in job selection and employment at all. Secondly, the employment guidance service institutions in many colleges and universities are set up unreasonably and unsound, and even some colleges and universities are still responsible for the employment guidance services by the student management departments, so the effect can be imagined.

2.2 The current personnel engaged in the employment guidance service for college students are not highly professionalized and specialized, and the guidance service ability needs to be improved.

At present, China does not have a unified implementation standard and assessment requirements for career guidance services in colleges and universities. Therefore, the level and quality of the current practitioners engaged in guidance services are uneven. Their employment guidance is not highly professional, information-based or socialized. the employment guidance lacks standardization, professionalism and systematization. Only theoretical knowledge and practical experience cannot meet the individual needs of graduates and cannot really help graduates to solve the difficulties they encountered in choosing employment. On the other hand, many of the personnel engaged in employment guidance services are part-time, basically composed of personnel from employment service agencies, teachers engaged in teaching work in each college or counselors engaged in student management work. the common disadvantage of these people is that they have not received systematic and professional training in employment guidance services, and most of them do not have professional knowledge and skills in employment guidance. They have no contact or very little contact with professional employment consulting services work, and they also lack relevant knowledge of human resource development and management. the current situation of such teachers has seriously affected the quality and effect of employment guidance services for college students.

2.3 At present, the form of employment guidance service for college students is relatively single, lacking relevance and effectiveness.

It is understood that the forms of employment guidance services in many colleges and universities basically remain at the level of simple employment guidance

courses or vocational guidance courses, slogan shouting at the employment mobilization meeting before graduation, or general explanation of employment notes to graduates. the contents of employment guidance services in colleges and universities are limited to informing employment policies, handling employment procedures, etc. It is worth noting that this service model is often used by our teachers to guide and serve graduates of different majors in a unified way, without a good understanding of the differences between graduates of different majors and failing to guide and serve students from the perspective of the actual market demand for graduates of different majors. This kind of guidance and service that does not run through the whole process of university and is detached from the employment reality of university graduates is seriously lacking in relevance, and of course, the effect is impossible to talk about.

3. THE CONSTRUCTION OF A GRID SERVICE SYSTEM FOR COLLEGE STUDENTS' EMPLOYMENT GUIDANCE IN THE NEW ERA

In order to ensure the smooth employment of graduates, the College of Mechanical and Architectural Engineering attaches great importance to, takes the initiative to, and actively plans employment work measures. It makes every effort to do a good job in the employment of graduates under the current situation of epidemic prevention and control. It has established a working mechanism of "leadership, full participation, tutor assistance, evaluation and incentive", and built a four-level grid service system of "top leader project of the college——major (department)——instructors, head teachers——employment tutors".

3.1 Overall planning and precise services

The College of Mechanical and Architectural Engineering held a meeting to promote the employment of graduates. Firstly, the School hold a special seminar on the employment program of graduates and organized propaganda activities on the employment and entrepreneurship policies of graduates throughout the college; secondly, do a good job of employment education and guide graduates to establish a correct concept of employment; thirdly, the college strengthens communication with employers and build an online employment platform for graduates; fourthly, the main responsibility should be compacted and implemented to form a situation where all employees participate in the employment work; Fifthly, the college fully exchanges and share employment work measures such as using the national 24365 college student employment service platform, students' examination and retest, and precise assistance.

3.2 Classify teaching and focus on assistance

The college actively carries out support work for students in need and poverty, and assigns employment guidance teachers. After figuring out the employment intention of the students, we clarify the direction of personalized assistance, help with career planning and resume-making counseling according to the actual situation of the students. At the same time, the employment information provided by relevant functional departments, enterprises and outstanding alumni is matched with the actual students, and high-quality employment positions are recommended to effectively help students solve practical difficulties in the employment process.

3.3 Multi-linkage and cohesion

The college held the "Colorful College Recruitment" Taishan College 2022 Graduates' Employment Express and the first job fair of the "Green Bird Program" on campus, which attracted more than 40 high-quality recruiters to participate, and 200 resumes were submitted. the employment through train was carried out and 32 enterprises were visited. At the same time, 176 enterprises were attracted to settle in the Spring Air Double Election with the Popular Talent Organization Institute, and 456 resumes were delivered by graduates; With the XiaoXianCai campus recruitment platform, we organized the spring online double election meeting and an online recruitment special session, which attracted 158 enterprises to settle in and 328 resumes from graduates. In addition, we continuously held several "air lectures" and built an online communication bridge between employers and graduates by "meeting through the air" during special periods.

3.4 Continuous efforts and real-time follow-up

The college held a lecture for all unemployed graduates to provide targeted employment guidance for students who have not implemented their employment intentions. At the same time, an online career and employment guidance micro-tutorial was set up to guide students to reasonably adjust their employment expectations in combination with the ideological and psychological changes of students under the epidemic situation, establish a correct outlook on career selection and career, so as to help graduates obtain full employment with high quality.

4. CONCLUSION

The scale of 2023 college graduates is expected to be 11.58 million, an increase of 820, 000 year-on-year. the Ministry of Education and the Ministry of Human Resources and Social Security held a video conference on the network of employment and entrepreneurship work for the 2023 session of national ordinary college graduates. the conference pointed out that it's necessary to study and implement the spirit of the 20th Party Congress, take Xi Jinping's thoughts on socialism with Chinese characteristics in the new era as guidance, summarize the work, analyze the situation, and comprehensively deploy to do a good job of employment and entrepreneurship for 2023 successive college graduates. Next, the college will actively explore and develop innovation in the practice of serving students' employment work. At the same time, it will continue to make efforts in the guidance of students' employment concepts, practical training and exercise guidance, and skill enhancement services. the college will promote the implementation of employment assistance to help college students to establish a correct employment outlook, accurate their own career

development positioning, reserve work experience, and enhance the core competitiveness of employment.

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Support the Development Policy Research of Small and Medium-Sized Cultural Enterprises in Shandong

Yan Song
Zibo Vocational College, Zibo, Shandong, China

Abstract: Small and medium-sized cultural enterprises are the main body of the cultural industry, and the cultural industry cannot do without the support of small and medium-sized cultural enterprises in the process of advancing to the pillar industry of the national economy. According to the Shandong provincial party committee, the provincial government construction "two big cultural industry circle", "three cultural industry belt" planning, draw lessons from international and domestic effective measures to promote the development of small and medium-sized cultural enterprises, combining the reality of the development of small and medium-sized cultural enterprises in Shandong, to "develop high-end, high quality, efficient small and medium-sized cultural industry" as the goal, put forward the feasible support policy plan.
Keywords: Cultural industry; Small and medium-sized enterprises; Government support; Shandong

1. INTRODUCTION

Field research and questionnaire survey were conducted on more than 100 small and medium-sized cultural enterprises in Jinan, Qingdao, Dongying, Yantai, Weifang and Zibo, and SWOT analysis was used to analyze their development advantages, disadvantages, opportunities and threats. the advantages of the development of small and medium-sized cultural enterprises in Shandong province include: advantages in the development and utilization of cultural resources, fruitful cultural brand construction, economic strength and geographical location advantages. Like other domestic small and medium-sized enterprises, Shandong small and medium-sized cultural enterprises also exist in the small scale, irregular management, system is not sound, low product level and independent development and technology innovation ability, capital raising operation ability, market development ability and resist market risk ability weak general disadvantage, besides there is a regional development disadvantage.

Combined with the actual development of small and medium-sized cultural enterprises in Shandong, with the goal of "vigorously developing high-end, high-quality and efficient small and medium-sized cultural industries", the following aspects of policy plans to support the development of small and medium-sized cultural enterprises are put forward.

2. PERFECT THE STATISTICAL SYSTEM, AND FULLY GRASP THE ACTUAL SITUATION OF SMALL AND MEDIUM-SIZED CULTURAL ENTERPRISES IN OUR PROVINCE

This measure is the basis and guarantee of realizing the government support. the perfect statistical data of small and medium-sized cultural enterprises helps the provincial government and scholars to comprehensively grasp the actual development of small and medium-sized cultural enterprises in our province and the outstanding problems and difficulties existing in the process of production and operation, and timely introduce targeted supporting measures to guide and regulate them. the specific measures to improve the statistical system of small and medium-sized cultural enterprises include: (1) improve the working organization of the statistical system, integrate information resources from all aspects, and do a solid job in the collection and analysis of statistical data. (2) Actively explore the establishment of statistical indicators suitable for the characteristics of small and medium-sized cultural enterprises, improve the release system of statistical results, and improve the transparency and utilization rate of information.

3. IMPROVE THE EFFECTIVENESS OF POLICY IMPLEMENTATION, DEVELOP AND STABILIZE THE SMALL AND MEDIUM-SIZED CULTURAL ENTERPRISES IN THE ENTREPRENEURIAL PERIOD

The results of the survey show that, Small and medium-sized cultural enterprises have encountered more difficulties in the entrepreneurial period, Special need for care and support, therefore, the following measures: (1) establish all kinds of development zones and parks enjoying preferential tax policies, Establish a standard plant building, To rent to small and medium-sized cultural enterprises at the beginning of the business; (2) Set up special funds or research plans specially to support small and medium-sized cultural enterprises in the early stage of entrepreneurship, Focus on funding the innovation and research and development of small and medium-sized cultural enterprises and the commercial operation of scientific research results in the early stage of entrepreneurship; (3) Simplify the examination and approval procedures for the establishment of small and medium-sized cultural enterprises, Reduce the administrative costs, at the same time, Discipline inspection and supervision organs at all levels should strengthen their supervision, Stop the improper behavior of charging fees from

small and medium-sized cultural enterprises.

4. EXPAND FINANCING CHANNELS TO ALLEVIATE THE SHORTAGE OF FUNDS IN SMALL AND MEDIUM-SIZED CULTURAL ENTERPRISES

For a long time, financing difficulties have restricted the survival and development of small and medium-sized enterprises. Similarly, the shortage of funds of small and medium-sized cultural enterprises has also become the focus of attention. Therefore, government departments at all levels in our province can take the following countermeasures to expand the financing channels of small and medium-sized cultural enterprises: (1) give full play to the leverage role of venture capital guide funds and guide the private idle capital to enter the field of venture capital of small and medium-sized cultural enterprises. (2) Carry out intangible assets evaluation and pledge business such as copyright mortgage loan, and handle various amounts of pledge loans from commercial banks for small and medium-sized cultural enterprises. (3) Fully consider the characteristics and life cycle of small and medium-sized cultural enterprises, appropriately relax the listing threshold of gem and small and medium-sized enterprise board, and encourage small and medium-sized cultural enterprises with development potential to go public and raise funds.

5. STRENGTHEN MECHANISM CONSTRUCTION AND PROMOTE SMALL AND MEDIUM-SIZED CULTURAL ENTERPRISES TO TAKE THE ROAD OF CLUSTER DEVELOPMENT

Provincial governments at all levels should through the construction of efficient clustering governance structure and coordination mechanism, develop regional cluster planning and talent development planning, promote the development of intermediary agencies, infrastructure, etc., to strengthen the mechanism construction, thus widely mobilize small and medium-sized cultural enterprises industry cluster of the enthusiasm and creativity, guide the enterprise technology innovation, participate in high-end products and core products competition, expand the small and medium-sized cultural enterprise industrial cluster breadth, depth and elasticity, promote the overall upgrade of small and medium-sized cultural enterprise the development of industrial cluster.

6. STRENGTHEN THE CONSTRUCTION OF THE SOCIALIZED SERVICE SYSTEM AND IMPROVE THE SOCIAL SERVICE CAPACITY OF SMALL AND MEDIUM-SIZED CULTURAL ENTERPRISES

Governments at all levels in our province should list improving the socialized service system of small and medium-sized cultural enterprises, standardizing service behavior and improving service level as one of the key work to support the development of small and medium-sized cultural enterprises. Specifically, : (1) the planning and guidance should be strengthened, Establish a sound investment mechanism, To promote the socialized service system of small and medium-sized cultural enterprises to achieve a reasonable level and a clear division of labor; (2) Establish and improve the hierarchical financial subsidy mechanism, By guiding private investment and financial support, Public service platforms for small and medium-sized enterprises with strong support or driving capabilities and common service functions, And to guide and support all kinds of intermediary service agencies to expand their service areas and improve their service capabilities; (3) Further improve the government information service system, Provide small and medium-sized cultural enterprises with laws and regulations, development planning, tax registration, financing support and other "one-stop" information services, Timely help small and medium-sized cultural enterprises to obtain the required market, policy, law and other information.

7. FORMULATE MARKETING SUPPORT POLICIES TO ENCOURAGE HIGH-LEVEL TALENTS TO FIND JOBS IN SMALL AND MEDIUM-SIZED CULTURAL ENTERPRISES

Governments at all levels in our province can consider the following measures when formulating marketing support policies: (1) strictly restrict the adverse monopoly behavior of large enterprises to small and medium-sized enterprises, implement fair trading, and protect the legitimate interests of small and medium-sized cultural enterprises in the market. (2) In government procurement, provide small and medium-sized cultural enterprises with a certain legal procurement share, and help them to obtain government order contracts. (3) In order to promote the export of small and medium-sized cultural enterprises, foreign economic and trade departments can provide international market information for small and medium-sized cultural enterprises, and customs departments can also appropriately simplify the export declaration procedures of small and medium-sized cultural enterprises to help small and medium-sized cultural enterprises expand their exports. Relatively speaking, my province cultural industry talent lack. In view of the traditional idea that high-level talents are unwilling to work in small and medium-sized enterprises, governments at all levels can take the following measures to help small and medium-sized cultural enterprises: (1) actively arrange small and medium-sized cultural enterprises and medium-sized cultural enterprises with preferential tuition fees; (2) adopt "order training", the trained students can practice directly in the third year, especially outstanding students can be further trained by small and medium-sized cultural enterprises.

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Computer Network Security and Encryption Technology

Mengli Sun
Zibo Vocational Institute, Zibo Shandong, China

Abstract: Based on the Internet era, the rapid development and progress of information technology, accelerate the promotion of social development. In recent years, the wide application of computing network security data encryption technology can fully protect the privacy of users, and provide a lot of convenience for people's life and work. Therefore, this paper mainly discusses the computer network security and encryption technology in depth. First of all, it summarizes the status quo of network security operation in the Internet era. Secondly, data encryption technology is analyzed and studied, mainly involving the application principle and characteristics of encryption technology. Finally, careful analysis of the computer network network security and encryption technology application, can greatly improve the network security factor.
Keywords: Computer network security: Encryption technology: Measures

1. INTRODUCTION

With the rapid development and progress of information technology, people can use the network to receive and process information, effectively provide adequate work convenience, and also play a positive role in improving the quality of life. However, with the continuous improvement of network technology, computer networks are prone to attack by hackers and virus software, resulting in the loss and leakage of user information, and even pose a great threat to the business activities and future development of the entire enterprise. Faced with these circumstances, computer experts are gradually developing digital encryption technology, the scientific use of network security to ensure that information can be fully protected during attacks.

2. COMPUTER NETWORK SECURITY ENCRYPTION TECHNOLOGY ANALYSIS

2.1 Data encryption technology

2.1.1 Symmetric encryption technology

In the process of computer security data encryption, the operation principle of symmetric encryption technology is to unify the password of the data transmitted by the sender and the receiver, so as to ensure the confidentiality of both passwords and improve the security of information transmission. This method is widely used in the transmission of small files, or confidential files, because the transmission of files can only target the sender and receiver, and the personnel organization structure is single, effectively reducing the probability of information theft [1].

2.1.2 Asymmetric encryption technology

In the process of computer security data encryption, the operation principle of asymmetric encryption technology is that the password of sender and receiver is not uniform, usually using different data formulas to complete the encryption of files or data. With this approach, there is no need to require both parties to share passwords. However, according to the current degree of understanding, the encryption technology used at the present stage still uses symmetric encryption technology. However, asymmetric encryption technology has a good prospect for development. Once it is widely used, it can greatly improve the level of network security and ensure more secure and stable information data and file transmission.

2.2 Software encryption technology

Data encryption technology is applied in software to ensure the security of software download and use, avoid illegal elements from the actual intrusion system, improve the stability of computer network security operation. At the same time, the scientific use of software encryption technology for user downloads and information applications for scientific processing, better protection of user privacy security, to prevent user privacy disclosure caused by huge economic losses. In the daily use of the network, users need to constantly enhance their awareness of self-protection, regularly check the traces of network browsing, and gradually screen them, not only to ensure the stable operation of the computer security network, but also to fundamentally reduce risks with the help of the computer, which is conducive to the security of the computer system.

Secondly, encryption software data can greatly improve the level of computer security, to ensure the smooth operation of computer functions, file transmission security. According to the current situation of database management in our country, we find that the security effect is always in the preliminary state, hidden huge security factors. Therefore, in this case, the application of encryption technology can quickly realize software encryption, greatly enhance the security and reliability of computer.

Finally, the key software of the computer is encrypted. When carrying out this operation, the computer security system can be further improved. Therefore, only by ensuring the security of key software can we enhance the integrity of computer internal information and effectively demonstrate the application advantages of computer encryption technology [2].

2.3 LAN encryption technology

In the process of using computer network, there will be a lot of user data, especially in the same designated area, the close connection of multiple computers, which is conducive to faster data transmission between computers, fully reflects the advantages of LAN encryption technology application. Under normal circumstances, most enterprises based on LAN encryption technology, so that the work software, file information and other important content to achieve sharing. During the specific application of LAN encryption technology, internal information leakage can be avoided from the actual, to ensure the integrity of all kinds of information data protection, to prevent losses.

2.4 Database encryption technology

In recent years, with the deepening of the Internet era, the database management of computer network system is still used as an operating system. Despite this, the security and reliability of the operating system has always been unstable. On the other hand, computer network system often suffers from external influences in transmission and storage, which brings great threat to the whole security system. If the encryption technology is applied in the operating system, the smooth running of the computer's internal software and hardware is fully guaranteed, the database is strictly encrypted, the computer's internal data is fully protected, and the computer's internal data is actually prevented from being damaged.

3. ENCRYPTION TECHNOLOGY IN COMPUTER NETWORK SECURITY APPLICATION

3.1 In the virtual private network application

In reality, networks are generally divided into local area networks and wide area networks. First of all, local area network (LAN), which is security oriented, is often applied to various types of enterprises and effectively protects the privacy between enterprises. However, in the specific use process, the local network often suffers from regional restrictions, once the enterprise business beyond the scope of service, can only use the WAN information data. Second is the wide area network. When the WAN transmits information and data, it also needs to be encrypted for protection. the operation needs to be converted into confidential files by routers for transmission. When data is transmitted and received, it usually passes through the sender and receiver. the sender carefully combs its own data information, carries out targeted transmission on it, and sends it to the receiver at the fastest speed. Then the router completes encryption processing and transfers it to the receiver again. In practice, the data information received by the receiver will be automatically decrypted, and only internal personnel can receive it, fully reflecting the efficient security effect.

3.2 The application in e-commerce

Based on the Internet era, more and more people buy the necessary supplies through online shopping, making e-commerce emerge and become a new industry. While providing convenience to people's life, it will also face different degrees of information security risks. the transfer record can only be realized when people register with their real identity in the process of purchasing goods. If the system hides security risks, or is invaded by hackers, a large number of users' privacy will be leaked, directly threatening the security of enterprise and personal property. Therefore, in the development stage of e-commerce, encryption technology should be actively applied, with emphasis on encrypting user privacy information, seriously ensuring security, and effectively enhancing user shopping experience [3].

4. CONCLUSION

Computer network security is an important issue that all fields pay attention to in the new era. the scientific use of encryption technology has become an important breakthrough in the Internet era. In order to fully guarantee the good application effect of encryption technology, the construction of a perfect computer network system becomes the key, greatly improve the security of data information, effectively create a harmonious network environment, regularly check the hidden security risks of the system, prevent the illegal invasion of virus software, hackers, etc., so that the network security protection work smoothly. Better demonstrate the application value of encryption technology in computer network.

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Research On the Application Value of Animation Elements in Ziboqi Cultural Museum

Lei Tian
Zibo Vocational Institute, Zibo, Shandong, China

Abstract: With the development of science and technology, Chinese traditional culture is spread and carried forward in a newer form, and new scientific and technological methods also provide a platform for museums to disseminate, so that the world can see different cultural and regional styles. Qi cultural resources are the material and spiritual wealth created and accumulated by people in the process of historical development, and have the dual value of spiritual and material in historical value, and play an irreplaceable and important role in economic and social development. Therefore, this paper takes the application of animation elements in the Qi Culture Museum as the research object, and from the perspective of museum introduction and exhibit display, takes the tour guide characters, Qi cultural story image and collection display of Zibo Qi Culture Museum as the starting point, and carries out research on the application value of planned animation elements in Zibo Qi Culture Museum.
Keywords: Qi culture; Anime imagery; Traditional culture; Museum; Education and teaching

1. INTRODUCTION

With the continuous development of society and the improvement of people's awareness of cultural self-confidence, China's traditional culture and history and culture have also attracted great attention, the development of animation industry has entered an era of rapid development and combination of science and technology, and China's culture is also integrated with the animation industry and cultural industry with the development of science and technology. In recent years, national museums and excavated historical monuments, in the context of the big era, began to use digital technology means to achieve the digital era, many scenes and cultural relics and monuments are displayed in the form of animation in front of visitors, which greatly enhances the interest and diversity of visitors' field visits and deepens cultural experience.

This paper takes the tour guide characters, Qi cultural story images and collection display of Zibo Qi Culture Museum as the starting point to carry out research on the application value of planned animation elements in Zibo Qi Cultural Museum. At the same time, explore and innovate the talent training and curriculum design and reform of two-dimensional animation design in animation production technology related majors in Shandong vocational colleges, provide case reference and basis for the reform of relevant professional talent training mode and curriculum teaching reform, and promote the improvement of talent training quality.

Through the use of animation elements, it can also attract more young people to understand the cultural connotation of Qi culture, inherit Chinese traditional culture, strengthen cultural self-confidence, and expand the influence of Qi culture museum in the country and even the world to a certain extent.

2. RESEARCH STATUS AND DEVELOPMENT TREND AT HOME AND ABROAD

In recent years, animation elements in China's traditional culture publicity, cultural and creative products, food packaging, cultural tourism, architecture, clothing design and community culture continue to emerge, the cultural value of the museum is self-evident, just open to the public to tour the way of cultural relics has long been not the only way for the museum to carry out cultural dissemination, such as in 2018 Xinmin Evening News article titled "Forbidden City cultural relics have become cartoons, Chinese history is integrated into modern life" mentioned that the Forbidden City more than 1.86 million cultural relics and the Forbidden City of the city, It has entered our lives through cartoon interpretations.

2.1 The current situation and development trend of foreign research

In Japan, where anime is developing most rapidly, Japan promoted the spirit of traditional Japanese culture Bushido and group consciousness in its early work "Naruto". Developed countries such as Europe and the United States, Japan and South Korea are much more avant-garde than most low-level and middle-level developing countries in the intersection of animation art and public art. For example, the Japan Punch, a comic magazine founded by Englishman Charles Wirgman in Japan in 1862, is displayed in the British Museum.

Statistics from August 2008 show that the British Museum, which is listed as one of the world's three major museums along with the Metropolitan Museum of Art in New York and the Louvre Museum in Paris, has an operating income of 28.431 million pounds, accounting for about 38% of the total revenue, in the development and operation of derivative products created by incorporating animation elements into its museum-related exhibits.

2.2 Domestic research status and development trend

In China, in March 2015, the State Council promulgated the Regulations on Museums, in which the clause "the state encourages museums to explore the connotation of

their collections, combine them with cultural creativity, tourism and other industries, develop derivative products, and enhance the development capacity of museums", which undoubtedly injects vitality into the cultural creativity of museums. As early as 1981, China had works that made cultural relics "live" - Shanghai Art Film Studio created "Nine-Colored Deer" based on the story of the Dunhuang mural "Deer King Bunsheng", and countless people knew the Mogao Grottoes and saw the Dunhuang murals through this cartoon. In the past two years, domestic animation elements have continued to emerge in historical museums, and it is clear that such designs allow cultural relics to no longer be just static exhibits placed in display cases, but can show the stories and historical details behind them in a richer and three-dimensional way.

The charm of anime elements is being discovered and valued by more and more museums, from the initial design of cartoon characters on cultural and creative products, to the current diversified "living" of cultural relics. For example, the Hunan Provincial Museum produced a 26-episode cartoon "Time and Space Museum Card" based on the cultural relics unearthed from the Mawangdui Han Tomb, and the 2020 Nanguang MG animation graduation design work "Soul Ascension Map" has given the audience a deeper understanding of the Mawangdui Han Tomb.

Cultural self-confidence is a more basic, broader, and deeper self-confidence. Major museums and cultural heritage tourism products, cultural relics protection and publicity activities began to emerge. the application of animation elements in the Qi Culture Museum is imminent, and the significance of research is also crucial for other fields.

3. THE MAIN IDEAS, IMPORTANT VIEWS, DEGREE OF INNOVATION AND APPLICATION VALUE OF THE RESEARCH

This project combines theoretical knowledge in the fields of Qi cultural inheritance and two-dimensional animation design, and uses new media technology to carry out research on the application value of animation elements in Ziboqi Cultural Museum. So as to enhance the inheritance and publicity role of Qi culture, and increase the interest and vividness of the introduction of historical relics. the use of two-dimensional animation forms to replace the traditional window and picture display effect, greatly enhance the interest and diversity of exhibition forms, enrich the cultural experience of visitors. Visitors can watch videos, animations and other forms through modern technical means to show the construction mileage of the Qi Culture Museum, as well as the historical background and introduction of the exhibits.

Historical relics for the study of ancient Chinese history and culture, the presentation of humanities has important research value and inheritance value, but the preservation and restoration of historical relics is a constraint affecting its long-term exhibition, for example, in the Forbidden City in Beijing, many cultural relics with relatively high viewing value are not shown in front of visitors due to age, restoration difficulties, Beijing Palace Museum through animation technology, truly restore the original appearance of cultural relics, so that visitors can appreciate the artistic beauty of historical relics at any time.

The application of animation elements, the presentation of this new situation, greatly attracts more visitors, abandons the boring listening to experience Qi culture with visual experience, and then promotes the spread and inheritance of Qi culture. This form further promotes the promotion of the "animation +" era, so as to achieve the significance and promotion value of education, and strengthen the cultural self-confidence of Qilu people.

It is of great significance to the reform and practice of animation production technology courses to accumulate practical resources for the development and design of related projects by investigating industry norms and accumulating practical resources. Need, based on the needs of employment positions, deepen teaching reform, explore the practical teaching system with "commercial projects" as the main line, establish the operation mechanism of school-enterprise cooperation projects, and build a practical teaching system of "trinity and three-level progression".

The use of two-dimensional animation technology for animation element design, not only can truly reflect the historical background of cultural relics, visitors can watch videos, animations and other forms through modern technical means, show the construction mileage of Qi Culture Museum and the historical background and exhibits introduction, etc., enrich visitors' sense of cultural experience, enhance the inheritance and publicity role of Qi culture, actively mobilize visitors' exploration of Qi culture, and obtain higher level of educational significance.

The research content of this paper provides practical project basis and guidance for the two-dimensional animation design courses offered by related majors in vocational colleges in the province, provides ideas and basis for curriculum reform from the practicality and timeliness, and provides high-tech talents for connecting enterprise positions.

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Research On Teaching Reform Of Finance Specialized Course Based On Big Data Background

Bing Wang
Zibo Vocational Institute, Zibo, Shandong, China

Abstract: With the rapid development of mobile Internet, new intelligent terminals, new media, Internet of Things and other technologies and applications, new businesses based on Internet finance have expanded rapidly, and big data applications have become the mainstream direction of the financial industry. the teaching contents and methods of finance major in colleges and universities also need to be reformed, which can no longer be carried out according to the traditional manual data analysis and processing mode, but should be adjusted from the aspects of teaching objectives, teaching contents and teaching methods. Focusing on this point, this paper will study the teaching reform of finance major under the background of big data, put forward reform ideas and design reform programs.

Keywords: Big data background; Teaching reform; Finance major

1. THE CURRENT SITUATION OF FINACIAL PROFESSIONAL COURSE TEACHING UNDER THE BACKGROUND OF BIG DATA

With the rapid development of big data technology, the deep integration of "Internet plus" and traditional financial industry has realized a new financial business model of financing, payment, investment and information intermediary services. Data is the key to finance, and the financial industry has high requirements on the quantity and quality of data. Big data technology can not only improve the quality and processing ability of data, but also take advantage of the openness and cooperation of big data to form online and offline data collaboration with the financial industry and expand new business models. In this context, the teaching of financial courses is still based on data analysis and processing in artificial mode, and the data is dominated by artificial thinking. the information connotation and characteristics of the data are analyzed through artificial thinking, and then the data is processed according to the analysis results. It can be seen that the traditional curriculum teaching mode does not meet the modern requirements and needs to be reformed.

2. THE TEACHING REFORM STRATEGY OF FINANCE MAJOR UNDER THE BACKGROUND OF BIG DATA

2.1 The Change of Teachers' ideas

Colleges and universities should establish a brand-new teaching management system, guide teachers' teaching concepts, and reform teachers' traditional concepts through training measures, so as to reverse teachers' concepts, improve teachers' attention to big data technology, and then carry out teaching. Teachers themselves should actively cater to new technologies and strive to forge and enhance their own data wisdom and big data thinking. Make good use of big data platform and software tools in instructional design, which makes classroom management and teaching novel and convenient, and improves classroom activity. For example, in the teaching process, modern teaching methods such as micro-class and flipping classroom can be combined to better cultivate students' interest in subjects, provide students with more ways to acquire knowledge, adopt diversified teaching methods in the classroom teaching process, strengthen students' attention and memory, and enhance students' participation and initiative.

2.2 Reform of Teaching Content

The difference between Internet finance and traditional finance lies not only in the different media used in financial business, More importantly, financial participants have mastered the essence of "openness, equality, collaboration and sharing" of the Internet, and through tools such as the Internet and mobile Internet, traditional financial services have a series of characteristics such as stronger transparency, higher participation, better collaboration, lower intermediate cost and more convenient operation.

Specifically, in the reform of teaching content of finance major, first, in the traditional professional curriculum content, the design integrates big data professional knowledge, and turns students into financial professional compound talents with big data background; Second, to avoid the big and empty explanation of big data technology, we should combine the characteristics of finance major, concretize and instantiate it, and form rich teaching content, which is the core idea of teaching reform.

2.3 Reform of Teaching Methods

In the course teaching of finance specialty, teaching quality should be the core to carry out teaching. First of all, we should establish perfect teaching quality indicators, Secondly, in the teaching mode, It is necessary to abandon the traditional teaching mode of "taking teachers as the leading factor and students as the passive factor" and adopt guided teaching to carry out teaching work, that is, to put forward the theme around the practical problems of a certain industry and ask

students to use their own thinking methods to solve problems, which can strengthen students' thinking initiative and lay a foundation for practical teaching.

For example, through information technology, an evaluation platform for communication and sharing is established, which breaks the single way of teachers' independent evaluation in the past and creates an evaluation platform for communication and sharing. At the same time, we can also use information technology to cooperate and exchange financial disciplines, build a resource sharing platform, provide students with open and shared learning resources, and promote students' common progress and development.

3. CONCLUDING REMARKS

As an industry highly dependent on the quantity and quality of data, big data technology has natural advantages and is of great significance to promote the development of the industry. In the future development of the industry, a large number of financial talents with big data background are urgently needed. Through the analysis and strategy application of this paper, we can better change the current situation of relying on manual data analysis in the teaching of traditional financial professional courses, and integrate big data technology into the teaching reform of professional courses, cultivate a large number of compound talents that meet the needs of the industry, and improve the teaching quality and students' employment level.

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The Mascot Design Based on Visual Communication and the Integration Of 3d Film and Television

Bin Xi
Jiangsu Maritime Institute, College of Arts and Humanities, Nanjing, Jiangsu, China

Abstract: Under the background of the rapid development of Chinese network information technology, the status of the current 3D film and television has also improved. In the process of the development of film and television industry, the characteristics of combining various arts have emerged, and in the visual communication design, a variety of 3D film and television works also show the artistic mascots covered by their content. This paper mainly discusses the meaning of visual communication and the basic elements in the design, the connection between the visual communication and the mascot and the relationship between the visual communication design and the 3D film and television were summarized, and the visual communication design of the mascot modeling design and the integration of 3D film and television were explored, so that the mascot and the 3D film and television were effectively integrated.
Keywords: Visual communication design; Mascot modeling design; 3D film and television

1. INTRODUCTION

Visual communication is a kind of design art that presents a variety of different information to people by means of visual appreciation. When conveying information through vision, it can not only bring people a different color experience, but also has the characteristics of the designer's time, which has a relatively rich connotation. With the gradual improvement of the living standard of the broad masses of Chinese society, they can not do without the computer in their work, study and life, which is reflected in the time when they play mobile phones at home and go to the cinema to watch movies, which has a particularly deep experience. At the same time, combined with the integration of mascots and 3D film and television in visual communication design, the value of the existence of mascots in the film and television is analyzed, so that everyone can further understand the different values brought by visual communication design.

2. VISUAL COMMUNICATION DESIGN

2.1 The meaning and basic elements of visual communication

The original intention of "visual communication" is to enable people to have certain psychological resonance through the way of "seeing". Because there are great differences in language in the world, and there are also great differences in people's age, personality and thoughts, there are often difficulties in communication between people. However, through the form of visual communication, to express the information with a variety of graphics reflected, this way can effectively eliminate all kinds of obstacles in the communication of people, through the "graph" - schema, graph, picture, pattern, graph and image and other forms, so as to achieve the purpose of mutual understanding when people communicate information. Visual communication in design mainly includes four basic elements: modeling, color, graphics and text. the significance of modeling is to show the characteristics of objects and people in different ways to make them full of life and more vivid. the meaning of color is to present the content of the information expressed through different color differences, making it easy to understand and easier for people to understand. the meaning of words is to use some characteristic words, in the process of its impact on people's lives.

2.2 Application of visual communication fields

Visual communication is involved in many fields, such as 3D film and television, animation design, mascot design, font design, packaging design, corporate image design and advertising design have a wide range of applications. It is precisely because of the application of visual communication in these fields, adopt a variety of design, to bring wireless fun to people's life, but also let the "beauty" in life gradually increase.

3. THE CONNECTION BETWEEN VISUAL COMMUNICATION AND MASCOT

3.1 Introduction and origin of the mascot

There has been the concept of mascot since ancient times, but in ancient times the mascot had a more lovely name -- "cuteness", which is a product created by human beings in the continuous development of culture, and also formed by our predecessors in getting along with the nature. In the modern environment we live in, mascots are more about designing iconic images to carry out themed activities, and at the same time, using the representativeness of mascots to convey auspiciousness and happiness to people. Although there are many kinds of Chinese mascots, relevant data show that the "mascot" originated from the French Pross "Mascotto". It was not until the end of the 19th century that they were incorporated into the dictionary with Pross. Since then, some things, animals or people with good luck and auspicence were given the title of "mascot".

3.2 The application of mascots and the connection with visual communication

Mascots have the meaning of good luck and good luck, so at present, a variety of mascots gradually appear in people's attention, and are also widely used in daily life [1]. Some mascots come to people's attention as some toys and figures, and some combine with multimedia network technology to evolve into various movies and cartoons into people's lives. Take "Jinwa" as an example, the mascot has an important impact on visual communication. "Jinwa" is a mascot created in the form of the emblem at the 13th National Games in 2016. It appeared in people's lives. the prototype of "Jinwa" is a characteristic figure in Tianjin Yangliuqing New Year wood-block Prints. It has strong Tianjin characteristics and national style, fully embodies the connotation of Tianjin culture, and also reflects the symbol of happiness, well-being, prosperity and strength.

4. THE RELATIONSHIP BETWEEN VISUAL COMMUNICATION DESIGN AND 3D FILM AND TELEVISION

4.1 The impact of 3D on people's lives

With the continuous development of information technology, people's living standards in all aspects have made great progress. For example, in the past, people used to watch movies through the screen at the beginning, and then gradually began to watch movies with black and white and color TV. Until now, they watch movies and cartoons through the 3D technology in the cinema, which makes people's life more wonderful.

4.2 The role of 3D film and television in visual communication design

3D films and television have more vivid images and more artistic charm, which can bring visual impact to the audience, more realistic simulation of the picture content, closer to the physical characteristics of the world, can more easily express the relevant information, so that people can fully understand the content expressed. When making movies, proper use of 3D technology can present people's unexpected virtual scenes, character modeling and exaggerated actions, etc. It plays a pivotal role in the sense of color layering, the technology of capturing performance actions, and the authenticity of characters and model creation.

5. THE INTEGRATION OF MASCOT SHAPE DESIGN AND 3D FILM AND TELEVISION IN VISUAL COMMUNICATION DESIGN

When we have a certain understanding of visual communication and 3D technology, it is easy to find the relationship between them. After artistic design through visual effects, the image that people want to express is processed by 3D technology, and vivid images are displayed in front of people. Let people in the appreciation of their vitality and dancing have a sense of immersive, through the meaning of auspicious mascot, let them incisively and vividly in the film and television works to show their charm. For example, the classic "Fuwa Olympic Odyssey" performed by Fuwa in the Olympic Games, through the integration of mascot design and 3D film and television, vividly portrays the five children's brave and persistent spirit of adventure, which enables a large number of children at that time to gain the spirit of bravely moving forward in the face of difficulties and not being afraid of difficulties [2].

6. CONCLUSION

According to the above discussion, the mascot can directly reflect its beautiful meaning and positive energy orientation through the integration of 3D film and television. In the process of visual communication design, we should continue to improve the mascot design and the integration of 3D film and television. In the process of continuous practice in the future, we hope to achieve more perfect integration between mascots and film and television, so that better and more mascots can perfectly appear in people's lives through film and television works, and promote the long-term development of our culture.

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A Brief Analysis of Hybrid Teaching Mode and Practice for Automotive Electronic Technology Specialty in Higher Vocational Colleges

Jun Zhang
Zibo Vocational Institute, Zibo, Shandong, China

Abstract: As a highly technical subject, automotive electronic technology in higher vocational colleges has attracted more and more attention in recent years. However, the traditional face-to-face teaching mode has been unable to meet the learning needs of students in some aspects, so the use of "blended teaching" mode has become a new teaching mode that attracts much attention. For this, this paper mainly analyzes the "mixed teaching" mode of automotive electronic technology major in higher vocational colleges and the problems existing in the teaching of automotive electronic technology major in higher vocational colleges, and then studies the strategy of "mixed teaching" mode of automotive electronic technology major in higher vocational colleges, in order to provide basis and support for teaching.

Keywords: Higher vocational colleges; Automotive electronic technology major; Hybrid type; Blended teaching model

1. INTRODUCTION

"Hybrid teaching" mode of automotive electronic technology major in higher vocational colleges refers to the combination of online and offline teaching methods, aiming at improving students' learning effect and practical ability. To be specific, it combines traditional face-to-face teaching with online learning, so that students can choose their learning methods more flexibly and get more practical experience in practical operation.

2. HYBRID TEACHING MODE FOR AUTOMOTIVE ELECTRONIC TECHNOLOGY MAJOR IN HIGHER VOCATIONAL COLLEGES

In this teaching model, students can study the online part of a course through an online platform and practice the offline part in a place such as a laboratory or studio. the advantage of this teaching mode is that it can provide more practical opportunities, enable students to better grasp the skills and knowledge they have learned, and promote their competitive advantages [1].

However, the implementation of hybrid teaching mode of automotive electronic technology major in higher vocational colleges is difficult. For example, it is necessary to arrange a reasonable proportion of online and offline teaching to ensure that students can fully understand what they have learned. the online learning platform should have perfect functions, which can provide guidance and help for students' learning. It is necessary to pay attention to the quality and guidance of practice, design reasonable evaluation methods and timely feedback evaluation results to help students adjust learning strategies and improve learning effects.

In short, the hybrid teaching mode of automotive electronic technology major in higher vocational colleges is an innovative teaching method, which needs to pay attention to the quality of teaching design, online teaching implementation, practice and evaluation and feedback, and constantly improve and optimize the teaching mode, so as to achieve better teaching effects.

3. CURRENT TEACHING SITUATION OF AUTOMOTIVE ELECTRONIC TECHNOLOGY MAJOR IN HIGHER VOCATIONAL COLLEGES

With the continuous development and application of automotive electronic technology, the major of automotive electronic technology in higher vocational colleges has become one of the hot majors in the current job market. However, there are some problems in the specific implementation. the following is an in-depth analysis of the current teaching situation of automotive electronic technology major in higher vocational colleges.

3.1 Teaching content lags behind

Due to the lag of curriculum and content, the teaching content of automotive electronic technology major in higher vocational colleges is relatively simple, which is difficult to adapt to the changing market demand. Therefore, we need to strengthen the update and improvement of teaching content, pay attention to the introduction of the latest automotive electronic technology theory and practical knowledge, in order to meet the needs of the market.

3.2 Lack of practical teaching support

Automotive electronic technology is a very practical major, students need to master the relevant skills and knowledge in practice. However, due to the limitation of practical teaching equipment and conditions, there are some problems in the quantity and quality of practical teaching of automotive electronic technology specialty in higher vocational colleges at present. Therefore, we need to pay attention to the construction and improvement of practical teaching facilities, improve the proportion and quality of practical teaching,

in order to better enhance students' practical ability and skill level.

3.3 The teaching staff is not strong enough

At present, the teachers of automotive electronic technology major in higher vocational colleges are relatively insufficient, which leads to the influence of teaching quality and teaching effect to a certain extent. Therefore, higher vocational colleges should strengthen the construction of teaching teachers, recruit high-level and high-quality professional teachers, improve teachers' teaching ability, and thus help to provide guidance and help for students [2].

3.4 Lack of effective connection with market demand

With the continuous development of automotive electronic technology and the constant change of the market, students need to master more practical skills and knowledge to meet the needs of the market. However, through investigation and analysis, professional teaching and market demand is difficult to match and fit.

4. HYBRID TEACHING MODE AND PRACTICE FOR AUTOMOTIVE ELECTRONIC TECHNOLOGY MAJOR IN HIGHER VOCATIONAL COLLEGES

Through the above analysis, the problems existing in the teaching of automotive electronic technology in higher vocational education can be realized that there are some problems in the teaching content, teaching support, teaching teachers and teaching and market demand, and these problems affect the effective development and implementation of the teaching of automotive electronic technology, but also affect the formation and development of students' professional ability. the introduction of "hybrid teaching" mode into automotive electronic technology major in higher vocational colleges can get strong support, play the role and advantages of online and offline teaching, expand teaching methods, enrich teaching content and improve teaching quality. In the practice of hybrid teaching mode for automotive electronic technology major in higher vocational colleges, we should pay attention to the following aspects:

4.1 Course design and content integration

Teachers need to carefully design online and offline courses to ensure that they are interlinked and integrated so that students can fully understand what they are learning. Teachers need to carefully design each link, including online learning and offline practice links, and determine the learning objectives and teaching methods of each link. In addition, teachers also need to reasonably arrange the proportion of online and offline learning according to the actual situation of students to ensure the learning effect of students.

4.2 Implementation of online teaching

Online learning needs to be supported by reasonable platforms and tools, as well as guidance and guidance on how to proceed. Teachers should strengthen communication and interaction with students, fully understand the actual situation of students, assist students to overcome difficulties and solve problems. Online learning needs to make full use of multimedia technology to provide students with more vivid and vivid teaching content and improve their learning interest and enthusiasm [3].

4.3 Quality of practice

The advantage of blended teaching mode is that it can provide more practical opportunities, so that students can better grasp the skills and knowledge. In the concrete implementation, it is necessary to get the support of teaching hardware, and teachers need to provide sufficient guidance and support in practice to ensure that students can complete practical tasks safely and efficiently.

4.4 Evaluation and feedback

Teaching and learning assessment is an important part of teaching, but also a relatively key link, conducive to teachers to grasp the actual situation of students and teaching. For blended teaching, teachers should carry out teaching evaluation scientifically, assist students to master correct and effective learning methods, and improve students' learning quality. Teachers need to make full use of online teaching platforms and offline classrooms to evaluate students in a variety of ways, including tests, assignments, classroom performance, etc., to provide comprehensive feedback and guidance to students.

5. CONCLUSION

As a highly technical subject, automotive electronic technology major in higher vocational colleges needs to constantly adapt to new teaching methods and methods to improve teaching quality. Through the discussion of this paper, we can see some problems existing in the teaching of automotive electronic technology major in higher vocational colleges, and also understand the advantages of "hybrid teaching" mode to solve these problems. We believe that in the future teaching practice, we can continue to improve and optimize the teaching model through continuous exploration and practice, and provide better support for students' learning and growth.

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Analysis Of the Cost Project Management Of the Real Estate Industry

Wei Zhao
Zibo Vocational Collegd, Accounting Schoool, Zibo, Shandong, China

Abstract: Under the banner of reform and opening up, the real estate industry has gradually emerged, experienced the economic regulation and policy management of the country and the market, and now it has become an indispensable industry in our daily life. the real estate industry has not only made a significant contribution to China's economic growth, but also provided a good solution to China's severe employment form. In recent years, housing prices have soared in recent years, especially in developed areas such as Beijing, Shanghai and Shenzhen. Many real estate enterprises, all hope to obtain greater benefits in this industry. However, most real estate enterprises focus on the value of sales and other links, but ignore the problems existing in enterprise management, especially the cost management.
KeyWords: Cost project management; Real estate transaction volume; Economic development

1. RESEARCH BACKGROUND

In recent years, with the rapid development of the real estate industry, the construction industry has sprung up like bamboo shoots after a spring rain, contributing to the real estate market, the vital interests of the people and the economic development of the country, and has become a key area of our national construction. With the development of the construction industry, the competition of construction enterprises is also gradually increasing. Not only the quality of the project, the length of the construction period, the safety index of the project and the overall quality of the workers have also become the requirements of the society for the construction industry. However, the price of the project is inversely proportional to it, and in the high-quality market environment, the bidding price is getting lower and lower. Therefore, the construction industry must find the right way to win higher profits for its own enterprises.

As we all know, a project is implemented. National policy, economic development, market regulation, the regional environment of the project, the surrounding traffic conditions, as well as the project schedule, personnel arrangement, material preparation, weather changes and many other factors will affect the cost of the project. However, even if all the factors are taken into account, there will still be unexpected problems in the implementation of the project, leading to the cost budget problems. Therefore, to establish a perfect construction project cost management system, not only to the project before construction materials, personnel, technology and other costs of the budget, but also in the process of construction real-time records of the project, scheme modification, personnel deployment, more important is to the possible accidents of the project processing solutions. the completion of the project does not mean the end of the project, the later summary and analysis is more important. After the end of the construction, the capital situation of the whole project is calculated, and the problems in the cost budget are analyzed and discussed to find appropriate solutions.

2. THE REAL ESTATE INDUSTRY IS NOW IN THE PROJECT COST MANAGEMENT OF THE EXISTING PROBLEMS

2.1 Not establishing a systematic and comprehensive cost management concept

The real estate industry is developing rapidly in China because of its high profit, good development prospects and abundant market. But while the real estate industry is favored and also has a great risk, Because to engage in the real estate industry, it first needs to have sufficient funds in the intermediate construction process, And due to the characteristics of the real estate industry itself, Its money is put into profitability for a long time, Therefore, we must ensure that the capital chain can withstand the huge pressure of long-term investment; next, the senior managers of the real estate industry also need to pay close attention to the good policy, economic and social trends, Timely adjust and change the project objectives and design schemes, Factors directly linked to the interests of the real estate industry, such as: the new land use management regulations issued by the government that affect the site selection and planning; the development and price of new decoration materials that affect the design cost budget; the changes of the market demand power and purchasing power affecting the product market; A new financial system that affects funding.. For the real estate industry is a whole body.

2.2 Current situation and insufficiency of cost management at the project approval stage

Real estate project development for real estate company focus is to make the whole project from the big situation to the specific construction decoration packaging has a set of the most reasonable accurate cost control scheme, the whole project from design to construction development will rely on it to cost control in the best advantage, and the beginning of the project is the priority, directly determines the interests of the whole project in the final size and success or failure. However, at present, there are many domestic real estate companies still do not realize the importance of project approval decision, which has caused a great obstacle to the operation of these companies.

2.3 Lack of exposure to cost management in the design stage

Due to the flaws in the work planning and process, the project will eventually burst out of control, Summarize the whole process of the project from design to application, At the beginning of the overall analysis of the cost margin estimation of the project, A lax understanding of the need for residual reserve and strict control of cost control, Blind pursuit of high profit margins to reduce design funds, In order to reduce the cost of the total project cost is greatly reduced deduction; on the other hand, According to the project budget contract presented by the company, the other design unit does not have a clear data limit on both ends of the project design funds, This is a serious breach that leads to errors in succession, But now, with the rapid development of the economic market, Many such project design units ignore the most basic level of the problems under the rapid improvement of technology, Not sensitive enough to the concept of strict and practical implementation of the economy, At the same time, there are some deficiencies in the fundamental calculation method of design funds.

3. REAL ESTATE INDUSTRY COST MANAGEMENT PROBLEMS IN THE IMPROVEMENT PLAN

3.1 Strengthen the construction contract management. the construction contract must be observed by both parties, and the rights and obligations of the two are listed in detail, so the managers of the construction enterprise should read the contract carefully, clarify the central meaning of the contract, understand the intention of the contract and so on.

3.2 Control the design change well. the design change will have an impact on the cost of the project, so be sure to control the design change. In the process of construction projects, it is difficult not to have design changes, so to correctly respond to the design changes, no matter which party requires the design change, the cost person needs to budget the construction cost of the change, and then the supervision and the construction unit can make the changes. And for the design of the change to list the plan, at the same time, the plan to go through the relevant units and departments of the audit, and finally determine the most appropriate plan.

3.3 Strengthen on-site visa management. In the construction process of the project, but also to do a good job in its management, the construction enterprise should strictly follow the construction drawings, and in the construction of all the accidents should be carefully mastered, to avoid no budget consumption. And the personnel responsible for the site management should strictly spur the construction enterprises, and require them to make the corresponding records, especially the hidden engineering projects. This is because the cost of such a project is relatively high, after the completion can not be investigated, if there is no corresponding procedures, then the final project settlement will be very difficult. Therefore, for such a project must do its acceptance records.

Although now the real estate transaction volume is huge, but there are still many problems. With the development of the Times, people's awareness of real estate is also increasing. the high profit of the real estate industry will attract a large amount of funds, and at the same time, a large amount of funds will also drive the development of the real estate industry. As countries take "restricted" and a series of measures to regulate the real estate market, because the bank interest rates rise, real estate financing harder, at the same time, as more and more companies see the real estate industry profits and join them, the real estate industry competition is increasingly intense, every real estate company has its core strategy, an important part of its core strategy must be cost control, reduce cost is very important to an enterprise.

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Computer Information Security and Protection Countermeasures Under the Background of Big Data

Congcong Zhen
Zibo Vocational Institute, Zibo, Shandong, China

Abstract: Computer network information technology is a great invention, which in a sense has changed the form of human social production and life, but based on the characteristics and attributes of the information network has also brought a lot of harm, especially in the computer information security, hacking, user privacy disclosure, virus attack, etc., may cause loss of life or property to the user. Based on this, in order to build a safe, harmonious and healthy computer information environment, information technology industry, network users and other fields, need to take reasonable and scientific computer information security protection measures. This paper first expounds the importance of the construction of computer information security protection system, then analyzes the main factors affecting computer information security, and finally puts forward the effective countermeasures of computer information security protection, in order to share and communicate with people in the industry.

Keywords: Big data background; Computer information; Safety protection; Effective countermeasures

1. INTRODUCTION

Computer information technology under the background of big data has successfully narrowed the distance between people and truly realized the idea of "knowing the world without leaving home", which has made great contributions to social development and the development of human civilization. At present, with the rapid and widespread popularization of computer information technology, the high-speed transmission, extensive sharing and real-time access of information have created great convenience, but it has also brought a lot of information security risks for users, which has affected the value of information technology application to a certain extent. At present, in order to protect and improve the security of computer information, technical and social strategies emerge in an endless stream, of course, but also achieved very significant results, mainly including the installation of firewalls and anti-virus software, increasing social publicity, optimization of network resource management.

2. THE SIGNIFICANCE OF COMPUTER INFORMATION SECURITY PROTECTION SYSTEM CONSTRUCTION

The fundamental function of computer information security protection system is to avoid user information leakage, theft, loss, tampering and other problems, so as to avoid damage to the user's life and property, so the construction of computer information security protection system, has a certain necessity and importance. First of all, the information security protection system can protect the user's computer in real time and avoid virus attacks and hacker intrusion from the network, so as to effectively avoid the leakage and theft of user information [1]. Secondly, the information security protection system can check the computer system without dead corners, conducive to the timely discovery of loopholes and potential dangers in the system, and remind the user to implement maintenance and repair the computer system, so that can effectively improve the security factor of the computer. Finally, computer information security protection system, can maximize the protection of user information security, can prevent user privacy and important information disclosure. For example, users can encrypt information to save, transfer, and download information. In this case, the risk coefficient of information disclosure can be reduced.

3. FACTORS AFFECTING COMPUTER INFORMATION SECURITY UNDER THE BACKGROUND OF BIG DATA

3.1 There are security loopholes in the computer operating system

A computer is composed of hardware, software and peripherals, among which the computer operating system is the port of human-computer interaction, the key to ensure the stable operation of computer equipment, and the component of the computer most susceptible to external influences [2]. Under normal circumstances, the computer operating system security vulnerability is an important factor affecting information security, once the operating system vulnerability will give hackers and other criminals can take advantage of, at this time, users using computer equipment may lead to information disclosure crisis, such as hackers using Trojan horse and other number theft programs, steal the user's password, account and other personal information.

3.2 Natural disasters

Computer equipment is composed of a large number of electronic components, mainly including the graphics card, motherboard, CPU, hard disk, memory, etc., these electronic components are very sensitive to the external environment, if affected by some external force, it may lead to the damage of electronic components, at this time stored in the electronic components of the data,

data and information will also be implicated, even loss and damage. It can be seen that natural disasters are the key factors affecting the security of computer information, users need to take reasonable and effective protective measures in daily work and life, so as to ensure the security of computer equipment and system.

3.3 Computer network virus

Computer network virus is one of the biggest threats to computer information security factors, and the computer virus variety, the spread of various ways, it is impossible to protect computer information security. For example, when users browse websites or download resources in the public network, it is very likely to cause virus intrusion problems, at this time the user's computer will be in danger, the user's information, important files and data, will face the risk of disclosure, theft and other risks.

4. COUNTERMEASURES FOR COMPUTER INFORMATION SECURITY PROTECTION UNDER THE BACKGROUND OF BIG DATA

Based on the above mentioned factors affecting computer information security is very rich, which needs to take more comprehensive and perfect computer information protection countermeasures, so as to better protect the user's information security. Therefore, the author mainly from the installation of firewall and anti-virus software, optimization of network resource management and improve the security awareness of network users three dimensions, put forward relatively feasible and reasonable security countermeasures.

4.1 Install firewall and anti-virus software

Firewall and anti-virus software are the most commonly used computer information security countermeasures for users, but also the method with excellent protection effect. Its working principle is mainly to prevent external users from using illegal means to enter the computer system. In short, it is to prevent network viruses from damaging the user's computer system with the help of certain restrictive means. But also to prevent users from browsing websites or downloading resources, accidentally downloaded the virus to their own computer system, so the installation of firewall and anti-virus software is a simple, quick, practical means of information security protection.

4.2 Improving network resource management

Network resource management is a relatively scientific and effective computer information security countermeasures, mainly to upload, spread and download resources on the network to implement strict management, so as to avoid bad websites to individuals or enterprises caused harm. Based on this, the network resource management department needs to adopt comprehensive and real-time supervision and management of network resources, and review the information resources uploaded, downloaded and transmitted by the majority of users. Only the information that passes the review can be disclosed in the public network, which plays an important support for the creation of a green network and a safe network.

4.3 Improve the security awareness of network users

The author believes that the reason why computer information security problems occur is very much related to human causes. Objectively speaking, hacker attacks, virus invasion and so on are man-made, so computer information security protection needs to focus on the majority of computer users, to ensure that each network user can abide by the network security criteria, strictly prohibit browsing dangerous websites on the network. Or upload and download resources containing virus sources. Based on this, the society should strengthen the publicity of network security protection, and convey the security awareness to each network user, so as to ensure that each user can standardize the Internet and use the network safely. It is of great significance and value to build a safe, efficient and green network environment by improving the security awareness of network users.

5. CONCLUSION

To sum up, under the background of big data, every computer network user should not stay out of trouble, but should start from their own to maintain the security of the network environment, and then create favorable conditions for the development of computer information technology. Taking computer information security and protection as the research object, the above detailed analysis and research are carried out, and a series of effective countermeasures to improve network information security are shared, hoping to be helpful to the development of computer information technology field.

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The Application of Artificial Intelligence in Computer Network Technology in the Era of Big Data

Baoqiang Zheng
Zibo Vocational Institute, Zibo, Shandong, China

Abstract: Under the background of the development of Informa ionization, intelligence, automation and digital society, advanced scientific theory and technology make a great contribution, which also verifies the idea that science and technology is the first productive force of society. At present, artificial intelligence technology has gradually become the main direction of modern social development research, and its application scope and level in various fields and industries have been significantly developed. In the field of computer network technology, artificial intelligence technology supported by big data ensures the security of computer network, and improves the depth and value of computer network data. In this paper, the application of artificial intelligence in computer network technology in the era of big data is analyzed and researched in detail, with a view to sharing and communicating with people in the industry.

Keywords: Big data era; Artificial intelligence technology; Computer network technology; Application way

1. INTRODUCTION

In the digital era, massive data will naturally be produced and woven into a huge data network covering everyone, so big data is closely related to everyone's vital interests. the birth of Internet information technology has narrowed the distance between people, changed the traditional social production and life mode, created a lot of new things and fields, of course, but also promoted the development process of the era of big data. With the rapid development of science and technology, artificial intelligence has become the focus of the field of science and technology, and has been gradually applied in various fields or industries in the society, and has obtained very remarkable achievements, which is an important performance of science and technology to serve the society and promote social development. As far as the application of artificial intelligence in computer network technology is concerned, it promotes the development of automation and intelligence, and enhances the significance and value of the existence of computer network technology.

2. OVERVIEW OF BIG DATA AND ARTIFICIAL INTELLIGENCE

2.1 The concept of big data

Big data, also known as massive data, mainly refers to the huge amount of data involved, which is difficult to collect, sort out, manage and process through mainstream software tools, or requires a large amount of time, financial, material and human resources to achieve relevant operations on massive data [1]. At the present stage, Internet information technology connects the world into a whole, but also establishes connections between different fields and different industries. In a word, Internet information technology creates favorable conditions for the birth of the era of big data. In the era of big data, everyone can not stay alone, and data will be generated at every moment, and will always obtain data, so how to use big data to serve the society is a very important research topic.

2.2 The concept of artificial intelligence

Mechanical equipment, including the initial robot, needs to rely on the program written in advance to make relevant responses according to the instructions in the operation process. Although it can also achieve the purpose of automatic operation, there is still a gap with the goal of human imagination, under this background, the theory and technology of artificial intelligence was born. the so-called artificial intelligence is to give the machine human thinking ability, to ensure that the machine can have independent consciousness and thought, so as to achieve automation and intelligence in a real sense. In the era of big data, the application of artificial intelligence in computer network technology has accelerated the development process of social intelligence. the main reason is that artificial intelligence, supported by massive data, can deal with problems more humanely through the data calculation, analysis, storage and other functions of computer network technology.

3. THE NECESSITY AND ADVANTAGE OF ARTIFICIAL INTELLIGENCE APPLICATION

In the context of the era of big data, everyone is in the network of data interweaving. Of course, massive data resources can not only create value, but also may bring various risks or dangers [2]. Take the application of computer network technology as an example. Although users can obtain valuable data on the network, their own data and information will also be exposed on the network. Once stolen and used by criminals, it will pose a great threat to users' life and property. Based on this, in order to guarantee the data security in the era of big data, the application of artificial intelligence in computer network technology has very important significance and value. For example, when collecting, sorting and analyzing data, artificial intelligence can accurately screen out fuzzy information data and

conduct security processing on such data, mainly identifying whether there are dangerous factors in fuzzy data, such as computer viruses, junk information and stealing software, so as to ensure the security of computer networks and equipment.

4. THE APPLICATION OF ARTIFICIAL INTELLIGENCE IN COMPUTER NETWORK TECHNOLOGY

4.1 Security applications

The application of artificial intelligence in computer network technology can improve the security of computers and improve the efficiency of computer data processing, so as to avoid the impact of dangerous data on users, society or national security. In the context of the era of big data, data not only has the characteristics of mass, but also has the characteristics of complex and diverse types, among which there are some hidden security risks. If the computer is unable to identify and exclude useless or dangerous data, it may cause harm to users, society and national security. At this point, the application of artificial intelligence in computer network technology can improve the efficiency of computer network processing data information, and can effectively separate the dangerous data in the mass data. Based on the advantages and characteristics of artificial intelligence technology, computer network technology once again in the face of processed data, can be directly in accordance with the previous processing way to solve, even in the face of upgraded and transformed data, artificial intelligence can also through discrimination, comparison, analysis, the existence of security risks of the data away.

4.2 Application of data mining

In the era of big data, data can create value, so it is of great significance and value to collect, organize, identify and analyze data. the application of artificial intelligence in computer network technology has significantly improved the efficiency and quality of computer data processing information, which can realize the deep mining of data to a certain extent, so as to enhance the comprehensive benefits of data application. Take the data processing advantage of artificial intelligence as an example. Artificial neural network is the fusion product of artificial intelligence and computer network technology. With the support of big data, artificial neural network can form instructions for autonomous operation and operation through data collection, analysis and other processing means, and can predict network data relying on big data. This means that the application of artificial intelligence in computer network technology has a good ability to mine data.

4.3 The application of enterprise management

Informatization is the main direction of modern enterprise management reform. Compared with traditional management mode, informatization has higher efficiency. Looking at the application of artificial intelligence in computer network technology from the aspect of enterprise management, we can find that the enterprise management mode is advanced, the management goal is clear, and the management effect is accurate. Taking enterprise production management as an example, the application of artificial intelligence in computer network technology has realized the goal of production automation and intelligence. Moreover, with the support of big data, artificial intelligence has been humanized in the process of production management. For example, collecting production management data from big data and drawing useful data information from it can serve as the experience and basis of enterprise production management. So as to achieve the purpose of improving the quality of enterprise production management.

5. Conclusion

To sum up, in the face of the characteristics of large types and quantities of data information in the era of big data, the application of artificial intelligence in computer network technology is conducive to improving the quality and efficiency of data processing by computers, as well as protecting the information security of computer users, society and the country. the above analysis mainly from the aspects of security, data mining, enterprise management, the application of computer network technology artificial intelligence path.

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Taking the Film "The Day After Tomorrow" As an Example to Analyze the Traditional Cultural Values in American Disaster Films

Lei Zheng
Zibo Vocational College International College, Zibo, Shandong, China

Abstract: As an artistic international language, film has become one of the most important and effective ways to promote international cultural exchange, transmit information and emotion, and export national culture. With the exchange and collision of the world film market, the style and theme of Chinese and foreign films have basically been the same, but there are still great differences in ideological keynote and ideological performance, and cultural values are also different. This paper mainly analyzes the American traditional culture, values and ethics through the specific plot of the film, and explores the American values spread through the film.

Keywords: American films, Disaster films, Traditional cultural values

1. INTRODUCTION

American films incorporate the spiritual vision of American cultural people, contain their deep cultural values, spread their cultural values, and influence the formation of the cultural values of film lovers around the world. In the face of the gradually formed monopoly of American films in the world film market and the constant cultural encroachment on countries around the world, we have to discuss the cultural characteristics embodied in American films and the tendency towards the simplification and simplification of the world film culture. the various cultural values advocated in American movies are that Western culture highly advocates human values, fully affirms human desires and demands, and exalts the spirit of personal struggle and individualism; He advocates freedom, democracy and peace, and advocates the spirit of rationalism and scientism; Publicize the sense of crisis and advocate the exchange of force for peace. As a model of mass culture, American films are successful in business and provide many good entertainment texts for the contemporary public. This paper attempts to explore the inheritance and development of American cultural values in the film through this form of expression.

2. HERO CULTURE IN AMERICAN MOVIES

In the traditional cultural values of the United States, individuals have the opportunity to realize their dreams and the right to pursue their own happiness. the spirit of personal struggle, adventure and indomitable resistance advocated by Americans is particularly evident in American disaster films. the heroes in the film are always unafraid and unswerving in the face of danger. They do not believe in failure no matter what kind of blow they are, and strive to fight against fate. For example, Sam in the film "The Day After Tomorrow", from his fear of flying to persuading people how to fight the cold and successfully resist the wolves to help his classmates, is portrayed as a hero at the end of the film. Although the individual heroes in American movies have this common characteristic, the myth of unlimited individual power, and the tendency of individual heroism, the hero images widely produced in American movies are indeed worshipped by Americans, and are regarded as the model of personal success, which is also a perfect interpretation of American values.

3. ETERNAL LOVE, FAMILY AND FRIENDSHIP IN AMERICAN MOVIES

Love is the eternal theme of the film, which has irreplaceable status. No matter which film, it more or less describes the perfection and eternity of love. the family is the most important part of Americans, and the family is the warmest and most valuable. So the American movies reflecting love and family affection use the power of God, as if the distance between people is pulled close. In the film "The Day After Tomorrow", people saw the beauty of human nature and morality, and the profound meaning of friendship, family and love at the moment when the sky broke and the earth changed.

4. THE SPIRIT OF SCIENCE AND TECHNOLOGY AND CRITICISM IN AMERICAN MOVIES

American high-tech has contributed to the competitiveness of American films to conquer the world, and American films have also exported their film culture to the world with the help of contemporary media. American films have created the unique culture of the film by various visual modeling and high-tech means, which is reflected in its text composition and visual image creation. Some giant disaster films, science fiction films and drama films have sprung up in large numbers, such as Jurassic Park and other films, which tell the concrete embodiment of the differences between Chinese and Western cultures in the three films from the perspective of high science and technology, mainly involving family relations, father and son relations, friend relations, sexual ethics, different understanding of traditional culture, face values, legal culture and food culture.

High-tech means are also used in the film "The Day after Tomorrow" to enable the audience to understand the impact of greenhouse gases on the global climate more intuitively and vividly. the post-disaster scenes of

storms, hail and tornadoes can more directly arouse the public's reflection on the development of science and technology and the importance of human survival. the film does not directly criticize the impact of human behavior on the environment, but gives people visual impact and spiritual shock through scenes of temporary difficulties.

IV. Cultural Inclusion, National Superiority and Social Responsibility in American Films

After the two world wars, due to the changes of American ethnic groups, the rise of the civil rights movement and the promotion of the international situation, American culture turned to multiculturalism. This symbiosis and development of multiculturalism naturally gave birth to the inclusiveness of American culture. American film advocates the principle of commercialism and positioning itself in the global market, not just in attracting American audiences. What emerges from this is that American films do not care too much about maintaining the characteristics of their own culture, but rather embrace and absorb the cultures of all nationalities and countries in the world, which is also a cultural strategy of American films. Therefore, American films generally choose global themes in terms of theme selection.

However, the special environment of the immigrant countries makes them have a tolerant attitude. Facing the new American continent, they create life in doubt. the superior conditions of the American continent make them feel arrogant and superior. They believe that everyone has talent and talent, and treat other nations with contempt. the continuation of this sense of superiority is a sense of mission to save the world. This is well reflected in some sci-fi disaster films. Disaster films such as "The Day After Tomorrow" have such a structure. People's desire and pursuit have destroyed an existing balance. the United States, as the savior, then through efforts to lift the crisis and save mankind. Such a grand structure subtly shows the sense of superiority and mission in American culture.

American film is one of the important expressions of American culture on the screen. American films incorporate the spiritual vision of American cultural people, contain their deep cultural values, spread their cultural values, and influence the formation of the cultural values of film lovers around the world. It grows and develops with the growth and development of American culture. It vividly reflects the American ideology and many characteristics of the American nation and culture. It conforms to the lively nature and aggressive personality of Americans, and also shows the optimistic spirit and humanity of Americans. This form of cultural inheritance and transmission in the United States is worthy of our further study and research.

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Application Of Virtual Reality Technology in the Inheriting of the Culture of the Qi

Juan Li
Zibo Vocational Institute, Zibo, Shandong, China

Abstract: The culture of the Qi is an important part of Chinese excellent traditional culture. In the new era, its rich spiritual and cultural connotation should be fully inherited and disseminated. Virtual reality technology has the characteristics of immersion, interaction and imagination. By using man-machine interaction, the experiencer can obtain a variety of senses and immersive experience, such as vision, hearing, touch, kinesthetic and so on. This dissertation explores its typical application in the inheritance of the culture of the Qi by analyzing the technical advantages of virtual reality technology.

Keywords: The culture of the Qi; Virtual reality technology; Immersive experience

1. THE SIGNIFICANCE OF THE DEVELOPMENT OF THE CULTURE DISSEMINATION OF THE QI

Jiang Taigong simplified the etiquette because of the custom, respected the merit and laid the foundation for the development of the Qi; Duke Huan and Guan Zhong, reformed and opened up, worshipped commerce and heavy industry, united the marquises, unified the world, made the Qi became the first ruler in the Spring and Autumn Period; in that flourishing age, during the warring states, the Jixia School and talented persons appeared, the contention of a hundred schools of thought in the Spring and Autumn and the Warring States period prospered the Chinese civilization greatly.

More than 800 years ago, the culture of the Qi with the core spirit of reform, openness, pragmatism and inclusiveness has gradually formed, who representing the unique spiritual identity of the people of Qi and accumulating the deepest spiritual pursuit of the Chinese nation. With inheriting, innovating and developing the culture of the Qi, and realizing the innovative development and creative transformation of the culture of the Qi are the internal laws of excellent culture, and contemporary value for us to realize the Chinese dream of the great rejuvenation of the Chinese nation are immeasurable.

2. OUTSTANDING ADVANTAGES OF VIRTUAL REALITY TECHNOLOGY IN THE INHERITANCE OF THE CULTURE OF QI

Virtual reality technology has the characteristics of immersion, interaction and imagination. Through the user's operability of objects in the simulated environment and the natural degree of feedback from the environment, the perfect combination of human and technology is used to realize man-machine interaction. Through multiple senses such as vision, hearing, touch, and kinesthetic, the experiencer has an immersive feeling. It not only spans time and space, but also expands the imagination space and improves the breadth and depth of human cognition.

With its own technical characteristics, virtual reality technology has obvious advantages in the inheritance of the culture of Qi, mainly including the following aspects:

The dissemination of the culture of Qi image data is more intuitive, realistic and understandable. In the process of dissemination of Qi's image materials, 3D modeling technology and scene construction technology in virtual reality technology are used to integrate vivid images and intuitive and real videos, which can make the experience more vivid and rich. In particular, the application of 3D holographic projection equipment, universal treadmill, and bare-eye 3D equipment in virtual reality technology effectively combines 5G technology with audio and video, and presents cultural forms in model form, which can more detail the spiritual connotation, cultural forms, and cultural values of the culture of the Qi.

Completely record local characteristic cultural works from all aspects and angles, and inherit cultural essence. Virtual reality technology can record the culture of the Qi in digital form from multiple perspectives and dimensions, creating more opportunities for the inheritance and development of the culture and spirit of the Qi. the culture of the Qi contains abundant local culture. the cultural relics display in general museums mostly presents the thoughts, behaviors and historical changes of the ancients. the virtual reality exhibition hall displays the display contents in the virtual environment through the combination of virtual and reality, and cooperates with the corresponding explanation, which can make up for the deficiency and defect of the display site content and space.

Comprehensive information collection for permanent storage. With different equipments such as PC, intelligent terminal and VR glasses in the Exhibition of the Qi, visitors can easily use the VR controller to gain a richer experience and increase the unique experience in it. the integration of virtual reality technology into the culture of the Qi. has formed an innovative cultural communication mode, which has the characteristics of high precision, scale, high interactivity, and wide audience. In addition to the promotion and exhibition, it can also achieve digital preservation, virtual browsing, and create a digital museum, which not only solves the problem of the permanent protection of culture of the Qi, but also achieves the collection information from all angles.

It is conducive to the integration of the culture and the tourism of the Qi. the use of virtual reality technology in culture of the Qi has promoted the speed and convenience of communication, especially the combination of virtual scenes and reality. Users canexperience the charm of culture of the Qi truly only by relying on network communication. At the same time, the application of virtual reality technology in culture of the Qi allows the public to browse various tourist attractions in culture of the Qi without going out, which innovates the tourism mode and is conducive to the integrated development of the culture and the tourism of the Qi.

3. APPLICATION EXAMPLES OF VIRTUAL REALITY TECHNOLOGY IN THE INHERITANCE OF THE CULTURE OF THE QI

Build a digital museum to provide an immersive experience of history. Use the excellent dynamic environment modeling technology in virtual reality technology to collect the 3D data of the actual environment, use the 3D modeling software to establish the corresponding high-fidelity virtual environment model, copy the museum buildings and collections, and present the real culture of the Qi Museum in digital form, and provide intuitive browsing on the network. Users can log in to the online virtual museum after networking at any place, Visit virtual museums that are similar to real museums, and combine audio, video, pictures, and models to add more vivid interactive roaming experience for users. the on-site exhibition hall combines virtual reality equipment to provide immersive experience, and uses high-speed motion capture cameras and special cultural relics props to create realistic versions of "Museum Wonderful Night", "Exhibition Hall Roaming" and other projects, close the distance between the museum and the younger generation, and let the museum "live and move". This can maximize the extension space of the museum, give full to the museum's knowledge dissemination and publicity and education functions, and meet the needs of the public to participate in the exhibition at multiple levels and in multiple directions.

Meet the needs of diversity and diverse cultural relics display and dissemination. Restricted by the preservation environment and protection technology, the cultural relics in the museum are generally not allowed to be touched directly by users because of their special value. the digital exhibition hall built with virtual reality technology can break the limitations of traditional cultural relics display in time, space and form of transmission, provide "visible and tangible" intuitive experience for different groups, understand more detailed information of cultural relics through triggering relevant operations, and feel the production process, transmission process and spread significance of cultural relics. This can maximize the display of information related to cultural relics and expand the knowledge behind cultural relics. At the same time, in view of the digitization of the exhibition hall, the data are properly stored in a dedicated server, which also reduces the risk of destruction and theft during the display of cultural relics, and can greatly promote the protection and inheritance of cultural relics.

Reproduce the wonders of the flourishing age of the intangible cultural heritage project. VR game is an important application field of virtual reality technology. Because of its flexible space, convenient operation, rich content, strong interactivity and other characteristics, it can bring users a full range of direct and interesting sensory experience. Taking the classic intangible cultural heritage project "Cuju" in culture of the state of Qi as an example, through virtual reality technology, it can travel through time and space, experience the Cuju world of ancient people of each dynasty in a game way, and understand the playing methods of Cuju the origin of Cuju, the cultural value behind Cuju, and the enhancement of cultural confidence.

In short, with the rise of the "meta universe", the core technologies of virtual reality technology will develop rapidly in the future. Exploring its typical application and application effect in the field of Qi cultural propaganda and communication, and exploring the degree and state of integration are still the areas of traditional cultural communication that need to be deeply considered in the context of the new era.

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Research On the Leadership Training Path of College Association Student Leaders from the Perspective of Ideological and Political Education

Yilei Liang
Zibo Vocational Institute, Zibo Shandong, China

Abstract: College association is an important carrier and position to realize the “San Quan” Education System and is an important way for college students to manage, develop and serve themselves. Under the background that the country attaches great importance to the ideological and political education of college students, it is crucial to train the student leaders with the ideological and political education leadership of the members and make them give full play to the role of the members in the community. Therefore, this study aims to put forward corresponding countermeasures and suggestions to promote the leadership of students in college associations in the integration of ideological and political education and community work, and to provide reference for giving full play to the educational effect of university associations and improving the effectiveness of the role of ideological and political education for college students.

Keywords: Ideological and political education; College associations; College students; leadership

1. INTRODUCTION

College student associations are mass student organizations composed of college students voluntarily according to their interests and hobbies, and carry out activities independently in accordance with their rules in order to realize the common will of their members. the author found that the leadership of the student leaders of university associations is mainly reflected in the organization of sports and sports associations, but less in the ideological and political guidance. the 20th report of the Party points out that "we should use socialist core values to cast soul and educate people, improve the ideological and political work system", which can see the importance of ideological and political education in student education, so how to improve the leadership of students in college associations in ideological and political guidance is crucial.

2. THERE ARE PROBLEMS IN THE LEADERSHIP OF STUDENT LEADERS OF UNIVERSITY ASSOCIATIONS UNDER THE PERSPECTIVE OF IDEOLOGICAL AND POLITICAL EDUCATION

2.1 Lack of experience in the student leaders of college associations

Due to the lack of social experience, lack of practical ability, lack of understanding and lack of cultural confidence, the lack of overall planning and specific arrangement, and the lack of effectiveness and sustainability of the development of activities [1].

2.2 The management of social organizations in colleges and universities lacks standardization and has strong arbitrariness

In the process of enrollment expansion and development of colleges and universities, the type, number and scale of student associations are increasing, and the management difficulty of student associations is constantly increasing. Many student associations have problems such as poor management, chaotic organization, ineffective implementation and lack of cultural confidence [2].

3. LEADERSHIP CULTIVATION PATH FOR STUDENT LEADERS OF UNIVERSITY ASSOCIATIONS FROM THE PERSPECTIVE OF IDEOLOGICAL AND POLITICAL EDUCATION

3.1 The student leaders of the association should have a firm political stand and have the leadership to grasp the correct political direction of the club activities

The student in charge of the association should consciously strengthen the study of political theory, care about state affairs, and have high political consciousness and personality charm, so that the association should become a position full of positive energy and carry forward the advanced culture of socialism with Chinese characteristics.

3.2 The student leader of the association should set an example for the members of the association

The person in charge of the association should play a vanguard and exemplary role in politics, thought, study, work, life and other aspects. Handle the relationship between academic and community activities, and strive to be the "study model" of this major; strive to practice the core socialist values, implement the expectations of the Party Central Committee on college students into the whole process of their words and deeds and the process of community work, give full play to their vanguard and exemplary role, and create a positive, warm, harmonious and distinctive community culture within the community.

3.3 The student leader of the association should have the ability to transform the common interests of the members into the common aspirations

Common interest is the basis of the establishment of the community, but as the leader of the community, we should not position the community activities as leisure and pleasure, but should base on the lofty goals of the community, support the development of the school, serve the society, and organically integrate the feelings of family and country.

3.4 The student leader of the association should be the right assistant of the school culture education

The school should guide the leader of the association to carry out activities in combination with red culture, revolutionary culture and traditional cultural resources. Such as walking into “Heitieshan Armed Uprising Memorial Hall”, “Jiao Yulu Memorial Hall”, “Ma Yaonan’s Former Residence”and other places. So that can broaden students’horizons, enrich cultural knowledge and understand history.

4. CONCLUSION

To sum up, the new era of college community work opportunities and challenges, community is the important way to realize the all-round development of college students, take effective measures to improve the community student dedication, professional, professional leadership is the only way to ensure the healthy development of the community, schools should attach great importance to the student community, head of leadership training and training work, improve the community student service and contribution consciousness, guide the students to the community development service, for the growth of all the community members.

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On the Cultivation of Students' Social Adaptability in Physical Education In Higher Vocational Colleges

Chengli Mu
Zibo Vocational Institute, Zibo, Shandong, China

Abstract: Physical education is an important part of the education teaching system, the education cause development in our country, plays a good role in promoting the healthy body and mind development of students and the improvement of physical quality, and has a significant significance to enrich the student life and overall quality improvement. Higher vocational colleges are an important part of our education system, and the setting of physical education curriculum provides a favorable guarantee for cultivating students' social adaptability and is more conducive to their all-round development. Based on this, this paper discusses and analyzes the cultivation of students' social adaptability in higher vocational physical education.
Keywords: Higher vocational colleges: Physical education: Students' social adaptability: Training

1. INTRODUCTION

Under the background of the new era, in order to keep up with the trend of the Times, the growing demand for talents in various fields leads to the worsening of labor competition in various industries. Meanwhile, it brings great challenges to college students who are about to graduate, resulting in a wide range of employment difficulties. In the face of such steep social environment, higher vocational colleges pay attention to the comprehensive quality and all-round development of students in order to meet the needs of talents in various fields and different enterprises, not only improve students' professional quality and vocational skills level, but also cultivate their social adaptability. Due to the special teaching of physical education in higher vocational colleges, it is necessary to deepen the reform and improve it, so that the cultivation of students' social adaptability and smooth employment in the future have a close relationship, and better highlight the role and value of physical education.

2. UPDATE THE TEACHING CONCEPT, IMPROVE THE PROFESSIONAL QUALITY OF TEACHERS

In the course of physical education, the teacher is the instructor of the smooth development of the classroom, but also the organizer of students' learning of new knowledge. As a physical education teacher in higher vocational colleges, professional quality is directly related to the quality of curriculum teaching, and even has a certain impact on the learning effect of students. Therefore, in the process of carrying out physical education in higher vocational colleges, with the goal of cultivating students' social adaptability, students are required to constantly update their teaching concepts and greatly improve teachers' professional quality [1]. First of all, physical education is different from other professional disciplines. It has a strong practical nature and puts forward high requirements for students' physical literacy, rather than requiring the assistance of cultural courses. the corresponding teaching activities are designed according to students' current physical conditions to better show the application value of physical education teaching. Secondly, the teaching concept of "middle school by playing" is fully permeated into physical education. Due to the uneven physical quality of students, some students are unable to take the initiative to participate in the activities. According to the actual situation, it is necessary to make appropriate improvement, so that students can experience the fun of learning sports from the point of interest. Update the teaching concept, make the smooth teaching activities more realistic, to meet the learning needs of students, so as to promote students to achieve all-round development.

3. ENRICH SPORTS ACTIVITIES AND ENSURE THE QUALITY OF SPORTS ACTIVITIES

The stable development of society not only brings convenience to students' life and speeds up economic development, but also brings great help to the improvement of students' physical quality. Physical education is a basic subject that has existed from primary school to university. It also needs advanced teaching concepts to meet the needs of modern physical education. Teachers constantly excavate physical education teaching resources through students' actual life, effectively stimulate students' learning enthusiasm, and greatly improve students' comprehensive quality. First of all, teachers use teaching tools to carry out substantive teaching, centering on basketball, football, volleyball and other forms, so that students can enhance the sense of teamwork in different sports activities, greatly improve the physical quality of students, and develop good psychological quality. In addition, according to the changes of sports types, students' social adaptability should be improved as far as possible, and their learning needs should be defined according to the changing environment, so as to better guarantee the all-round development of students.

4. SELECT APPROPRIATE PHYSICAL EDUCATION TEACHING CONTENT BASED ON PROFESSIONAL CHARACTERISTICS

Higher vocational colleges are the main front of cultivating outstanding talents in society. In the course of daily physical education, they design targeted teaching activities for students around professional characteristics, so as to improve the comprehensive level of students as far as possible. For the occupation that requires team cooperation, it can be combined with the collective sports event; In the face of strong endurance sports, combined with physical exercise, greatly improve the students' tolerance. According to the occupation of students, physical education teaching activities, take students as the main body of classroom teaching, from the students' physical and mental development and vocational characteristics, to lay a solid foundation for future employment. Simply from the current form of education, different professions put forward different requirements for quality, and physical education teaching activities need further study; From the perspective of future employment, it lays a solid foundation for the healthy physical and mental development of students [2].

5. BUILD A MICRO SOCIAL CLASSROOM TO CULTIVATE STUDENTS' TEAM SPIRIT

Physical education teachers regard classroom teaching as a "small society", encouraging students to play different roles in the process of creating social situations, and teachers should fully control the whole teaching process. Let students organize students to form a team at any time, build a cooperative relationship, and then break the team to rebuild a new team. In this kind of teaching environment, not only the relationship between cooperation and competition, but also the courage to face success or failure, students need to constantly form a new group with new partners in the teaching process. Through the creation of satellite social class, students can truly grasp the various characters they are likely to face in the future society, such as competitors, partners, etc., so that the cooperative relationship will gradually change. When students have the courage to face these realities, it will create a favorable platform for cultivating student group cooperation ability, social adaptability and adaptability, and help students quickly adapt to the society. In the process of carrying out physical training, PE teachers should make use of the advantages of students' groups to make sure that members of each group achieve a balanced physical quality, and make use of relay running, group games and other activities to let students play different roles, so as to truly feel the strong cohesion of the team, realize the importance of the team and effectively build up self-confidence. In addition, such teamwork activities not only expand the scope of making friends, but also lay the foundation for future employment contingency and win the trust and recognition of peers.

6. SHAPING STUDENTS' INDIVIDUAL NEEDS TO ACHIEVE ALL-ROUND DEVELOPMENT

The teaching content of social adaptability involves many aspects, including interpersonal communication ability, learning ability, coping ability, etc., which puts forward high requirements for students' personality quality. But students themselves are an independent individual, through the character, psychological characteristics and so on can clearly distinguish others. Therefore, in the process of training students' social adaptability in physical education in higher vocational colleges, students should grasp this period of teaching time, effectively train students' timely coping ability, make adequate preparation for future career development, and respond to future challenges at any time. Therefore, planning teaching objectives in advance can cultivate students' cognitive ability and timely processing ability, and effectively provide great help to students' personality shaping [3].

7. CONCLUSION

The physical education of higher vocational colleges attaches great importance to the cultivation of college students' social adaptability. the purpose is to reduce the learning pressure and adapt to the working environment quickly after entering the society. Since the new curriculum reform continues to deepen, higher vocational physical education teaching began to innovate teaching methods, update the teaching concept of teachers, strengthen the cultivation of their social adaptability, so that students in higher vocational physical education learning gradually form a mature attitude to work. In the future physical education teaching, teachers should enhance their own teaching level, enhance professional teaching quality, lay a solid foundation for the smooth development of various sports activities, so that students can receive sports knowledge at the same time can grow up healthily.

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Research Progress and Development Trend of Agricultural Internet of Things Technology

Houyuan Tian
Zibo Vocational Institute, Zibo, Shandong, China

Abstract: With the rapid economic development of modern society, the research progress of agricultural Internet of things technology has been improved by leaps and bounds in our country, and has been applied in agricultural production and obtained remarkable results. Based on this, this paper first describes the concept of agricultural Internet of Things, then analyzes the research progress of agricultural Internet of things technology, and finally studies and discusses the development trend of agricultural Internet of Things technology.
Keywords: Agriculture; Internet of Things technology; Research progress; Development trend

1. INTRODUCTION

Our country belongs to an agricultural country. Agriculture provided the foundation for our survival and promoted the development of the national economy. Therefore, agriculture has an extremely high status in today's society. In order to effectively improve the production efficiency and quality of agriculture, China has continuously introduced the principles and policies of developing agriculture, and taken reasonable measures to improve and solve the problems of agriculture, rural areas and farmers. At present, most people in the society do not know enough about agricultural Internet of things technology, or even some people have never heard of it. It can be seen that the publicity and popularization of this technology has become an inevitable trend. Therefore, while conducting scientific research on agricultural Internet of Things technology, relevant departments should cooperate with various departments to actively carry out publicity work, increase the status of this technology in people's hearts, and promote the smooth and efficient development of agricultural Internet of things technology.

2. CONCEPT OF AGRICULTURAL INTERNET OF THINGS

In our country, to improve the production efficiency and quality of agriculture, the Internet of Things technology was applied to agriculture, namely agricultural Internet of things [1]. First of all, agricultural Internet of Things technology can change the traditional agricultural situation and promote agriculture to keep up with the development of the new era. Secondly, make agricultural production to the direction of intelligent development, such as the use of this technology for real-time monitoring and management of agriculture. Therefore, relevant departments should strengthen the promotion and popularization of this technology to promote the efficient development of our economy.

3. RESEARCH PROGRESS ANALYSIS OF AGRICULTURAL INTERNET OF THINGS TECHNOLOGY

3.1 Agricultural intelligent monitoring system

Under the background of new era, some agricultural production in our country has applied advanced Internet of Things technology, among which agricultural intelligent monitoring system is a representative [2]. First, the atmospheric environment detection system. Traditional agricultural production requires farmers to investigate the field to determine the atmospheric environment. However, with the application of agricultural intelligent monitoring system, the data results of atmospheric environment detection can be received through computers or mobile phones, such as light concentration, air quality, humidity and soil PH values, etc., through which a solid foundation can be laid for subsequent planting. In addition, the system also has alarm function, such as air quality value exceeds the maximum limit set by the user, the detection system will give alarm prompt, in order to achieve real-time monitoring of the situation; Secondly, the monitoring system can help users understand the growth of crops in real time, such as uneven growth problems can be found in time to carry out reasonable solutions.

3.2 Integrated water and fertilizer management system

In the past, watering and fertilization were very important in agricultural planting. Water was the life source of crops, and fertilizer was the nutritional component of crops. However, in the actual implementation process, problems such as delayed watering, excessive watering and excessive fertilizer were often encountered, which were not conducive to the healthy growth of crops and even led to the death of crops [3]. However, with the application of agricultural Internet of Things technology, the integrated management system of water and fertilizer is adopted for these work, and the proportion of water and fertilizer amount is reasonably calculated through computer technology, as well as automatic watering and fertilization, which effectively improves agricultural productivity. In addition, the system reduces farmers' workload and capital investment.

3.3 Quality and safety testing system

For quality and safety inspection systems, the technology can detect the quality of the soil, analyze problems in the soil and whether it is suitable for growing crops. At the same time, the technology can also detect the growth of crops, timely detection of

quality problems, reduce economic losses in agricultural production. Therefore, relevant agricultural production management personnel need to carry out real-time testing of crops and make good records to ensure the healthy growth of crops. In addition, if quality and safety problems are encountered, research and analysis should be carried out in time to design reasonable solutions, improve the efficiency and quality of agricultural production, and promote the green and healthy development of agriculture.

3.4 Traceability system for agricultural products

In order to effectively improve the quality and safety of agricultural products, it is necessary to carry out management for each production link, and record and analyze the growing environment of crops and the use of fertilizer using the Internet of Things technology. At the same time, consumers can be involved to ensure that agriculture is actually entering the ranks of modern development. In addition, relevant agricultural personnel can actively use two-dimensional code technology, and input specific information of various agricultural products, namely agricultural products traceability system, on the one hand to help consumers understand the real situation of agricultural products; On the other hand, improve the efficiency of agricultural products trading market. In a word, agricultural production under the background of the new era should keep up with the pace of the development of the Times, make use of various modern advanced technologies to improve the level of modern agricultural science and technology, at the same time, it is suggested that relevant regulatory departments strengthen the supervision and management of the quality and safety of agricultural products, avoid the existence of quality and safety of agricultural products into the market, and play a role in guaranteeing the health of modern people.

4. ANALYSIS ON THE DEVELOPMENT TREND OF AGRICULTURAL INTERNET OF THINGS TECHNOLOGY

The agricultural Internet of things technology will be applied in some agricultural production in the new era. Most agriculture in our country is still in a traditional way. Relevant departments should speed up the popularization of the agricultural Internet of things technology to promote the rapid development of Chinese agriculture. Thus, the development trend of agricultural Internet of Things technology includes popularization and promotion. At the same time, agricultural iot technology needs to be improved and innovated continuously to ensure that it can be adapted to future agricultural production. In addition, a reasonable development strategy for agricultural Internet of Things should be designed, as follows: First, the reform center can be placed in small-scale agricultural production, and these small-scale agricultural production can be integrated into large-scale cultivation, so as to realize centralized management, and finally give full play to the advantages of agricultural Internet of Things technology; Second, actively introduce advanced technology, and constantly improve the existing agricultural Internet of things technology; Third, to continuously reduce the energy consumption of agricultural Internet of Things technology, we should follow the concept of green development and take energy-saving measures to reduce the consumption of this technology. Fourthly, increase financial support for agricultural Internet of Things technology. Relevant departments should provide both financial and resource support to scientific research departments to ensure that relevant departments can have sufficient scientific research funds to guarantee the innovation and development of agricultural Internet of things technology. In addition, it has become an inevitable trend for agricultural Internet of Things technology to develop in the direction of intelligence, because intelligence can effectively reduce the working time and workload of farmers, which is an important strategic goal for future development.

5. CONCLUSION

In summary, the application and development of the agricultural Internet of Things technology in our country is very important under the new era background. This technology plays an active role for agricultural production. According to the analysis in this paper, the current research progress of agricultural Internet of Things technology has made some achievements, such as agricultural intelligent monitoring system, integrated management system of water and fertilizer, quality and safety testing system, agricultural products traceability system, etc. This paper also specifically elaborated, and analyzed the development trend of agricultural Internet of Things technology. Finally, the popularization and application of agricultural Internet of Things technology will inevitably become an important strategic development goal in the future. Hope to provide some experience for reference.

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Research On Training Mode Of Information Technology Talents In Higher Vocational Colleges

Bin Zhu
Zibo Vocational Institute, Zibo, Shandong, China

Abstract: With the development of our social economy, higher vocational colleges began to pay attention to the training of information technology talents. According to the society's demand for innovative talents, this paper makes an in-depth analysis of the current situation of training IT talents in higher vocational colleges, summarizes the existing problems in the training mode, and explores the construction of professional courses of information management based on Internet technology. In the afternoon, we will mainly study the training mode of information technology talents in higher vocational colleges, so as to provide more high-quality applied information professional and technical talents for the country.

Keywords: Higher vocational colleges; Information technology; Talent training mode

1. INTRODUCTION

According to survey, every year the demand for higher vocational talents information technology professionals is increasing in our country, and in the process of information industry development, the market begins to show a situation that demand for talents in information technology professionals exceeds supply. According to the employment statistics of information technology majors in higher vocational colleges, most graduates have a low employment rate and will choose to change careers. Through analysis, it is found that there are some problems in the training mode of information technology majors in higher vocational colleges, such as imperfect innovation education and differences with job demands.

2. CURRENT SITUATION OF TRAINING MODE FOR INFORMATION TECHNOLOGY MAJORS IN HIGHER VOCATIONAL COLLEGES

2.1 The top design is not clear

From the employment situation of information technology professionals, there are some problems in higher vocational colleges, such as unclear top-level design, which will affect the formation of benign personnel training mode and is extremely unfavorable to professional development. Therefore, the training model of professional talents will be derailed from the service economy, resulting in fuzzy professional orientation and low employment rate of students.

2.2 The curriculum system is unclear

At present, there are various problems in the training mode of information technology majors in higher vocational colleges, among which the curriculum system is not clear. Under the influence of exam-oriented teaching, teachers have the problem of emphasizing theory over practice, let alone innovative education, which will ignore the principal position of students. Because the curriculum system is too backward, it cannot meet the talent needs of the Times.

2.3 Practical teachers are weak

At present, there are many teachers in the training of information technology majors in higher vocational schools who are theoretical and lack practical experience. Due to the single source of teachers, the school does not pay enough attention to it, leading to the serious homogeneity of teachers, which is extremely unfavorable to talent training, and is the main factor hindering the development of information technology majors. It is necessary for higher vocational colleges to strengthen the construction of professional teacher teams, deepen the understanding of it, actively expand the source channels of teachers, and provide support for the implementation of talent training mode.

3. RESEARCH ON TRAINING MODE OF INFORMATION TECHNOLOGY MAJORS IN HIGHER VOCATIONAL COLLEGES

3.1 Effective top-level design

Information technology professionals in higher vocational colleges mainly serve the computer industry. Strengthening their training can promote the economic development of information service industry to a certain extent. It is necessary for higher vocational colleges to build an effective talent training mode according to the needs of the computer industry, do a good job in characteristic top-level design, and form a benign talent training mechanism [1].

3.2 Scientific curriculum system

Under the background of the new era, if we want to accelerate the reform of the training mode of information technology professionals, we must design according to the requirements of the Times and the needs of social talents. At the same time of in-depth research on the core skills of information technology professionals in higher vocational schools, find out the bottom line of theoretical teaching and skill application teaching; Focusing on the development needs of students, it integrates all teaching resources in the classroom and training room, implements the emerging teaching concepts, closely follows the development of modern society and innovates the education curriculum system, and cultivates high-quality talents [2].

3.3 Strengthen the construction of practical teaching staff

The establishment of high-quality teachers will play a positive role in the development of information technology majors. It is not limited to the use of talents only with academic qualifications. It is necessary to hire senior technical talents, improve the teaching level of the existing teachers, and formulate a double-qualified assessment system. Organize them to work in enterprises to improve the skill application level of teachers [3].

4. INNOVATION AND PRACTICE OF TRAINING MODE FOR INFORMATION TECHNOLOGY MAJORS IN HIGHER VOCATIONAL COLLEGES

4.1 Actively building an Internet+innovative education platform

In the training of information technology talents in higher vocational colleges, in order to improve the current situation of talent training and solve the existing problems, we must take effective measures, pay attention to the innovation of the training mode of information technology professionals, to deepen the integration of production and education, the organic connection of industrial chain and education chain, the combination of work and study as the starting point, to build the corresponding training mode of information technology professionals. In addition, it is also necessary to build an Internet+innovative education platform, strengthen cooperation between schools and enterprises, and make scientific adjustments to the curriculum content of information technology majors, so as to drive the reform of theoretical teaching, teaching methods, curriculum system and other links. In the innovation of talent training mode, it is necessary to establish the big data talent analysis database, so as to obtain relevant information at any time on the network information system, understand the Chinese and social demand for information professionals, and implement the supply-side reform; Based on school-enterprise cooperation, excellent teachers are dispatched to do a comprehensive survey on the field position to understand the needs of employers and the skills that talents must have. Then, the learning situation of students majoring in information technology in the university is investigated and systematically summarized to provide reference for the implementation of innovative education, cultivate innovative talents and closely connect with the national demand for talents. In addition, it is also necessary to do a systematic analysis according to the post skills, clear the development direction of students, the formation of a systematic talent training model, so as to improve the quality of training information technology professionals in higher vocational colleges.

4.2 Thoughts on the construction of training mode for information technology majors in higher vocational colleges

On the basis of the Internet+innovative education platform, the paper makes an in-depth analysis of the training mode of information talents in higher vocational colleges, accumulates experience in practice, and explores the training ideas of talents. In addition to deepening the integration of industry and education, a situation of co-construction of teachers should be formed. A position cluster should be formed by analyzing the needs of talents, and the skills that must be mastered by talents in this position should be analyzed from the perspective of post tasks to form a theoretical teaching knowledge system. In addition, professional curriculum standards should be established. Based on students' future development needs, an integrated teaching system is constructed and modern information teaching means is introduced. With the change of society's demand for information professionals, higher vocational colleges must keep pace with the Times, update the content of teaching materials in real time, and develop school-based teaching materials to better serve relevant enterprises.

4.3 Improving the training mode of information technology majors in higher vocational colleges based on Internet+innovative education

In the training of information technology professionals in higher vocational colleges, limited by teaching resources, system and mechanism, the supply side of higher vocational colleges has not achieved the optimal match with the demand for employment, there are still many problems. the talent training mode based on Internet+innovative education is to use various advanced technologies to analyze the employment needs of units, achieve accurate positioning, identify the key skills that must be mastered by the post, mobilize the enthusiasm of teachers in higher vocational colleges through assessment and evaluation, study theoretical teaching and skill application teaching, and carry out textbook reform, classroom reform and practical training reform. Focus on all kinds of teaching resources to improve the quality of talent training, in the supply side and the demand side to achieve the best match.

5. CONCLUSION

As can be learned from the above, the problems existing in training mode of higher vocational information specialty have become increasingly prominent in the process of social and economic development of our country. Through analysis, it can be found that due to the complex talent environment, vague employment and entrepreneurship orientation, the implementation of talent training mode leads to the low competitiveness of higher vocational information technology professionals, the lack of professional characteristics, the cultivated students can not meet the needs of employers, the lack of innovation consciousness, the need for higher vocational colleges to have a correct understanding of it, through taking various effective measures, Improve the quality of training information technology professionals.

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Research On Collaborative Management of Fixed Investment Projects and Project Archives Under Information Condition

Jin Cui
Zibo Vocational Institute, Zibo, Shandong, China

Abstract: With the rapid development of modern social economy, the development and application of information in our country also increases, especially in the enterprise solid investment project and project archives collaborative management the application is very broad. Based on this, this paper describes the status quo of enterprise fixed investment projects and project collaborative management, analyzes the necessity of this work under the information condition, and studies and discusses the measures to improve the level of enterprise information management.

Keywords: Informatization; Fixed investment projects; Project files; Management measure

1. INTRODUCTION

Nowadays, if Chinese enterprises want to have long-term development, they must pay attention to the risks existing in the investment projects, and strengthen the efficiency and quality of project archives management, and strive to achieve collaborative management. At the same time, relevant enterprises also need to pay attention to the deficiencies in the collaborative management of fixed investment projects and project archives under the information condition, such as the lack of risk awareness of fixed investment projects, the uneven quality of management personnel, the lack of perfect management system and other problems, identify the adverse impact of these problems, combined with their own actual development to design reasonable countermeasures and actively implement. In addition, it is necessary to continuously improve and innovate these measures to ensure their permanence.

2. CURRENT SITUATION OF COLLABORATIVE MANAGEMENT OF FIXED INVESTMENT PROJECTS AND PROJECT ARCHIVES UNDER INFORMATIZATION CONDITIONS

2.1 Lack of risk awareness of fixed investment projects

Some enterprises pay too much attention to economic benefits and lack of risk awareness of fixed investment projects, which is not conducive to the healthy development of enterprises [1]. Therefore, relevant attention should be paid to the risks, such as investment risk, management risk, etc.

2.2 Uneven quality of management personnel

Due to the late development and application of information technology, some enterprises lack relevant elites, plus some enterprises do not carry out reasonable training activities to save cost [2]. In addition, some managers do not clear their own responsibilities, not conducive to the protection of project archives management efficiency and quality.

2.3 Lack of a sound management system

For the collaborative management of fixed investment projects and project archives, a reasonable management system is very important. This system can play a supervisory and restrictive role, but some enterprises do not realize this point, leading to the chaos of internal archives management [3].

3. NECESSITY ANALYSIS OF COLLABORATIVE MANAGEMENT OF FIXED INVESTMENT PROJECTS AND PROJECT ARCHIVES UNDER INFORMATION CONDITION

Under the background of new era, it is very necessary to reasonably use information technology in the collaborative management of fixed investment projects and project archives. First, it plays a positive role in the informatization development and competitiveness of enterprises; Second, it helps enterprises to make reasonable decisions; Third, to provide excellent knowledge services to help the construction and development of enterprises; Fourth, improve work efficiency and avoid repetitive work; Fifth, to achieve the situation of collaborative management; Sixth, improve corporate culture.

4. EFFECTIVE MEASURES FOR COLLABORATIVE MANAGEMENT OF FIXED INVESTMENT PROJECTS AND PROJECT ARCHIVES UNDER INFORMATION CONDITIONS

4.1 Attach importance to the risks of fixed investment projects

Under the background of the information age, some enterprises have too little regard for the risks and problems existing in fixed investment projects and tend to focus on economic benefits, which is not conducive to the healthy and efficient development of enterprises. First, the project risk problem. Relevant enterprises should adopt the strategy of real-time supervision of the project implementation process to ensure that problems existing in the project can be found in time, so as to guarantee the investment. Secondly, the risk of file induction and sorting. Attention should be paid to the document arrangement of each fixed investment project, and professionals should be assigned to track, collect and sort the whole process to ensure the timeliness of documents in fixed investment projects. Finally,

attention should be paid to the cooperation between various departments to ensure that fixed investment projects can truly bring objective benefits to enterprises.

4.2 Training and improving the comprehensive quality of management personnel

From the current situation of the collaborative management of fixed investment projects and project archives under the information condition, the quality of this work is closely related to the ability of managers, that is, the stronger the management ability and information level of managers, the higher the quality of work, so it is necessary to cultivate and improve the comprehensive quality of managers. First of all, relevant enterprises can actively recruit young college students in the society, set strict recruitment requirements, select the best among the many young talents, and add the unique vitality of young people to the existing management team. Secondly, pre-job training should be conducted for new employees to ensure that they can quickly and calmly adapt to the new position and give full play to their talents. Thirdly, enterprises should give young people more opportunities and adequate rights to avoid restrictions in daily work. Finally, skills and education training activities should be actively carried out for all managers to increase their professional ability through skills training and improve their cognition of informatization through education and training.

4.3 To establish and improve the information system of archives management

For the collaborative management of fixed investment projects and project archives, this work requires a lot of energy and patience from relevant personnel, which is not conducive to the efficient operation of this work. In order to change this situation, we should reasonably use information technology and build information management system. First of all, the paper version of the past data is entered into the data. At the same time, multiple backup is adopted to prevent data loss and the risk of confidential disclosure. Secondly, when establishing electronic archives, enterprises also need to pay attention to the subsequent application and management of information systems, to ensure the formation of standardized work flow and facilitate the management of archives in the future. In addition, enterprises should design a strict authority system to avoid data loss caused by low authority when they move the information system. At the same time, they also need to strictly manage the personnel with authority to ensure that the core secrets of enterprises will not leak.

4.4 Attach importance to the communication and cooperation between archives management department and other departments

In addition to the above effective measures for the collaborative management of fixed investment projects and project archives under information conditions, relevant enterprises also need to pay attention to the organization, coordination and management in collaborative management, that is, to improve the communication and cooperation between archives management department and other departments. First, the enterprise constructs the sharing mechanism according to the actual situation. With this mechanism to strengthen the archives management department and various departments between the exchange and cooperation, so that all departments can participate in the archives management work, the archives management personnel collection of information is not timely problem for thorough solution; Secondly, the enterprise can carry out the communication activities of all departments, urge the personnel of all departments to actively participate in, and ensure that different departments and different personnel can understand each other through this activity, so as to effectively improve the efficiency of archives management and service mode. In addition, project files contain information of various departments of the enterprise and business secrets of cooperation with other enterprises. In order to prevent leakage, relevant evaluation system can be established to restrict employees to keep confidential these confidential documents. Enterprises can also link files with the interests of relevant employees, so that employees can clearly understand the importance of this work. And in the case of problems can be responsible for the relevant personnel, at the same time, when someone needs to borrow file information, need to assign professional personnel for audit, after the audit also need to be signed.

5. CONCLUSION

In a word, the collaborative management of fixed investment projects and project archives is very important under the information condition, which plays an active role in the healthy development of enterprises. According to the analysis of this paper, there are many deficiencies in the collaborative management of fixed investment projects and project archives in some enterprises at present. These problems increase the risk of enterprises to some extent. This paper also elaborates specifically on this, and also puts forward several effective measures. Such as attaching importance to the risks of fixed investment projects, cultivating and improving the comprehensive quality of management personnel, establishing and improving the information system of archives management, attaching importance to the communication and cooperation between archives management departments and other departments, and other measures, hope to provide some experience for reference.

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Analysis Of Information Construction of Archives Management in Higher Vocational Colleges in the New Stage

Xiaoling Dong
Zibo Vocational Institute, College of Artificial Intelligence and Big Data, Zibo, Shandong, China

Abstract: Archives management is the key component of the management of higher vocational colleges, standardized archives management can improve the management ability of higher vocational colleges, therefore, relevant personnel should improve the importance of archives management. the application of information technology to archives management can make archives management more efficient and provide convenience for the smooth development of archives collection, search, application and other work. the staff should increase efforts to promote the information construction of archives management in higher vocational colleges. This article briefly introduces the shortcomings of information construction of archives management in higher vocational colleges, and puts forward improvement measures, hoping to provide reference for the smooth development of information construction of archives management in higher vocational colleges in the new stage.

Keywords: Higher vocational colleges; Archives management; Information construction; Measure

1. INTRODUCTION

In the new period, archives management plays an increasingly prominent role in higher vocational colleges, which can determine the subsequent development of higher vocational colleges to a certain extent. Therefore, relevant personnel should do a good job in archives management, and improve the utilization rate of archives with the help of information construction of archives management. However, from the analysis of the current situation, it is found that there are still deficiencies in the information construction of archives management in higher vocational colleges, which requires the staff to explore vigorously, identify the common problems and make improvements, so as to promote the orderly promotion of the information construction of archives management in higher vocational colleges.

2. SHORTCOMINGS OF ARCHIVES MANAGEMENT IN HIGHER VOCATIONAL COLLEGES

2.1 The management system used is not comprehensive

The archives management work carried out by higher vocational colleges reflects the teaching quality of higher vocational colleges and is very important for the development of higher vocational colleges. In general, archives management can be divided into four categories: student archives, teacher archives, teaching archives and academic archives. Archivists are required to record the number of teachers and students as well as the teaching situation, student achievement, etc. Therefore, higher vocational colleges should build a perfect archives management system, targeted archives management, fully mining archives resources, improve the application efficiency of archives. However, at present, most higher vocational colleges pay less attention to archives management and do not have a comprehensive archives management system. There are some problems in archives management, such as the loss of original materials and the unscientific classification of archives. If these problems are not properly dealt with, the objectivity of the archives will not be guaranteed. In addition, higher vocational colleges do not make plans for archives management based on the actual situation, and the management means are not scientific, which leads to ineffective management [1].

2.2 The degree of informatization is low

At present, most higher vocational colleges will still be carried out manually when carrying out archives management, and the application of information technology is less. It is likely to cause damage to archives due to improper human operation, and cannot improve the effect of information construction of archives management. First, the application of information technology is less, has not formed a stable operation of the file management system. Second, there is a certain lag in the thinking of archives management personnel, and they do not realize the importance of information technology in archives management. They still insist on using traditional ways to carry out archives management, which, from a certain point of view, hinders the orderly promotion of the information construction of archives management.

2.3 The professionalism of talents is not guaranteed

The information of archives management has higher requirements for technology, and needs professional talents as support, flexible application of archives management, library and information science and information management knowledge, to solve the problems. Therefore, higher vocational colleges should build a long-term training mechanism when promoting the construction of archives informatization, and organize archives management personnel to join in the study. However, from the actual analysis, it is found that the professionalism of talents in higher vocational colleges is not guaranteed at present. Common problems can be summarized as follows: first, the professionalism

of management talents is not guaranteed. Most archives management staff are counselors concurrently, did not receive professional training before entry, management experience is less, leading to the management effect is not ideal. Second, the number of technical personnel is scarce. Archival information construction needs technical personnel to maintain and update the system regularly. However, from the actual analysis, it is found that the number of available information technology talents in higher vocational colleges is small and they do not have a perfect management system, which leads to a gap between the effect of information management and the expectation [2].

3. MEASURES TO PROMOTE THE INFORMATION CONSTRUCTION OF ARCHIVES MANAGEMENT IN HIGHER VOCATIONAL COLLEGES

3.1 To optimize the existing archives management system

First, to supplement the existing archives management system, so that it contains more comprehensive content. the types of archives management in higher vocational colleges are more diverse, and there are some similarities and differences in the management of different types of archives, which improves the degree of difficulty of archives management personnel. It is necessary for higher vocational colleges to establish feasible management system according to relevant standards and development needs of higher vocational colleges, so as to provide basis for standardization of archives management. Second, to do a good job in personnel management, the archives management responsibility is subdivided to the individual, to prevent the staff to carry out the archives management is more random, no one is responsible for the problems of the archives management. In this process, it is also necessary to clarify the time and scope of archives management, reasonable division of labor, improve the utilization rate of archives management personnel, so that the archives management work is more orderly.

3.2 Improve the informatization level of archives management

First, the archives management department should take the initiative to apply information technology and other modern technologies to promote the automatic and intelligent development of archives management. In this process, but also need to increase the investment of funds, timely update the archives management system. Second, the staff should realize the importance of file management information system, timely maintenance, to ensure that the system can be normal application.

3.3 We will do a good job in personnel training

Archives management is the focus of the work of higher vocational colleges at present, which needs professional personnel as the guarantee. the staff can carry out personnel training from the following points to ensure that the information construction of archives management can be promoted in an orderly way. First, improve the professional quality of archives management staff. the archives management work contains many aspects of content, the task is heavy, has certain requirements for the archives management personnel, the archives management personnel need to enrich their own work experience, timely classification of the archives, to meet the needs of teachers and students for the archives. Therefore, higher vocational colleges should build a perfect training mechanism and regularly organize archival managers to participate in learning to ensure that they are competent enough for archival management [3]. Second, we should do a good job in training technical personnel. This requires higher vocational colleges to raise the recruitment threshold, attract more technical talents to participate in the work, and provide practical opportunities for technical talents to ensure that they can flexibly apply modern technology such as computer. Third, cultivate comprehensive talents. Higher vocational colleges should enrich the training content of archives management, to ensure that archives management personnel can enhance their professional quality through training, while skilled in the application of information technology, to become a new stage of higher vocational colleges to carry out archives management needs of comprehensive talents.

4. CONCLUSION

According to the above analysis, information technology has been widely applied in all walks of life in the new era, providing favorable conditions for the transformation and upgrading of the industry. Therefore, higher vocational colleges must realize the importance of information technology when carrying out archives management, flexibly apply it, create a perfect archives management system, to ensure that the archives management work can be promoted in an orderly way, and to transport more high-quality talents for the development of society.

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Analysis Of Application Effect of Layering Technology in Computer Software Development

Qian Wang
Zibo Vocational Institute, College Of Artificial Intelligence And Big Data, Zibo, Shandong, China

Abstract: The current era is the era of information, in the process of continuous development of science and technology, computer information technology has achieved rapid development, has become an important force to promote economic development. Computer technology is constantly being developed, and people's demand for computer technology is also constantly improving. In order to meet people's demand for diversified software, computer software development technology has been updated. At present, the application of layered technology makes programmers more relaxed in the process of software development, which greatly improves the efficiency of software development. Therefore, this paper will analyze the layering technology and discuss the application effect of layering technology in computer software development.

Keywords: Computer software development; layering technology; Application effect

1. INTRODUCTION

With the development of science and technology and the advent of the information age, computer technology has been applied to all walks of life, greatly improving the production efficiency of some industries. At present, many work needs to rely on computer software to carry out, the application of computer software has changed the traditional work and the form of data processing, greatly improving people's efficiency of data processing. In view of the current development trend, computer technology is bound to continue to develop, but with the popularization of computer technology, people have increasingly high requirements for computer software, which has relatively great pressure on computer software development. In software development, the results of development are affected by many aspects, and whether it can be applied also needs specific practice. the difficulty of software development is relatively great. Therefore, in the face of the current social development needs for software, software development technology must be optimized, and the use of layered technology can greatly reduce the difficulty of software development, improve the level of software development.

2. OVERVIEW OF STRATIFICATION TECHNOLOGY

Hierarchical technology is the hierarchical management of software in software development, dividing the whole development process into multiple departments, each part has a solution to the problem, and can analyze and solve the various parts of software, making up for the shortcomings of traditional software development. Layered technology is based on the framework of software development. the emergence of layered technology in the 1980s, the first is the single-layer technology, single-layer technology solves some problems in the process of software development, is of great significance. Then with the development of technology, technicians optimize the development technology on the basis of single-layer technology. So there are two layer technology, three layer technology and four layer technology development technology.

3. The Application Effect Of Layering Technology In Computer Software Development

3.1 Analysis of the application effect of double-layer technology

Traditional software development technology uses single-layer technology, single-layer technology has great limitations, software development work to do more trouble, more time consumption, but with the development of technology, researchers continue to explore software development technology, the emergence of dual-layer technology, optimize the process of software development, so that software development consumption time is greatly shortened. In the process of dual-layer technology application, it can well deal with client problems, such as the application of logic processing for information processing, the needs of the whole client development for hierarchical integration, orderly software development work. In the specific development practice, the application of dual-layer technology has certain requirements for the technical level of the user, in the use of dual-layer technology for software development needs to be carried out in strict accordance with the operation specifications, if the application of the operation method is not skilled, then there will be problems in the process of development, customer requirements can not be met. In addition, after software design with dual-layer technology, there is a certain limit on the number of clients on the client side. the number of clients should be under the specified number limit, otherwise the client load will exceed and various problems will occur. Therefore, although dual-layer technology has greater improvement than single-layer technology, it has higher requirements for users and still has certain shortcomings [1].

3.2 Analysis of the application effect of three-layer technology

With the continuous optimization of software development technology, two-layer technology is replaced by three-layer technology. On the basis of the two-tier technology, the three-tier technology shortens the time needed to develop software again, and makes up for the shortcomings of the two-tier technology, and raises the limit of the number of clients on the client side. Three-layer technology can be applied to the data layer, the interface layer and the business layer. From the data point of view, the application of three-layer technology improves the convenience of customers to query information, and the speed of information feedback is greatly improved. At the business level, information is processed faster and services can be precisely tailored to users' needs. In terms of the interface layer, the information in the software can be further processed, so that relevant departments can accurately understand the content of the information when receiving the information, and the whole processing process is more standardized.

3.3 Analysis of the application effect of four-layer technology

As people's requirements for data processing continue to improve, in order to be able to deal with huge data, people put forward new requirements for software development, so in order to adapt to the high load of data processing work, on the basis of three-layer technology, four-layer technology has been developed. At present, some users have higher requirements for the speed and ability of software processing information, and the three-layer technology has greater limitations, and the four-layer technology is essentially on the basis of the three-layer technology to add a package, can store information between the data layer and the business layer, improve the speed of information storage and processing, the original interface is replaced by the web layer. After the four-layer technology is applied to software development, the software can choose the appropriate processing mode according to the user's instructions. When the user deals with less information, the processing process is not much different from the three-layer technology. However, when the user deals with a large amount of data, the advantages of four-layer technology are reflected, which greatly improves the efficiency of data processing [2].

3.4 Analysis of the application effect of intermediate technology

In the application of layered technology, intermediate technology is the core content, which has an important impact on software development. According to the development trend of software development technology in the future, software development technology needs to be constantly updated, and intermediate technology can greatly reduce the burden of technology development, slow down the process of software development, and improve the efficiency of software development. In software development work, intermediate technology is well applied in MOM, DM, OOM and other middleware, intermediate technology can make the function of software more complete, improve the security of software. Intermediate technology enables information to be transferred synchronously, to achieve coordination with the queue manager, information will be stored in the manager, facilitate the transfer of information. the application of intermediate technology can compose software functions and integrate new components together. When designing new software, if customers want to save some functions of the original software, the intermediate technology can save the functions and transfer them to the new software, which greatly improves the compatibility of software development and can meet the personalized requirements of software development [3].

4. CONCLUSION

In a word, with the continuous development of science and technology, software development technology will be constantly optimized. At present, people's demand for data processing is constantly rising, and there is great pressure on software design. Therefore, it is necessary to continuously explore layered technology and develop deep-level software development technology to meet the needs of social development.

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Thoughts On Computer Information Processing Technology Under the Background Of "Big Data" Era

Lin Yang
Zibo Vocational Institute, College of Artificial Intelligence and Big Data, Zibo, Shandong, China

Abstract: In today's society with the rapid development of science and technology, computer technology has gone into thousands of households, took root in every field of society, thanks to this, our society is also in continuous progress, this paper based on the "big data" background, in-depth analysis of computer information processing technology, hope computer information processing technology can better serve the people.
Keywords: Big data; Computer; Information processing technology

1. INTRODUCTION

In today's era, science and technology presents a blowout trend of development, especially computer technology is constantly innovating. In order to meet the social demand, computer information processing technology is also in constant development, applied in every field of our country, has brought great convenience for people's life, promote the steps of social progress.

2. COMPUTER INFORMATION PROCESSING TECHNOLOGY IN THE ERA OF BIG DATA

2.1 The concept of big data

Big data, also known as massive data, refers to data that cannot be sorted in a reasonable time through mainstream software tools. the content of the data involves video and audio text files, geographical location information, network logs and so on. Many computers cope with such a large scale information content, unable to do effective processing in time, therefore the computer information processing technology of our country has been at the level of international disadvantage for a long time, until in recent years the technology of cloud computing and Internet has gained rapid development. Has provided strong support for the development of computer information processing technology in our country [1].

2.2 Computer information processing technology

The working principle of computer information processing technology is to rely on the powerful computing function of the computer, the integration of all kinds of data on the network processing, and the use of sensor technology and computer technology to improve the work efficiency and quality, in today's fast-paced life background, computer information processing technology is more and more people's attention.

3. ANALYSIS OF COMPUTER INFORMATION PROCESSING TECHNOLOGY

3.1 Cloud computing technology

In the face of massive data, if you want to deal with big data, there are certain requirements for computer hardware and software. Among them, hardware equipment is the key content of computer scientific research, the old computer hardware in the processing of large-scale data work, even if the use of computer software optimization technology can not meet the needs of various fields of big data work. With the development of cloud computing functions in recent years, the speed of computer data processing has been improved, and the processing of large amounts of data and information is also handy.

3.2 Information security protection technology

With the development of science and technology, while bringing more convenience to people, the problem of information security has been severely challenged. In the background of the era of big data, every piece of information contains a huge amount of personal information, once these personal information is leaked, will bring great security risks to people's property security, therefore, the establishment of computer information security protection mechanism is particularly necessary. This requires enterprises to pay more attention to the construction of proxy servers, have a higher awareness of information security risks, and strengthen the ability to intercept risky information, so as to minimize the possibility of information leakage during transmission [2].

3.3 Data analysis techniques

Nowadays our computer information technology is in the stage of high speed development, most of the cases, when using the computer information to process the problems, the rate of data analysis technology makes the highest. the so-called information analysis technology is to analyze data from different perspectives such as emotion, habit, region and time zone. Different angles can reflect different characteristics of information, so that the data analysis work is more targeted.

4. DEFECTS OF COMPUTER INFORMATION PROCESSING TECHNOLOGY AT THE PRESENT STAGE

4.1 Information processing is characterized by slow progress and complex features

At present, Chinese computer technology still has many problems in the process of information processing, among which the most prominent problems are the data processing program. In the working process of data processing program, it takes a long time to collect data.

This is because the integration of big data and information processing technology is not thorough enough, so the information processing system is at the level of the old system, which has a negative impact on the work efficiency. In the process of information processing, many enterprises still chrysalis the traditional computer information processing system, which leads to a longer processing time, resulting in network delay, reduce the network user experience.

4.2 Information security is not guaranteed

In today's faster and faster pace of life, many people for computer information processing technology requirements only pursue efficiency, but pay attention to efficiency at the same time, the security of information is also very important. Nowadays, more and more network users have their personal information leaked in the process of computer application. the main reason is that many network users have inappropriate behaviors in the process of computer application, which leads to the emergence of information leakage.

4.3 Harm of data leakage

Big data technology relies on computer technology, and promotes the rapid development of computer technology, but once there is a computer virus, the normal use of computer efficiency will be affected, the stability of big data can not be guaranteed. If big data technology data loss occurs, network users' data information will be leaked, resulting in their own life and property safety can not be guaranteed. Many network users have encountered the situation that their information is bundled and sold in their daily use of the Internet, which is caused by the problems in the network information security system [3].

5. RELEVANT APPLICATION STRATEGIES OF COMPUTER INFORMATION PROCESSING TECHNOLOGY IN THE ERA OF BIG DATA

5.1 Improve the computer information processing mode, shorten the information collection time

With the increasing popularity of big data technology, it is necessary to have a clear understanding of big data in the process of computer application, so as to give full play to the advantages of big data, improve the current information processing mode through the advantages of big data, and minimize the possibility of system loopholes in the information processing work of computers. In the process of actual operation, big data and information processing technology should be more deeply integrated, and relevant technical personnel should take the initiative to enrich the original information processing technology, and carry out innovation of information processing technology on this basis.

5.2 Perfect computer information storage design

Whether data information is effective plays a decisive role in computer information processing technology. Relevant technical personnel should make use of data analysis technology to conduct a more diversified analysis of information to ensure the effectiveness of book information. Only by analyzing more effective data information can the selected information be more useful, thus serving the vast number of network users. the deeper combination of big data and information processing technology can provide timely help to users at the stage of processing big data information and improve the efficiency of information screening. the integration of big data and cloud computing technology can further innovate information processing technology at the software level [2].

6. CONCLUSION

Influenced by big data, people's way of life and production has been developed unprecedentedly, and countries around the world have been more closely linked by big data, which has laid a solid foundation for cross-border exchanges such as trade and trade. All walks of life have developed more rapidly and obtained more favorable data support in the development of big data. With the development of science and technology, the connection between information processing technology of computer and People's Daily life is also increasingly close, only continue to promote the further development of computer information technology and its integration and use, so as to better apply it in People's Daily life, so as to promote the great step development of our social economy.

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Detection Analysis and Fault Diagnosis of Gasoline Engine Fuel Supply System

Weiwei Zhou
Zibo Vocational Institute, Zibo, Shandong, China

Abstract: The engine fuel supply system is the core component of electronic control Fuel injection, which has a significant impact on vehicle power and economy. On the basis of summarizing the evaluation indexes of fuel economy, this paper summarizes the common fault points of engine fuel supply system, and diagnoses and eliminates the faults of engine fuel supply system through real cases.

Key Words: Automobile; Gasoline Engine; Fuel supply system; Fault diagnosis

1. FAILURE OVERVIEW

A Volkswagen Jetta with an R20A3 engine stalled slowly at high speed and failed to stop when it was restarted. the owner described replacing the spark plugs but not overhauling them. What is the probable cause of this failure and how can it be identified and resolved?

2. PERFORMANCE TEST AND EVALUATION OF FUEL SUPPLY SYSTEM

Taking electronic control injection system as an example, the fuel supply system of gasoline engine includes pump, fuel tank, oil pipeline and injector, etc. In the working process of the system, if there is a fault in the fuel supply system, too much or too little fuel injection, etc., the fuel consumption will rise, and even make the engine start difficult or unable to start, the system should be thoroughly checked at this point.

2.1 Check the fuel pump of the supply system

When the ignition switch is turned on but the engine is not started, check whether the electric fuel pump can work for a few seconds to preliminarily determine whether the fuel pump is working properly.

Preliminary detection: unscrew the fuel cover body, in the ignition switch but not start the engine state, with the ear preliminary detection of the fuel pump working conditions.

Diagnostic instrument testing: on the central interface of the special diagnostic instrument, enter the engine system control module of the corresponding model, enter the corresponding executive component testing.

Fuel injection quality detection: the injector is installed in the automatic detection and cleaning analyzer to detect the fuel injection angle, atomization quality, uniformity, normal fuel injection, etc. the standard of fuel injection parameters is cone-shaped mist with a fuel injection volume of about 5ML/s.

2.2 Check the pressure of the supply system

By checking the pressure of the supply system, we can judge the working condition of the whole system, especially whether the oil pump is normal or not and the pipeline is blocked. the specific operation process is as follows:

To relieve the pressure of the fuel system: Start the engine and make it in idle state, pull out the fuel pump power connection device to make the engine automatically flameout, and then start the engine three times, at this point the fuel system can be fully decompressed.

Installation of fuel pressure device operation: the pressure device installed in the pressure or distribution pipe into the oil interface, and then in the engine start and idle state of the fuel pressure measurement, and compared with the standard value (generally around 240 kpa). If the pressure is low, check the regulator, filter and fuel pump; conversely, if the pressure is high. Check the vacuum line and voltage regulator.

Determination of the fuel system maintain pressure value: five minutes after the flameout of the fuel system maintain pressure value of 160 KPA or more. If the pressure has a drop in the phenomenon, it is necessary to check the pipeline leakage, whether the oil injector leakage and pressure valve sealing.

3. THE COMMON TROUBLE DIAGNOSIS AND ELIMINATION OF FUEL SUPPLY SYSTEM

3.1 Keep pressure too low fault

Keep the pressure too low for the performance of the engine is not easy to start. Check the flow as follows: 1 to see whether there is a leak in the fuel line, oil leakage. 2 after connecting the fuel pressure gauge, in the idle state of the engine with pliers pressure return pipeline, check the pressure change after flameout. If the oil pressure still does not drop, it may leak regulator.

3.2 Failure of low oil supply pressure

Oil pressure is too low for the engine speed instability, acceleration is not smooth, difficult to start. the process is as follows:

After connecting the fuel pressure gauge, in the idle state of the engine with pliers pressure return pipeline, observe the oil pressure value. If the oil pressure is still very low, then check the fuel tank fuel volume, fuel pump, tubing, pump filter and filter is abnormal. If the oil pressure rise significantly, then the fault is not in the fuel pump, but in the regulator.

3.3 failure of high oil supply pressure

Oil pressure is too high performance for the engine idling instability, fuel consumption increases, and even smoke. the inspection process is as follows: check whether there is leakage or fall off the vacuum tube regulator. After flameout, replace the oil return line and place the other end in the container, then connect the pressure gauge. Check the pressure gauge after the fire,

if the oil pressure does not change at this time, it means that the regulator is damaged; if the oil pressure is normal at this time, it means that the return pipe is blocked.

3.4 No oil fault

No-oil fault performance of the engine after starting slowly extinguished or even unable to start. the inspection process is as follows: 1 after unloading the fuel pipe, the engine will start, if there is no fuel injection into the fuel pipe, it is determined not to oil fault. Turn on the ignition switch and listen to the fuel pump at the fueling port. If the fuel pump is not running, check the control circuit and the fuel pump. If the fuel pump normal operation, you should check the filter, pipeline, such as whether there is plug.

4. CASE DIAGNOSIS AND TROUBLESHOOTING

In the case of the engine slow flameout and can not start again, the specific fault diagnosis and troubleshooting process is as follows:

Diagnostic Reading Fault Code: fault-free light on, start-up data normal. Check the battery voltage: the multimeter connected to the battery positive and negative electrodes, the voltage is normal. Check the fuel pressure: the fuel system pressure relief, the installation of fuel pressure gauge, the system to maintain pressure measurement, remove the oil pressure gauge. Inspection of oil supply: according to the above operation for oil supply inspection. Check the fuel pump circuit: first check the fuel pump itself; check the fuel pump circuit diagram of the terminal circuit, circuit check. Find fault point: gasoline pump electrification should generally be carried out in the special test fluid, in the absence of the corresponding circumstances, should be as far as possible to reduce electrification time, through the test, fuel pump does not work, make sure that the fuel pump itself fails to start the engine. Troubleshooting: use special tools to remove and replace the fuel pump. Test run check: Start the engine and idle work, no fault. Central control instrument failure indicator lamp is normal. Read the fault code again and verify that the fault code has been eliminated.

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Design of Battery Management System Based on STM32

Hongwei Peng
Huizhou Yiwei Lithium Energy Co., Ltd, Huizhou 516006, Guangdong, China

Abstract: Taking a group of power batteries as the control object, a battery management system is designed based on STM32 chip. In the design process, the topological structure of the battery management system is determined according to the battery characteristics and power supply requirements, and the hardware module circuit design and software development are carried out by dividing functional modules. the experiment proves that the designed battery management system can collect and process the information of the battery pack, feed back the data through the display screen, and protect the battery pack, which effectively guides the design of the vehicle battery management system.

Keywords: power battery; battery management system; hardware module; information collection and processing

1. INTRODUCTION

In today's era, as an important means of transportation, cars provide great convenience for human travel and increasingly highlight its important role. However, human beings will inevitably produce a lot of harmful exhaust gas in the process of using traditional fuel vehicles. In order to deal with the problems caused by environmental pollution and energy crisis, it is a very feasible way to choose and develop new energy vehicles. With the continuous strengthening of human's concept of environmental protection, human beings pay more and more attention to the protection of the natural environment. Only by continuously promoting new energy vehicles can we fundamentally protect the natural environment.

Electric vehicles have become the mainstream of the current automobile market development. the biggest difference between electric vehicles and traditional fuel vehicles is that they use the power battery as the power drive. As an important link connecting the battery pack, the vehicle system and the motor, the importance of the battery management system BMS is self-evident. the biggest difference between electric vehicles and traditional fuel vehicles is that they are powered by power batteries. As a power storage system, power battery plays an important role in the field of power storage system because it can store and transmit energy efficiently [1]. the power battery pack of electric vehicles is one of the core components of electric vehicles, providing driving power for the whole vehicle. At present, the commonly used power batteries of electric vehicles mainly include lead-acid batteries, nickel-hydrogen batteries and lithium-ion batteries. BMS is closely related to the power battery. Whether the vehicle is charging or in normal operation, BMS needs to accurately and reliably complete real-time detection and diagnosis of the current, voltage, temperature and other states of each single battery. the basic functions of the battery management system mainly include the collection of battery status data, battery status detection, balance management of the power of each battery pack, thermal management, security protection, etc. Generally speaking, it can be divided into three parts: detection, management and protection.

Foreign electric vehicles started earlier, so their research on BMS also started earlier than domestic ones. China's BMS research started late, and China is also increasing its research on battery management system, investing a lot of funds, resources and talents. At present, research institutions and enterprises have also made certain achievements in battery management system research. Beijing Jiaotong University has developed a corresponding battery management system for lead-acid batteries. the main achievement is to use intelligent neural network method to estimate the state of charge of batteries. the experimental results show that the neural network algorithm is relatively effective. Chongqing University also carried out in-depth research on the lithium ion battery management system. They mainly studied the CAN network performance of the battery management system and analyzed the battery state of charge. They fused the Kalman filter method and the ampere-hour integration method to estimate the battery state of charge. Through experimental analysis, the effectiveness of the algorithm was verified. the product EV02 of Huizhou Yineng Electronics Co., Ltd. is mainly used in the field of electric vehicles. It adopts distributed topology design. Each BMS is composed of a master control unit and multiple slave control units. the BMS product developed by Cole Technologies emphasizes the active equalization and wireless transmission function to solve the problem of inconsistency of individual batteries in the battery pack.

2. FUNCTION DESIGN OF BATTERY MANAGEMENT SYSTEM

Power battery, commonly lithium ion battery, has high specific energy, high efficiency, long service life and other advantages. These unique properties make it the preferred power supply [2]. However, when the power battery is in the state of over-discharge or overcharge, as long as it exceeds a certain threshold, it will cause irreversible damage to the battery [3]. Moreover, when the battery is operated at high temperature, it can not be fully charged or even leak or explode. Too low

temperature causes the electrolyte to solidify and can not maximize the use of energy. the battery management system realizes the status analysis and safety protection of the battery by detecting the battery status of the power battery, and effectively guarantees the power source of the electric vehicle to ensure the safe and efficient operation of the electric vehicle. the designed BMS functions mainly include battery status detection and analysis, battery status analysis, battery safety protection, energy control management, battery information management and other aspects:

(1) the battery status detection includes the collection of the total voltage, current, temperature of the power battery pack and the voltage of the single battery. In the power battery pack, most of the batteries are in series structure with the same working current, so only the total current needs to be detected. Because the total current is detected, the sampling value will be relatively large. Since the current has a significant impact on the estimation of the battery pack's remaining power and the safety of the whole vehicle, the current sampling frequency should be as high as possible. the battery is extremely sensitive to temperature. Any power battery has an appropriate operating temperature range. Only in the appropriate temperature can it play its best role, so it is necessary to detect the temperature of the battery.

(2) the battery state analysis refers to the estimation of the remaining power of the battery, namely the SoC (State of Charge) estimation.

(3) Battery safety protection is the most important function of electric vehicle BMS and the purpose of setting BMS. the realization of the battery safety protection function depends on the battery status detection and battery status analysis. Its common contents are overcurrent protection, overcharge and over-discharge protection and over-temperature protection.

(4) Energy control management [4] includes battery charge control management, battery discharge control management and battery balance control management. This time, it is mainly to realize the battery balance control management of the battery pack, and realize the energy balance of each single battery of the battery pack through the balance module.

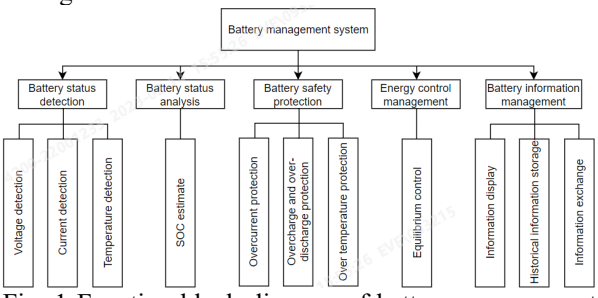

Fig. 1 Function block diagram of battery management system

(5) the information detected and processed by the battery management system needs to be saved and displayed through the display screen. Therefore, the LCD display screen is used in this design to display the battery status parameters. Figure 1 shows the functional block diagram of the battery management system in this design.

3. BATTERY MANAGEMENT SYSTEM TOPOLOGY SELECTION

In order to provide enough energy for electric vehicles, the battery pack is composed of multiple single power batteries in series and parallel. To detect and manage multiple batteries in real time, it is necessary to study the topology of the battery management system. In the hardware circuit of the battery management system, it can be divided into two functional modules, namely battery monitoring circuit (BMC) and battery control unit (BCU). the topological structure of the battery management system is selected from two levels: first, the topological relationship between the BMC and each single battery, that is, whether the BMC corresponds to one or more batteries; Secondly, there are two common topologies between BCU and BMU: centralized and distributed [5]. Centralized BMS is to gather all the collection units of the voltage and temperature of the single unit in one BMS board. At this time, MCU is responsible for realizing the functions of BCU and BMC. It is applicable to the situation that the number of power batteries is small and the scale of battery management system is relatively small. Distributed BMS, BCU and BMC are separated. BMC is responsible for collecting the voltage, temperature, total circuit current, balance management, thermal management, etc. of the single battery module. BCU is responsible for collecting and processing the data uploaded by BMC, controlling the charging and discharging of the battery pack, fault diagnosis of the battery pack, and information interaction with the vehicle and charging pile. Considering that this design is used to guide the development of the vehicle battery system, a battery management system is designed with four lithium ion batteries in series as the control object. This time, the control object is a group of power batteries in series. the number of power batteries is small. the scale of the battery management system is smaller than that of the vehicle battery management system. the MCU can be used to realize the functions of BCU and BMU, that is, the BCU and BMU share the same board. Therefore, this design adopts centralized design. Figure 2 shows the topology selected for the battery management system [6].

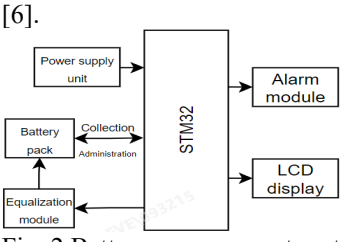

Fig. 2 Battery management system topology

4. HARDWARE DESIGN OF BATTERY MANAGEMENT SYSTEM

4.1 DESIGN SCHEME

STM32F103C8T6 is selected as the micro-control unit for the battery management system. In the hardware design, the method of dividing functional modules is

used for the hardware circuit design. In the software development, the Keil uVision5 microcontroller software platform, a development environment specifically for ARM core processor, is selected for the software design of the battery management system. Keil uVision5 software platform can support processors based on ARM kernel designed by different companies, and can cooperate with special simulators to achieve better debugging and simulation of programs. In this design, STM32F103C8T6 in STM32 series chips is selected as the micro-control unit. the selected software platform development environment Keil 5 can perfectly support Cortex-M series devices.

The selected control object is four lithium ion batteries in series. the quantity to be detected is the voltage, total current, total voltage and temperature of each single battery. STM32F103C8T6 is responsible for collecting the voltage of the parameter pin from 0 to 3.3V, and the rated voltage of the lithium ion battery is 1.2V. Therefore, the battery data can be collected directly using the pin of the control chip, and the data will be displayed on the LCD after ADC conversion. In consideration of safety, the system adds an insulation detection module to protect the circuit board. When the battery status is abnormal, the buzzer will alarm.

4.2 SINGLE VOLTAGE ACQUISITION CIRCUIT

STM32F103C8T6 has multiple ADC channels inside. the principle of resistance voltage division is used to collect the voltage of the single battery. Here, pins 14 (ADC0), 15 (ADC1), 16 (ADC2) and 17 (ADC3) of the control chip are selected for collection. the four circuits are connected to a 10K resistor for voltage division. the ADC value collected by the ADC channel is the battery voltage.

4.3 CURRENT ACQUISITION CIRCUIT

The working current of the battery is also collected using the ADC channel of STM32F103C8T6, which is the same as the voltage collection method. Here, pin 9 (ADC11) of the control chip is selected, a 510 Ω sampling resistor is connected at the discharge end, and the working current is calculated using the voltage value read by ADC11. When the battery is discharged, the current collection circuit is on, the LED light is on, and then the ADC11 channel receives the voltage signal. According to the STM32 chip instruction manual, the maximum input impedance of the AD interface is 50K Ω. When the external voltage divider resistance is far less than the impedance value, the output impedance of the signal source will be relatively small, thus reducing the error of signal reading.

4.4 TEMPERATURE ACQUISITION CIRCUIT

The power battery temperature acquisition is an extremely important part of BMS system. the system uses NTC-3435 negative temperature coefficient thermistor to collect the temperature of four single cells. the battery temperature can be detected by placing the thermistor probe close to the battery. When the temperature rises due to the operation of the battery, the resistance value of the thermistor will decrease accordingly. Therefore, the resistance value of the thermistor can be measured using the ADC channel of the control chip, and then the temperature value corresponding to the current resistance value can be obtained by looking up the thermometer. the NTC-3435 itself does not have the ability to output high level. the high level read by the control chip must be supplied by other means. A 5.1K resistor needs to be connected in the temperature acquisition circuit as the circuit pull-up resistor, and used for circuit voltage division to convert the resistance value into a voltage signal and transmit it to the control chip. Here, pin 20 (ADC4), pin 21 (ADC5), pin 22 (ADC6) and pin 23 (ADC7) of the chip are used to detect the temperature of the thermistor. the measured ADC value is the NTC voltage value.

4.5 EQUALIZATION CIRCUIT

Due to manufacturing accuracy error, the characteristics of each cell will vary slightly. Even for batteries produced in the same batch, their respective capacity and impedance will vary slightly. In practical applications, it often occurs that one cell is fully charged while the other cells are not fully charged, which leads to the battery pack stopping charging, wasting the capacity of the other cells, or the fully charged cells are overcharged because of continuous charging. Therefore, the equalization management circuit of the battery management system exists to ensure that each battery in the battery pack can be charged to the maximum capacity. After comparing the active/passive equalization methods, this paper decides to use the passive equalization method to achieve the balance between battery packs. the principle of passive equalization enables the battery to release excess power through the load of the bypass, and try to keep the power of all batteries in the battery pack consistent. the bypass can be combined in or outside the coordination circuit.

4.6 ALARM MODULE CIRCUIT

The system uses the electromagnetic active buzzer as the core of the alarm module, and prompts the user to pay attention to the status of the battery management system through the buzzer. When the battery circuit is open, the control chip detects that the insulation resistance value in the insulation circuit is too low, and then the chip controls the buzzer to alarm; When the battery temperature is too high, the control chip detects that the resistance of the thermistor decreases, and the chip will also control the buzzer to give an alarm. the alarm module circuit is shown in Figure 7. Use pin 52 (PC11) of STM32 to control the buzzer to sound. Because the working current of the buzzer is large, the TTL level of STM32 pin is not enough to drive the buzzer to work. Here, the triode is used as the current amplification circuit. the base of NPN triode is controlled by PC11. the pin output is high level to control the conduction of the triode, and the buzzer will alarm when the buzzer is turned on. the pin output is low level to control the cutoff of the triode, and the channel of the buzzer will not alarm when it is disconnected.

5. SOFTWARE DESIGN OF BATTERY MANAGEMENT SYSTEM

5.1 BATTERY MANAGEMENT SYSTEM SOFTWARE DEVELOPMENT ENVIRONMENT

During the software development, the development environment of the processor specially designed for the ARM core was selected, and the Keil uVision5 microcontroller software platform was used to program the battery management system. Keil uVision5 can support processors based on ARM kernel designed by different companies, provide support for C language and assembly language, and have powerful library management function, which can cooperate with special simulators to achieve better debugging and simulation of programs. In this design, STM32 series chips are selected as the micro-control unit, while Keil 5 perfectly supports Cortex-M series devices. Using Keil and SWD simulator debugging has the following advantages:

Debugging can realize unlimited breakpoints, including access, condition, and execution breakpoints;

During the simulation process, the simulation peripherals and program execution can be completely synchronized;

The simulation process has complete timing and execution analysis.

5.2 MAIN FLOW CHART OF BATTERY MANAGEMENT SYSTEM PROGRAM

The software design is mainly divided into the following processes: after the system initialization, the battery data is collected, and then the data is read by the memory. the STM32 main control chip evaluates the battery status parameters read. After evaluation, decide whether to balance or protect. the program of the system adopts modular design, and the program is designed with the modules designed in Section III.

6. EXPERIMENTAL VERIFICATION

The designed circuit schematic diagram is made into a PCB diagram, and the components are welded after the board is punched. At the same time, the written program is downloaded to the STM32 main control chip to complete the production of BMS. Connect four lithium-ion batteries in series to make a power battery pack, and test the power battery pack in series with the manufactured BMS. BMS collects the battery parameters and displays them on the LCD screen.

Analysis of experimental results: BMS realizes the collection of single cell voltage, current and temperature, and the estimated SOC is also displayed on the LCD screen. the designed BMS achieves the expected function, can realize the control and management of the battery pack, reduce the experimental cost, improve the design efficiency, and effectively provide guidance for the design of the vehicle battery management system.

7. CONCLUSION

New energy vehicles have become the mainstream trend in the development of the current automobile market. As a guarantee for the safe and efficient operation of electric vehicles, battery management system is an indispensable part of the development of electric vehicles and plays a positive role in promoting the development of electric vehicles. This paper first analyzes the current application of BMS, and then designs the function and structure of the battery management system according to the battery characteristics and research objects. Then the BMS hardware design scheme is determined according to the set function and structure, and the functional circuit of BMS is designed and analyzed by using the functional module design method. the BMS control program is developed through Keil uVision5 software development platform and then downloaded to BMS. Finally, the BMS designed this time is used to control a group of batteries, and the experimental results are in line with expectations. In the development of electric vehicles, the battery management system is playing an important role. the battery management system will better serve electric vehicles and promote the development of clean energy industry. the battery management system designed in this paper based on STM32 chip has a complete functional structure, which can achieve battery energy balance control and SOC estimation. At the same time, the experimental cost is low and the cycle is short. It also provides a certain guidance for the functional improvement and new design of the vehicle battery management system, which is conducive to the design optimization and innovation of the battery management system.

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Power Battery Management System Based on Internet of Things Technology

Hongwei Peng
Huizhou Yiwei Lithium Energy Co., Ltd, Huizhou, Guangdong 516006, China

Abstract: With the increasing number of electric vehicles, people pay more and more attention to their intelligence and safety. the power battery pack is one of the most important parts of the electric vehicle. the driver's requirements for the power battery pack of the electric vehicle are increasing, including the safety of the battery, the convenience and humanization of the battery management, and the pre-estimation of the fault. These requirements can be completed through the intelligent battery management system. This paper proposes a power battery management system for electric vehicles based on the Internet of Things technology. the owner can monitor the data of the power battery in real time and predict the potential failure, which is safe and practical.

Keywords: Electric vehicle; Power battery; Battery management system; Internet of Things technology

1. INTRODUCTION

At present, the number of electric vehicles is increasing year by year. In 2015, the number of new energy vehicles in China was 420000, including 330000 pure electric vehicles. By 2019, the number of new energy vehicles will reach 3.81 million, including 310 pure electric vehicles. By 2020, due to the impact of the epidemic, the number of new energy vehicles will be 4.17 million by June. With the increasing number of electric vehicles, people pay more and more attention to their intelligence and safety. the power battery pack is one of the most important parts of the electric vehicle. the driver's requirements for the power battery pack of the electric vehicle are increasing, including the safety of the battery, the convenience and humanization of the battery management, and the pre-estimation of the fault. These requirements can be completed through the intelligent battery management system. Moreover, the maintenance and repair of the traditional power battery pack is relatively troublesome and costly. the battery management system based on fault prediction can predict the potential failure of the battery, so as to improve the operation status of the battery in advance and avoid the occurrence of failure. Based on the Internet of Things technology, this paper proposes a power battery management system for electric vehicles. the owners can monitor the various data of the power battery in real time and predict the potential failure, so as to prevent the trouble before it happens. It not only improves the safety of the whole vehicle, but also saves the expensive repair costs.

2. SYSTEM TOPOLOGY

The battery management system architecture of electric vehicles studied in this paper is shown in Figure 1. the whole system is divided into three layers: application layer, network layer and perception layer.

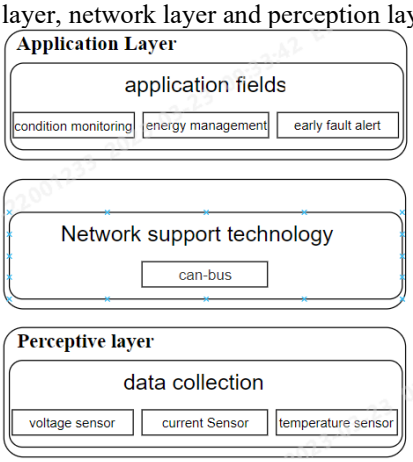

Figure 1 Battery management system architecture

3. SYSTEM AWARENESS LAYER

Based on the Internet of Things technology, the bottom layer of the battery management system for electric vehicles is the sensing layer composed of various sensing devices. Its main function is to collect data, which is an important part of connecting the power battery and the management system. Various intelligent sensing devices expand the concept of communication, from the communication between people and things to the autonomous communication, connection establishment and intelligent management between things.

The key technology of the sensing layer of the Internet of Things is sensor technology. the sensor is composed of a sensing element and a conversion element. the sensing element is used to sense the corresponding measured (voltage, current, etc.). the conversion element converts the measured signal into a usable output signal according to a certain rule. Sensors can be divided into different types according to different classification methods. It can be divided into mechanical sensor, thermal sensor, magnetic sensor, optical sensor, etc. the system mentioned in this paper mainly uses voltage sensor, current sensor and temperature sensor.

3.1 Voltage sensor

The power of electric vehicles can be obtained either by batteries alone or by batteries and other energy sources. No matter which method is adopted, voltage sensor is required for battery charging, power supply for drive motor and low-voltage equipment. the voltage sensor

can be divided into isolation amplification type, Hall principle, fluxgate principle, etc [1].

There is no common ground terminal between the input end and output end of the isolated amplification sensor, that is, there is no direct circuit coupling relationship. This structure can protect the data collector at the input end from the influence or even damage of the noise voltage at the output end. Because there is no coupling circuit between the input and output, the formation of a loop is also avoided, which causes measurement error. Because of the good isolation effect between the input and output terminals, this sensor can be used in medicine, power electronic measurement and other fields.

Hall type voltage sensor uses the measured magnetic induction intensity to change, and then uses the Hall effect of semiconductor to change the output voltage. Hall sensor can measure voltage, current and even transient peak electrical signals of different waveforms, and has the advantages of high accuracy, good linearity, safe isolation and wide measurement range.

The above two sensors have been applied in many fields, and their input turns and isolation element sizes can be customized according to different application scenarios. However, the input inductance value of these two sensors is relatively large, which will produce large electromagnetic noise in the working environment of high voltage and high frequency. Generally, the applicable frequency is tens to hundreds of kilohertz. Now, electric vehicles are loaded with more and more high-frequency power electronic components, whose working frequency has reached hundreds of megahertz, and its voltage signal has also reached hundreds of megahertz. the voltage signal of these occasions can be collected using the fluxgate voltage sensor with fewer coils on the input side. the fluxgate sensor measures the surrounding magnetic field by reasonably designing the conversion circuit, selecting the appropriate material, according to the law of magnetic circuit, using the principle that the magnetic probe will be saturated in the measured magnetic field, and then using the relationship between the magnetic field and the voltage to complete the voltage measurement. the fluxgate voltage sensor has wide measuring range, high reliability and high resolution.

3.2 Current Sensor

The Hall sensor is used to measure the current of the battery. the Hall sensor obtains the current by measuring the magnetic field generated around the measured conductor after it is energized with the corresponding component. This is done by converting an electrical signal into a magnetic signal and back into an electrical signal. Due to the Hall effect of sensor components, the magneto-electric conversion has good linearity, short response time and good reliability. the current sensor can meet the requirements of high working frequency, wide frequency range and frequent working mode switching of electric vehicle parts.

3.3 Temperature sensor

Temperature sensors can be divided into contact and non-contact. the contact temperature sensor reaches the state of heat balance through conduction or convection, so that its display value can directly represent the temperature of the measured object. According to the mechanism of signal conversion, it can be divided into thermal expansion type, resistance type and thermoelectric type. Generally speaking, the measurement accuracy of contact temperature sensor is relatively high. A precise temperature sensor is designed in literature [2], which adopts NTC resistor and aluminum profile package. the temperature of the measured equipment can be obtained by using the characteristic that the resistance value of thermistor changes linearly with temperature. This sensor has low cost and good precision, and is often used in agriculture, industry, especially in new energy vehicles.

4. SYSTEM NETWORK LAYER

The network layer of the system is to interact and share the massive data collected by the perception layer with the Internet through various communication networks. In this paper, various sensors of the sensing layer are connected to each battery respectively, which CAN collect the instantaneous voltage, current and temperature of each battery in real time, and then upload these node data to the control module through the CAN bus. the control module analyzes these data and calculates the real-time voltage, current and temperature of the whole battery pack. CAN is the abbreviation of Controller Area Network, is the ISO international standardized serial communication protocol, because of its high reliability, high performance, complete function and low cost advantages, widely used in automotive electronics, industrial automation, ships, medical equipment, industrial equipment and other aspects. CAN bus network can be divided into high speed network and low speed network [3]. the power battery is controlled by high-speed CAN bus network, which can form a closed-loop system with motor control system of automobile. the data transmission of CAN bus system can reach 1Mbps, and the maximum transmission can be 10km. CAN bus system has the ability to detect and deal with errors, and can automatically make the faulty node out of the network without affecting the normal work of other nodes. In addition, each controller and various devices on the electric vehicle CAN be connected to the CAN bus to form a network. All nodes on the network can communicate with each other, improving performance and saving wiring harnesses and costs [4].

5. APPLICATION LAYER

The application layer uses intelligent algorithms such as data mining and cloud computing to analyze and process the massive data collected by sensors. the collection frequency of various sensors can be set. the collection frequency of key parts can be increased while that of secondary parts can be reduced. the collected mass data can be processed in the background, and the real-time curve of the signal can be drawn, which is easy for users to read.

Intelligent computing at the application layer can realize the fault pre-diagnosis of electric vehicle power battery pack [5]. Since three sensors are used in the sensing layer, the device information provided by various sensors can be compared and analyzed, thus making the pre-diagnosis more comprehensive and accurate. First, the data of the same sensor is processed to obtain the optimal value. Then, each group of data is further analyzed and processed to remove noise and interference to get the corresponding characteristic value. Finally, the eigenvalues of each group are input into the fuzzy neural network for analysis and fault pre-diagnosis.

6. CONCLUSIONS

The electric vehicle power battery management system based on the Internet of Things technology realizes the comprehensive perception and intelligent control of the power battery pack, and improves the performance of the electric vehicle.

1) Realized real-time monitoring of the status of the power battery pack. the real-time on-line monitoring system can realize the real-time acquisition and processing of power battery voltage, current and other data. the characteristic values of the main faults of battery pack are extracted, and all kinds of faults can be intelligently analyzed and diagnosed. It can predict the possible fault, the exact location of the fault and the process of production, greatly reducing the time and cost of fault maintenance.

2) Improved safety of electric vehicles. It can accurately display the remaining power, running state, real-time temperature and so on of the power battery pack, avoiding various driving faults caused by inaccurate prediction of the remaining power and overheating of the battery pack.

3) Improved interconnection of electric vehicles. With the advent of the Internet of everything era, the automobile industry is also building the "Internet of vehicles". the intelligent battery management system proposed in this paper can make use of emerging big data, cloud computing and other technologies to remotely monitor the running status of electric vehicles, remote fault prediction and diagnosis, so as to achieve good connectivity.

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The Fusion of Production And Education Exploration And Practice

Pang Hong

Zibo Vocational Institute, Department of Mechanical and Electrical Engineering, Zibo 255000,Shandong, China

Abstract: Under the government's leading and pushing in our country, our country modern vocational education system in professional setting, personnel training mode, curriculum building, curriculum design, teaching contents, teaching methods, etc is undergoing profound changes. A change to "work-integrated learning, the fusion of production and education, the post internship" as the basic direction. As the important carrier of university-enterprise cooperation activities of the reform and development of higher vocational education has already become the main line. According to the basic direction of numerical control technology major of our college, bold practice, acquired a lot of production cases, and these cases were carefully selected typical cases, combined with the core of the professional courses of the curriculum standard of The numerical control machine tool parts processing course requirements, introduce the course teaching. Enterprise production are introduced in detail in this paper, the application of the case as a teaching case.

Keywords: The fusion of production and education; Enterprise production case; Teaching case

1. DEEPLY FUSION OF PROUDUCTION AND EDUCATION IN THE IMPORTANCE OF VOCATIONAL EDUCATION TEACHING

Vocational education university-enterprise cooperation, integration education as a national development of vocational education the important path and institutional arrangements, has attached great importance to by the party and state. The national medium and long-term education reform and development plan (2010-2020), clearly put forward the work-integrated learning, cooperation between colleges and field work personnel training mode. To establish and perfect the government dominant, industry guidance, enterprise participation mechanism, promote university-enterprise cooperation in running schools regulations, promote university-enterprise cooperation institutionalized. In June 2014, the Ministry of Education and so on six departments jointly issued the modern vocational education system construction plan (2014-2020) , put forward the overall goal of modern vocational education system construction is the "depth fusion production and education".[1]The report suggests that the party's 19 perfect vocational education and training system, deepen the teaching fusion, university-enterprise cooperation.Also put forward "the third plenary session of the eighteenth reform and accelerate the construction of modern vocational education system, deepen the education integration, cooperation between colleges and cultivating high-quality workers and skilled personnel." Today, in our country, university-enterprise cooperation training talents as an important form of education have gained wide attention of the vocational education. "University-enterprise cooperation, the fusion of production and education" has become the current vocational education field in one of the highest frequency of words, the reform and innovation efforts are unprecedented. University-enterprise cooperation could be carried out widely in the field of vocational education, and enterprise, one of the important development mode of the development of vocational colleges. [2]

2. ENTERPRISE PRODUCTION CASE AS A TEACHING CASE IN CLASS IS THE FUSION OF PRODUCTION AND EDUCATION RESULTS

Our institute of intelligent manufacturing and dozens of companies in the cooperation between colleges and combining production, combination, directional cultivation, order, setting up practice base outside, introduce the workshop school, introduce the classroom workshop, establish national campus productive practice base, productive practice jobs for students, students' field work, equipment sharing, establish training base and so on a variety of ways of cooperation, face-to-face teacher credentials the exercise regularly into the enterprise, using the winter vacation, summer vacation to participate in the practice, to participate in technology development, at the teacher's skills and knowledge update. At the same time, enterprises technical experts, skillful craftsman and high-skilled talents as off-campus part-time teachers, directly involved in major setting, curriculum setting, teaching content setting, teaching methods, teaching contents in the design work. Between the two sides support each other, mutual penetration, mutual involvement, complementary advantages, the accumulation of a large number of real cases of enterprise production, schools and induced, and refine the universal professional basis and operation method of procedural capacity, new technology application of new technology into the curriculum. At the same time, pay attention to let students experience the strict discipline, rules and regulations, production line of technical requirements, experience of difficult labor, the value of collaboration and joy of success, to cultivate good professional ethics, strives for

perfection the work style, serious and responsible work attitude, mutual between colleges cultivate skills talents, improve the teaching quality. [3]

3.THE INTRODUCTION OF THE NUMERICAL CONTROL MACHINE TOOL PARTS PROCESSING COURSE

This course is an important numerical control technology specialized professional core courses. Is for students to design and implementation of CNC machining process planning, CNC programming, numerical control operation and adjustment ability, the processing parts inspection ability, processing site coordination ability of comprehensive training and evaluation.

In the fundamentals of mechanical knowledge chart and drawings, mechanical processing technology, mechanical processing process establishment and implementation, the common machine tool processing technology, operation and management of the CNC system and CNC machining programming, CNC machine maintenance and maintenance course, on the basis of to CNC machine operators on the basis of the national vocational standard, through the integration of theory and practice teaching, enable students to master CNC turning, CNC milling, machining center, process planning, CNC programming and machining operations specifications to CNC machining parts according to process documents independently, and through the quality inspection of parts for processing adjustment, causes the student to have the CNC machining technology of comprehensive application ability.

Teaching content is divided into "the numerical control turning processing technology", "the numerical control milling technology", "processing center processing technology" three modules. Among them, "the numerical control turning processing technology" module consists of six programs are FANUC 0I system foundation, the numerical control turning processing steps in CNC lathe control shaft parts, the numerical control turning processing shaft sleeve parts, the numerical control turning processing thread parts, the numerical control turning processing combination, the numerical control turning processing surface. In this paper, we introduce the enterprise application case study project "the numerical control turning processing shaft sleeve parts".

4. ENTERPRISE PRODUCTION CASE,THE NUMERICAL CONTROL TURINING PROCESSING SHAFT SLEEVE PARTS PRODUCTION

4.1SOURCE OF CASE

The real machining parts, parts of ZIBO diesel engine factory workshop processed by the university. Detail drawings are shown in Figure 1.

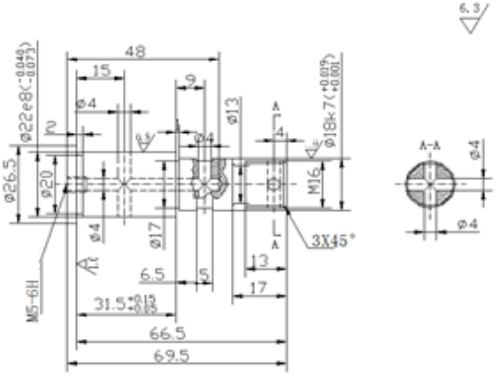

Figure 1 Sleeve part drawing

The parts of different diameter, 4 relief groove and the ring groove, the internal and external thread and hole. Parts shape trajectory is not complicated, but the workpiece size required to teach more, so the processing difficulty is big. Because the artifacts for and dimensional accuracy and surface roughness of axially symmetrical parts demand is higher, so choose the numerical control lathe processing. Single production, so choose three jaw self centering chuck clamping.

Important radial in the numerical control turning processing, parts machining parts are: M16 thread,Φ13 relief groove, Φ18 cylindrical section, Φ22 cylindrical section, M16 vertical two Φ4 holes in thread requirement, other parts radial processing parts are relatively easy to processing. Important parts of axial parts processing:Φ22 cylindrical section and Φ20 ring groove length is 31.5 mm. Detailed in Figure 1.

The parts material for the forging of 45 # steel, after heat treatment machinability.

Through the study of the task, students choose set of parts processing methods, and divide the machining process. Can use G71, G70, G75, G76, G94 instruction preparation tank process. Correct execution security technology operating rules. According to the provisions of the enterprise on civilization production do work orderly, artifacts, tools, neat.

4.2 TO FORMULATE PROCESS

Parts arrangement principles of operation sequence:

According to the benchmark first principle, time principle, the first surface after home hole principle, first rough then essence principle, the principle of form a complete set of processing process: develop the workpiece to rough machining and finish machining; Advanced processing and then gets round hole processing.

Feeding route analysis:

The parts go to route as follows: the cutting point to 3 ~ 5 mm wide parts; Advanced gets round to everywhere groove machining, then thread processing; G71 machining cylindrical loop starting point of the X value than the last return the value of X older; Return point in diameter slightly larger than the parts.

Holdings tools selection:

T01: cylindrical thick, finishing tool (main Angle Kr =

93°, tip radius of circular arc R0.2) ,1; T02: slotting tool (B = 2 mm wide blade, blade width B = 1 mm) ,1; T03: screw tool (blade Angle of 60 degrees) ,1; T04:45 cylindrical turning tool (the main Angle Kr = 45,° tip radius of circular arc R0.2) ,1; Φ4 bit 1; 1 A2 center drill,1; Tap HSS M5-6H,1.

Fixture selection:

When machining the parts for mass production, for shortening the time of the clamping choose general clamping fixture three jaw chuck.

Determination of cutting parameter:

Cutting parameter including spindle speed (cutting speed), turning and feed back (or feed rate). Cutting dosage on the size of the cutting force, cutting power, tool wear, have a significant impact on machining quality and machining cost. Concrete numerical value should be used according to the machine manual, manual cutting parameter, and combined with actual experience were revised.

Formulation process:

Through the analysis and the analysis of the above parts drawings, work out the process of the parts.

Blanking Φ28 x75; Neat end face, for type A center hole; A clamp a roof, rough machining parts right end trajectory shape; A clamp a roof, finish machining parts right end appearance trajectory, turn slot to size 4, turn M16 thread; Run, neat end face to ensure overall length, type A center hole; Rough machining parts left side outline; Fine turn parts, the left side outline, Φ4X48 4 holes; In the milling machine drilling holes, other manual tapping the M5-6H thread; Deburring;Inspection.

4.3 PROGRAM

Application of axial rough turning compound cycle G71, finish machining cycle instruction G70, thread cutting cycle G76, radial cutting cycle instructions G94, grooving circulation G75, the label size according to drawing, the right end face and the workpiece the workpiece axis intersection for the workpiece coordinate system is established. Each node of calculation and programming.

4.4 PROCESSING

Blanking:

Choose according to drawings Φ30 x 75, 45 # steel blank.

Preparation tool:

According to the process card to choose the appropriate tool. T1 for Kr = 93 ° of external circular tool; T2 is 2 mm and 1 mm cutting tool; T3 is 60 ° thread cutter; T4 external circular tool for Kr = 45 °.

Equipment selection:

Through the analysis of the parts and connecting with the school workshop equipment selection CKI - 6136 type relationship of FANUC system and sliding - 840 vertical CNC lathe CNC milling machine SIEMENS802C system.

Boot back to the reference point:

Open the side of machine system, the power switch, then press the start button on the operation panel, open the abrupt stop button. Then back to the reference point operation, the operation is to benchmark the re-verification back to zero, can eliminate benchmark deviation due to various reasons.

The installation of tool:

Tool when installation to must notice the tool high adjustment, if the cutting tool installation can make tool rake Angle increases after high Angle decreases, and at the time of processing cutting tool will tremble and sounding; If the tool to install a bottom can make the tool rake Angle, increase with the decrease of Angle after cutter when processing cutting tool is easy to crack. When installing tool at the same time, also want to consider the arrangement of the process, so that we can reduce the tool change time improve work efficiency.

Adjust the tailstock;

Before processing to the tailstock into adjustment, avoid when machining spindle and tailstock taper coaxial parts. Proper use of dial indicator, adjust the tailstock and the distance between the chuck to appropriate location, both to ensure that the cutting tool and the tailstock interference occurs and to ensure the tail seating barrels should not be too long. Clamped choose a piece of waste to chuck and tailstock top good, the tailstock clamping. Use tool to the cylindrical bar, and then measure, determine the tailstock bias. Will the header in the tailstock side of the dial indicator on the bus, and then through the adjustment nut on the tailstock on either side of the tailstock. Note that when adjusting adjustment according to the measuring difference in value. After the tuning turn again tool if validated measurement.

The workpiece installation and matters needing attention:

You must be aware of when installing workpiece clamping, workpiece extended length to appropriate otherwise there could be dangerous; Tight with a tailstock artifacts, should grasp the strength when the top tight neither too tight and not on the top of the roof too loose, too tight will make the workpiece deformation, too loose to reach a "clip a" the effect.

Set the cutting tool:

To set the cutting tool parameters in numerical reset, check G54 offset in the presence of numerical value, if any should be reset. Check after T0101 way respectively for each tool to tool, the tool and simulation are basically the same way.

Input of the program:

In edit mode will be a good programming input to the machine, after the input to check the correctness of the program input and corresponding drawings to check the correctness of the program.

Right contour machining parts:

Under the cycle start state parts processing. Note that when using 1 mm wide cutting tool must be slow, because the strength of the tool is very low; In the thread machining on the coolant must be hit.

The proper use of various measuring tool, the test parts

right contour.:
With micrometer inspection cylindrical, with vernier caliper inspection groove, using test thread ring gauge.
Head left contour machining parts:
His face length. Then turn left contour cylindrical to size, measured with vernier caliper for inspection; Centering; Drill Φ 4 x 48 hole.
Remove the artifacts, and inspection:
Check all dimensions are in accordance with the requirements of the drawings, and then go to the next process (drilling).
Cleaning machine:
5S originated in Japan, is in the heart of the production site personnel, machines, materials, methods and other production factors for effective management, is one of the unique Japanese enterprise management methods. Content is clear, reorganization, cleaning, specification, quality. According to the different factory factory culture may have different meanings. Will clean up the chip on the machine tool with the brush first, and then use cotton the cooling fluid on the machine tool is wiped clean, brush machine oil again, the last shutdown, in turn, turn off the power and total power on the machine tool operation panel.
The radial holes:
The workpiece clamping to universal dividing head, first using the center drill a center hole, in order to avoid the use of bit drilling occurs when partial, then use Φ 4 bit drilling, then dividing head at the back of the two fixed screw loosening and then dividing head rotated 90 ° will handle a 20 times, then dividing the two fixed screw hole behind the head.
Hand tapping:
In front of the tapping hole and screw tap should be with machine oil, lubrication; Pay attention to the tap tapping the start of verticality, if tap tilt direction in a timely manner.
Deburring:
In the processing and surface will appear when drilling burr, in processing after the completion of the need to deal with burr, provide convenience for the use of artifacts.
Test artifacts:
By the workpiece for final inspection, inspection personnel to determine the quality of the workpiece.

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Design and Application of Automatic Clay Forming Machine

Yu Aiwu

Zibo Vocational Institute ,Zibo 255000,Shandong,China

Abstract: With the improvement of people's quality of life and their yearning for a better life, higher requirements are put forward for the degree of product automation. The automatic clay forming machine adopts PLC control, laser detection and other advanced technologies, which can quickly adjust, automatically control and cut the length, diameter and shape of the clay bar according to the actual needs, thus realizing the automatic clay forming, making the production of ceramic works more time-saving and labor-saving, improving the production efficiency, and ensuring the stable and reliable quality of ceramic works. The product is highly automated, easy to operate, simple in structure, environmentally friendly and clean, small in size and small in floor space, which can effectively reduce production costs, with moderate price, wide range of use and broad market prospects. After large-scale production, it can replace the traditional clay forming equipment.

Keywords: Automatic clay forming machine; Screw mud feeding device; Laser length recording device; High degree of automation; Improve production efficiency and quality.

1. INTRODUCTION

In recent years, with people's expectations for a better life, as well as the improvement of cultural accomplishment, the upgrading of health and environmental protection, ceramic art has gradually integrated into public life, and the application of ceramics has become more and more extensive. Ceramic works can be seen everywhere in life. By consulting the survey results of ceramic works manufacturers and visiting the actual application of ceramic producers and the teachers and students of the Tao Liu major of Zibo Vocational College, it is found that they generally use two methods when using clay to make clay and ceramic works, one is the hand-pressing method, the other is the manual piston mud-pressing method. [1]These two methods are not only time-consuming and laborious, small output, low efficiency, but also difficult to control the length, diameter or shape of the sliver. In order to solve the above problems, we have innovatively designed and applied the automatic clay forming machine to ensure the automatic clay forming, save a lot of manpower, and improve the production efficiency and quality of ceramic works. [2]

2.INTRODUCTION TO AUTOMATIC CLAY FORMING MACHINE

2.1 PRODUCT STRUCTURE.

The product is mainly composed of storage base, decelerating stepper motor, stepper motor, screw mud feeding device (including mud inlet), automatic mud discharging device, electromagnetic push rod, laser length recording device, control panel (including PLC control system), support, etc. Its structure is shown in Figure 1.

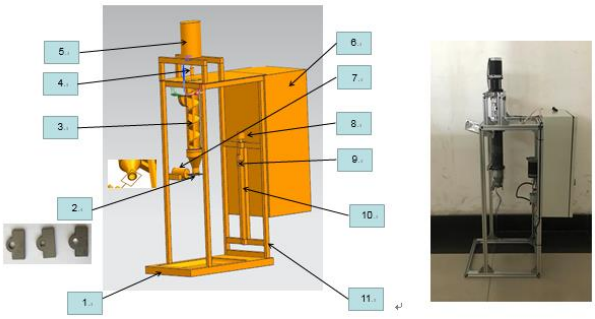

Figure 1 Structure diagram and physical object of automatic clay forming machine

2.2 MAIN STRUCTURE OF THE PRODUCT.

In addition to the storage base and support, the main structure of the automatic clay forming machine is mainly divided into two parts, namely the screw mud feeding device and the laser length recording device.

(1) Screw mud conveying device. It is composed of spiral blades and automatic sludge discharge device, as shown in Figure 2. When working, put the ceramic mud raw material into the screw mud feeding device from the mud inlet, and the screw blade is driven by the decelerating stepper motor to rotate to realize the mixing and transfer of ceramic mud, and the mud bar is extruded from the mud outlet. [3]

It is equipped with quick-change mud inserts of different sizes and specifications to meet the needs of processing mud strips of different diameters and shapes.

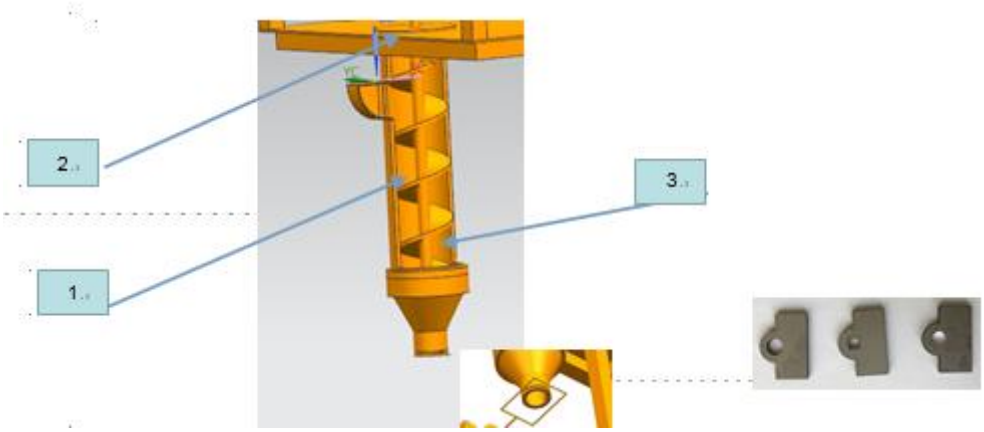

Figure 2 Schematic diagram of screw mud delivery device and quick-change mud insert

(2) Laser length recording device. It is composed of stepping motor, laser length sensor, lead screw, column and bracket, as shown in Figure 3. During operation, when the laser length sensor detects that the length of the mud strip meets the requirements, the PLC control system in the control panel transmits the signal to the electromagnetic push rod, which drives the mud cutting wire to respond quickly and automatically cut the mud strip. [4]

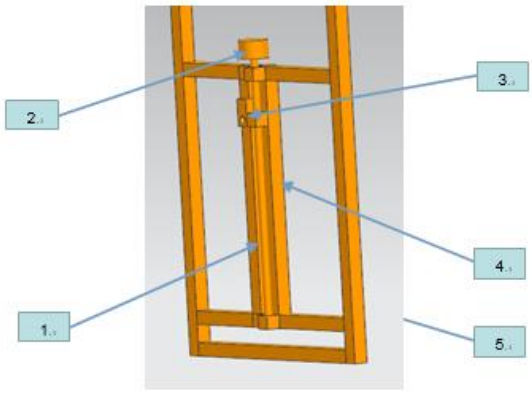

Figure 3 Structure diagram of laser length recording device

3.APPLICATION OF AUTOMATIC CLAY FORMING MACHINE

3.1 PRODUCT APPLICATION STEPS.

Generally, there are four steps: preparation → feeding → sludge discharge → automatic cut-off.

(1) Prepare. Select the quick-change mud insert with appropriate specifications and sizes according to the needs of the work, and the stepper motor drives the laser length recording device to move to the position of the required mud strip length. [5]

(2) Feed. Put the clay into the mud inlet, press the button on the control panel to start the deceleration stepping motor, and then drive the screw mud feeding device to rotate, so that it can mix, squeeze and transport the clay to the mud outlet.

(3) Sludge discharge. When the mud passes through the selected mud outlet, it will flow out of the mud bar with the required diameter or shape after being squeezed. [6]

(4) Automatic cut-off. When the mud strip reaches the set length, the laser length recording device detects the length signal, which is transmitted by the PLC control system to the electromagnetic push rod (which has a tensioned thin steel wire). The electromagnetic push rod moves back and forth to cut the mud strip according to the received signal, and then the mud strip falls into the storage base. In this way, the continuous mud discharge and automatic cutting... complete the processing of mud strips.

3.2PRECAUTIONS FOR PRODUCT APPLICATION.

(1) The power signal connected to the product should not exceed 24V and 50Hz.

(2) The product should be placed vertically, not tilted or inverted.

(3) Do not touch the product with your hands during operation.

(4) It is strictly forbidden to inspect and repair the product when it is powered on.

(5) The quick-change mud insert must be replaced in case of power failure.

4. INNOVATION POINTS OF AUTOMATIC CLAY FORMING MACHINE

The innovation points of automatic clay forming machine mainly include:

4.1 Innovation of automatic control. The product converts the traditional manual mud discharging method into automatic control, with high automation, convenient operation and high efficiency.

4.2 Innovation of power. The product innovates the traditional manual forming of clay into the automatic forming of clay. It uses the step-down motor to drive the screw mud feeding device to realize the mixing and transfer of clay. The mixing is uniform and the operation is environmentally friendly and clean.

4.3 Innovation in the control of the length, diameter or shape of mud sliver. The product will control the size of the mud stick mainly based on human feeling and experience. The innovation is to use the laser length sensor to determine the length of the mud stick, and quickly adjust the diameter or shape of the mud stick by changing the quick-change mud insert of different specifications. The size accuracy is high, and the

quality is stable and reliable.

4.4 Innovation of automatic cutting of mud bar. The product controls the electromagnetic push rod to automatically cut the mud bar.

5.PERFORMANCE CHARACTERISTICS OF AUTOMATIC CLAY FORMING MACHINE

5.1 The product is highly automated, easy to operate, time-saving and labor-saving, environmentally friendly and clean.

5.2 The diameter or shape of the mud strip can be adjusted by replacing the quick-change mud insert at the mud outlet of the product to meet the needs of different products.

5.3 The product adopts the advanced laser length recording sensor, which can change the length of the mud stick according to the needs, and uses the electromagnetic push rod to move back and forth to cooperate with the fine steel wire to realize the automatic cutting of the mud stick,.

4.4 The product has simple structure, small size, less land occupation and moderate price, which can effectively reduce production costs.

5.5 The product has a wide range of applications, and can be used for ceramic products made by ceramic professionals, manufacturers, ceramic lovers and art masters in schools to realize automatic forming of ceramic clay. For example, teachers and students or art masters of the Tao Liu specialty can use this product to make clay sticks, complete teaching and homework, or use the second class to complete the production of handicrafts and works of art; Manufacturers can use this product to complete the batch production of ceramic works.

In the future of the continuous development of science and technology, we will continue to adhere to the concept of progressiveness, continue to strengthen learning, continue to improve and develop ourselves, innovate and design more and better products to adapt to the society, and are committed to promoting and applying products to better serve the society!

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Protein Identification Algorithm Based on Post-translational Modification

Guiqing Zheng

Zibo Vocational Institute, Zibo 255000,Shandong,China

Abstract: Protein identification search algorithm is an important tool for proteomics research. It is often used to analyze high-throughput tandem mass spectrometry data to analyze protein samples. Due to the consideration of many amino acid mutations, post-translational modifications(PTM), etc., an ' open search ' algorithm has emerged. Open search can consider more peptide forms, but due to the frequent occurrence of explosive combinations, protein identification algorithms face a large-scale search space, and conventional search algorithms are also difficult to quickly and accurately complete open search for massive mass spectrometry data. This paper mainly discusses the development status of post-translational modification protein algorithms, and analyzes and studies the future development trend.

Keywords: Proteomics; PTM; Mass spectrometric; Open search.

1. INTRODUCTION

Proteomics is a discipline that studies all the proteins expressed in cells or tissues. With the advent of the information age, the trend of using computing technology to assist in the study of related biological problems has emerged. Computational Proteomics aims to apply computer technology to solve key biological problems in proteomics. At present, computational proteomics has become a major branch of computational biology and bioinformatics [1].

Using computational proteomics technology, bioinformatics analysis of protein samples based on mass spectrometry data, especially in protein identification, post-translational modification analysis, search for biomarkers and early diagnosis of diseases, has great social value. For the analysis of post-translational modifications, the use of mass spectrometry data combined with proteomics identification is almost the only technology that can be used for large-scale identification of low-abundance modifications.

The difficulty of modification identification is that the site combination of modification increases exponentially with the length of amino acid sequence and the number of modification types considered, so its retrieval space is extremely large and the computational complexity overhead is extremely high. Taking a protein sequence with a length of 400 amino acids as an example, if only three known modification types are considered, the number of possible protein variants is already equal to the number of all possible Go games, not to mention the modification records in the Unimod library have reached more than 2,000.

At present, there are a large number of mass spectrometry experimental data in ProteomeXchange, which provides data support for our research on sequence identification and modification discovery methods. With the development of mass spectrometry technology, the cost of mass spectrometry data acquisition is gradually reduced, and there are more and more high-resolution mass spectrometry data, so the demand for rapid, high-throughput and accurate mass spectrometry identification has become increasingly strong. Based on the discovery and identification of post-translational modifications, the establishment of a rapid search method from tandem mass spectrometry to modified peptides and protein variants has positive social and development benefits.

2. METHOD

Since the beginning of the study of protein sequences, tandem mass spectrometry has become one of the important techniques in proteomics research. The process of this technology is to obtain the mass spectrum of fragment ions from proteins, and then reversely derive the peptide sequence to obtain the protein sequence, or directly derive the protein sequence. At present, mass spectrometry data analysis strategies are mainly divided into spectral library searching, sequence database searching, de novo sequencing and sequence-tag based searching.

2.1 SPECTRAL LIBRARY

When the experimental protein samples have a complete spectral database, spectral library search [2] is an ideal identification method. At this time, the search engine compares the experimental spectrum with the peptide spectrum in the spectrum library to identify the peptides [3].The existing spectrum library projects include : PeptideAtlas [4], ProteomicsDB [5-6], Human Proteome Map [7], etc. The library stores the actual experimental spectra, which can reflect the fragmentation law of peptides. However, the problem of spectral library search is that it is difficult to establish a complete and accurate spectral database.

2.2 DATABASE SEARCH

Sequence library search is the most commonly used tandem mass spectrometry identification scheme in proteomics [8], and it is also a relatively mature identification method. The basic idea is to compare the experimental spectrum with the theoretical spectrum generated from the database, and finally select the best matching result. The commonly used database searches are SEQUEST, Mascot, pFind, MSFragger, etc. With the increasing scale of protein databases and mass spectrometry data, the speed and accuracy of traditional sequence library search are challenged.

2.3 DE NOVO

De novo sequencing is a database-independent method to derive peptide sequences directly from mass spectrometry data. Compared with the database method, it can analyze the mass spectrometry data of new species or unsequenced species. Common ab initio algorithms include PEAKS, pNovo +, Novor, etc. Due to the uncertainty of tandem mass spectrometry and the nature of amino acids, the accuracy of full peptide identification by de novo sequencing is lower than that by database search.

2.4 SEQ-TAG SEARCH

Sequential label search is a search method that combines de novo sequencing and database search methods. It was first proposed by Mann et al.in 1994 . Later, the emergence of algorithms such as GutenTag and InsPecT made the sequence label method gradually known. At present, the sequence tag method is widely used in the open search for post-translational modification identification. The common algorithms in recent years are Byonic, JUMP, Open-pFind, MODplus, TagGraph and so on.

3. MODIFICATION INDENTIFICATION

The four mass spectrometry data analysis strategies introduced above can be summarized into two categories : one is the use of database information, including spectral library search, sequence library search and sequence tag search ; the other is a database-independent ab initio sequence. Both the ab initio method and the database-based search method determine the final results by using the similarity scoring method of the theoretical mass spectrum and the experimental spectrum of the candidate peptides. They also have more in common in the identification process.

Although the de novo sequencing has the advantage of identifying unknown protein sequences, its identification accuracy is lower than the method of using database information search, and from another perspective, the de novo sequencing method is equivalent to facing the theoretically largest database, which contains all possible candidate peptides. Therefore, from the perspective of modification identification and discovery, for proteomics analysis of known sequence libraries, using database information to identify modified peptides and protein variants, the identification rate is more impressive, post-translational modification identification is more efficient, and it is more conducive to the discovery of unknown modifications.

The early sequence search strategy was carried out by the exhaustive brute force method, which is obviously extremely inefficient in the case of a large number of mass spectrometry data. Coupled with the low accuracy of the early mass spectrometer, almost most of the identification algorithms for modifications are limited to the laboratory stage, and support commercial software such as SEQUEST [9].Most of them also limit the identification of modifications to user-specified modification types. With the iterative upgrading of mass spectrometry instruments and the in-depth application of computer technology, proteomics has been further developed, and open search for large-scale modification identificationhas gradually attracted attention.

Usually, the conventional database search is called ' limited search ', and the search method for larger search space is called ' open search '. In 2015, Gygi et al. that the quality window range of ± 500Da is sufficient to cover 93 % of the known modifications in the Unimod library, and according to experiments, even in the case of a large quality window, the Target Decoy Approach (TDA), which is widely used in false discovery rate (FDR) estimation, is still available.

Because there are some differences in the quality of peptides or proteins before and after modification, the limited search essentially limits the identification of modified peptides and protein variants, while the open search takes into account the larger search space and supports a wider range of quality deviations, which can greatly help the exploration of modification discovery. At present, the modification discovery algorithms that can realize open search can be roughly divided into four categories : dynamic programming strategy, large quality window search strategy, ion index search strategy, and sequence label search strategy.

The dynamic programming strategy represented by MS Alignment is a dynamic programming algorithm that performs spectral alignment in turn by brutely exhausting all possible amino acid sequences in the database. The time complexity of this strategy is high, and it is not suitable for the identification of high-throughput and large-scale mass spectrometry data.

The large window strategy implemented by Gygi on SEQUEST [9] does not perform candidate pruning on the retrieval space, so its overhead is not easy to use directly. However, the idea of large mass window has been applied and developed in both ion index strategy and sequence label search strategy.

The ion index search strategy represented by

pFind2.0 and MSFragger uses fragment ion information to construct an inverted index of fragment ion mass-peptide sequence information. Only by traversing the peak information in the experimental spectrum, the possible candidate peptide sequence can be recalled at one time. In 2008, the pFind2.0 search engine developed by the Institute of Computing, Chinese Academy of Sciences completed the acceleration of the search process through ion indexing, but it was earlier at that time and did not achieve open search. In 2017, the MSFragger search engine developed by Nesvizhskii 's team realized open search by opening the candidate peptide quality window to a width of up to ± 1000 Da. However, because it recalls candidate peptide sequences by fixed fragment ion mass, it is not sensitive to peptides containing accidental modifications. Although the Nesvizhskii team developed a new version of MSFragger that is more sensitive to modification localization in 2020, which supports the identification of some C-terminal modified peptides, this strategy still has certain limitations on modification identification, which is determined by the ion index search strategy itself.

The sequence tag search strategy has been briefly described in the previous article. It has become the mainstream method used by search engines for modification identification. In recent years, the main search engines using sequence tag search strategies have Byonic, JUMP, Open-pFind, MODplus, TagGraph and so on. The sequence labeling method uses the continuous characteristics of fragment ions to construct a short sequence of a certain length in the mass spectrometry data, thereby recalling the candidate peptides through the short sequence. TagGraph, developed by Elias ' team in 2019, directly uses trusted de novo sequencing results, then performs short sequence segmentation, and then recalls candidate peptide sequences. In addition, reliable short sequence tags extracted from experimental mass spectrometry data can also be used for auxiliary identification of modifications. In 2008, MODi, developed by Paek 's team, began to use the concept of tag chains proposed by the team itself. The tag chains reconstructed by sequence tags can be used to further reduce the combinatorial explosion problem in the process of modification identification. Later, this method has been used on MODmap in 2009, MODa in 2012 and MODplus in 2019. The JUMP search engine developed by Peng Junmin 's team in 2014 also uses the quality of the two wings of the sequence tag to divide the modification identification interval, thereby reducing the time complexity of the modification location. In addition, the Open-pFind search engine developed by the Institute of Computing Technology of the Chinese Academy of Sciences in 2018, through the sequence labeling strategy, can also have a significant speed advantage on the basis of supporting the identification of missing and non-specific digested peptides in a large area.

4.CONCLUSIONS

In recent years, open search and sequence labeling strategies have shone in the field of large-scale modification identification, and search engines developed by various experimental teams have emerged in an endless stream. But the actual software that has been published is not necessarily perfect. For example, the running speed of Byonic and JUMP cannot meet the needs of current large-scale research, and TagGraph needs the results of de novo sequencing as input, which is also unbearable in terms of time overhead. Although Open-pFind supports modification localization and has extremely fast speed, it cannot support the discovery of unknown modifications and can only be interpreted as known modifications. The MOD series software, although the time overhead is acceptable, can also report the existence of mass shift, but it can not locate the unknown modification. At present, according to the large-scale statistics of the identification results of a large number of mass spectrometry data, it is found that there are still a large number of unexplained mass shifts, which indicates that there is still a huge space for mining the current mass spectrometry data. With the improvement of computer hardware level and the gradual improvement of mass spectrometer accuracy, the use of sequence tag strategy to mine and locate unknown modifications can greatly help humans continue to explore the function of proteins, which is a very meaningful work.

Therefore, in addition to the identification of unknown modifications, the identification of protein variants based on the open search strategy based on sequence tags, especially the identification of modification combinations on protein variants, is also a promising research field. In any case, the protein engine, as an analytical tool for protein sample identification, has an increasingly far-reaching impact on proteome data analysis.

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