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Research on The Reform of Applied Accounting Professionals

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Abstract: Higher education accounting professional teaching, application-oriented talent training aims to combine the needs of social development, respond to the requirements of the industry, accelerate the reform of professional education, and cultivate talents in line with the needs of the new era. Some colleges and universities have traditional methods of accounting professional talent training process, unclear grasp of school-running orientation, lack of talent professional skills training, insufficient degree of connection with enterprises, and unreasonable setting of students' practical ability standards, leading to the failure of the realization of applied talent training goals. In this regard, the following briefly describes the importance of cultivating applied accounting talents in colleges and universities, and explains the application of training mode reform and optimization measures for reference.

Key words: Applied Accounting; Major; Talent Training; Reform

At present, institutions and universities rely on the national programmatic document in the training of accounting professionals, set up relevant courses and organize practical activities according to the talent training objectives. However, the application-oriented curriculum is not obvious, and the curriculum system does not reflect students, leading to the low rate of students' professional certificates, coupled with the lack of rigor in the implementation process of the training program, practical teaching may become a formality, affecting the effectiveness of application-oriented talent training. In this regard, it is necessary to explore the reform path of accounting professionals in colleges and universities, improve the teaching situation and improve the quality of education.

1. THE VALUE OF APPLIED ACCOUNTING PROFESSIONALS

With the rapid development of science and technology, technologies such as artificial intelligence, big data and the Internet have come into being. In the digital environment, it has changed people's lives and put forward higher requirements for the ability of accounting talents. Accounting belongs to the core position of enterprise management, responsible for capital, financial supervision, decision-making and management. In the process of the gradual development of the accounting industry, the social demand for the accounting talent ability is also getting higher and higher. the establishment of platforms for

financial sharing, cloud accounting and accounting informatization poses challenges to the ability of accounting talents. Application-oriented talent training requires accounting majors to actively explore innovative ideas of talent training mode, so as to provide more technical personnel support for universities and promote the development of the industry [1].

2. CURRENT STATUS OF APPLIED ACCOUNTING PROFESSIONALS

In terms of accounting talent training, some colleges and universities lack the accuracy of school orientation, and fail to reposition the accounting talent training mode according to the characteristics of colleges and universities and the needs of economic development, leading to the low degree of fit between talent ability and the needs of enterprises. the training standard of accounting talents' practice ability is set too low, the teaching content lags behind, and the proportion of teaching practice content is not high, so it is difficult to reflect the characteristics of applied talents training. the examination rate of students' various certificates is not high, and it is relatively difficult to achieve the goal of double certificates. the rationality of the curriculum system is insufficient, it is difficult to reflect the "skill standard", the implementation of the talent training program is not strict enough, and the setting of the assessment plan is unreasonable, leading to the teaching practice becoming a mere formality.

3. ANALYSIS OF REFORM STRATEGY OF APPLIED ACCOUNTING PROFESSIONALS

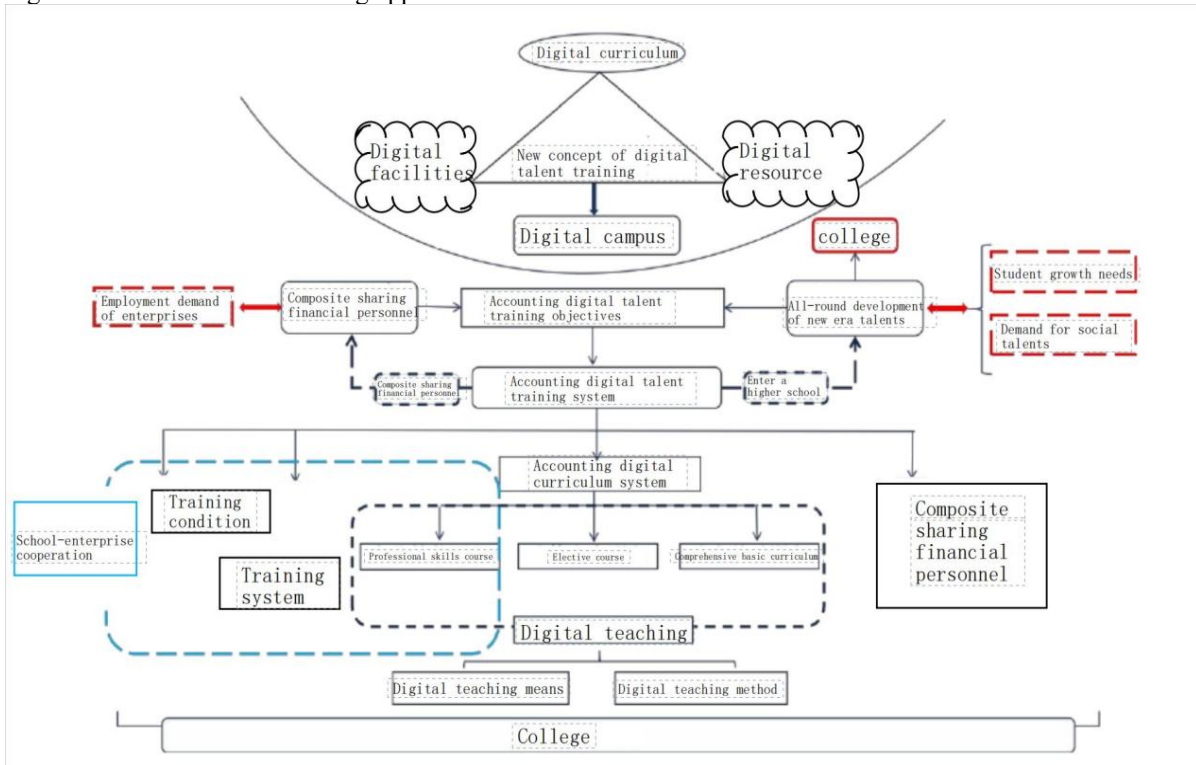
3.1 Accurately determine the orientation of colleges and universities

The purpose of cultivating application-oriented talents in colleges and universities is to promote the supply-side reform of education, adapt to the economy, and combine the differences in the needs of industrial transformation and innovation and development. the training of accounting talents should fit the professional characteristics and the economic development situation. Colleges and universities accounting professional in the process of education, to clear applied talents training orientation, talent training to have scientific literacy, humanistic quality, honest, and trustworthy, strong sense of responsibility, strong expression ability, understand accounting, economics and management discipline knowledge, innovation ability and practice ability of talent, after graduation in enterprises and institutions, financial institutions, intermediaries, government departments engaged in

accounting practice of scientific research, teaching, etc. the concept of running schools in colleges and universities is the direction of application-oriented talents. Therefore, colleges and universities should start from the perspective of local economic development characteristics, highlight the ability training of accounting talents, and use the characteristic education concept to provide strong support for the training of application-oriented accounting talents. the training of applied talents in accounting major should be demand-oriented and provide services for the local economic development. Due to the different level of economic development in different regions, the development direction is also different. Some regions are dominated by industry, while some regions are dominated by commerce, and some regions are mainly dominated by service industries, so new requirements are put forward for the

training of accounting professionals. If the regional economy is dominated by business, it is necessary to integrate business accounting into the scope of curriculum development and take it as the required course; if the regional economic development is dominated by service industry, it is necessary to provide service accounting, dominate the local industrial clusters, and take industrial process, industry cost accounting and accounting treatment as training programs to improve students' adaptability after graduation. In the process of talent training, the industry cost accounting and industrial cost management are mainly taken as the entry point, to ensure a high degree of agreement between the ability of accounting professionals and the local economic development, and to achieve the goal of application-oriented talent training [2]. Just as shown in Figure 1.

Figure 1 Flow chart of accounting applied talents in universities



3.2 Improve the curriculum system of accounting major

In the process of cultivating applied talents in colleges and universities, the reasonable setting of theoretical course and practical course is very important. In order to change the traditional curriculum setting based on accounting theory, colleges and universities should focus on increasing the proportion of credits and credit hours of experimental and practical courses. At present, some colleges and universities in order to reflect the accounting talent training applied characteristics, opened a basic practice course and practice, practice project accounting characteristics, such as accounting treatment (manual), software accounting processing, invoice, tax declaration, etc., the above content focuses

on accounting talent accounting ability training, and conventional difference between accounting experiment, practice course is not big, may be difficult to achieve applied talents training training requirements. In this regard, colleges and universities need to change the traditional course mode focusing on the training of talent accounting ability, use the principle of step by step, choose a variety of training methods, and gradually improve the level of accounting professional training programs. In the process of education, attention is paid to the standardized training of basic skills, and then the special skills training of basic accounting, cost accounting, financial accounting and audit is carried out. Finally, the virtual simulation experiment teaching

is carried out to cultivate students' accounting skills. After studying at school, students can enter the enterprise and complete the internship in the accounting position. After the above course training,

step by step to improve the comprehensive ability of talents step by step. Just as shown in Figure 2 and Table 1.

Figure 2 Flowchart of accounting application ability training

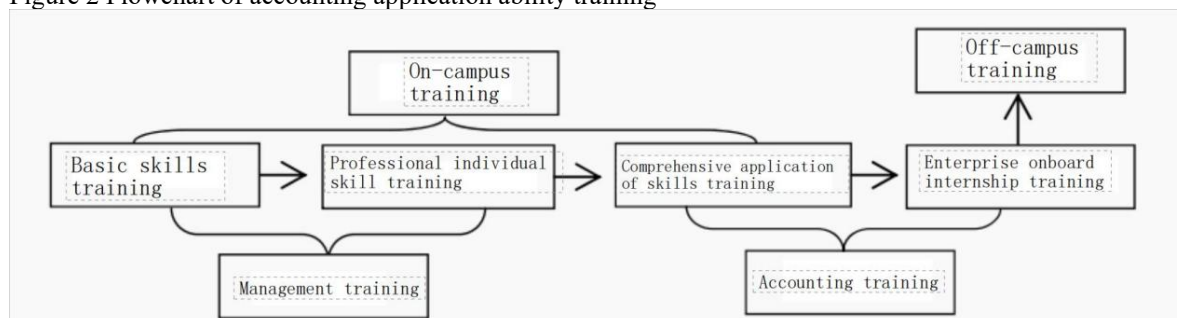


Table 1 Course Information Form of Applied Accounting talents

the type of course	course content	New content
Professional core course	Basic accounting, accounting computerization, tax-related accounting, financial regulations and accounting professional ethics, accounting cost practice, accounting practice operation	Cost management accounting, intelligent accounting, office automation, and financial software applications
Professional skills class	Commodity purchase and sales accounting, financial clerk, basic knowledge of economic law	Basic knowledge of tax calculation, payment and audit
Professional practical training class	True account copy do, real account real do	Comprehensive financial training
Off-campus internship	Internship with the post, and on-the-post practice	-

3.3 Encourage talents to participate in the vocational skills examination

The national accounting professional qualification belongs to the mark of socially recognized accounting professional ability, and is also a measure of the comprehensive level of accounting talents. In the process of cultivating applied accounting talents in colleges and universities, it is necessary to take whether the talents can obtain the accounting qualification as the standard and evaluate the working ability of the talents. Therefore, colleges and universities should strictly implement and implement the management system of "academic qualifications and vocational qualifications". the accounting vocational grade system is divided into three levels: primary, middle and high. According to the current management regulations of the accounting vocational system, college students can only participate in the primary accounting grade examination during school, and intermediate and senior students can only reach a certain working years and conditions after graduation. Colleges of higher learning may require accounting students to obtain a primary accounting qualification certificate before graduation. the examination includes the Accounting Law and Primary Accounting Practice. During the training of applied talents, accounting students are required to complete the examination course in the first semester of their sophomore year, and then sign up for the examination. After graduation, students can obtain the primary accounting qualification and have stronger employability. Asset

appraisal is one of the important types of work for accounting students, and the qualification of asset appraisal is also an important prerequisite for this work. At present, the policy allows college students to obtain the qualification of asset appraisers during the school, during the training of accounting professionals in colleges and universities, college students are encouraged to actively participate in the qualification examination of asset appraisers, and provide learning conditions, assist students to participate in the vocational qualification examination, and improve their employability [3].

3.4 Highlight the characteristics of moral education

In order to cultivate applied accounting talents, colleges and universities need to integrate moral education into the talent training index. Professional ethics is an important embodiment of moral education. Educators in colleges and universities should realize that society and enterprises have clear requirements for professional ethics of accounting talents, and should achieve the unity of knowledge and practice. To this, from the aspects of talent training content, to highlight the professional ethics requirements, talent accounting skills, professional ethics training, actively revised course content, accounting professional ethics into them, outstanding social responsibility, accounting professional ethics, credit management, business ethics, practice education stage, pay attention to the students to guide, make it clean in money management, payment accounts management to integrity, in the distribution process exquisite principle, through

employment guidance clear the relationship between individual interests and collective interests, let talent develop good professional ethics habits.

Colleges and universities can integrate ideological and political courses into their accounting professional courses, Improve the effectiveness of professional ethics education, According to the characteristics of the accounting major and the course content, Integrating professional ethics and professional courses, To explore the hidden moral education in professional courses, Change the traditional teaching mode of professional ethics, Using flipped classroom, case teaching method, and virtual simulation technology, Give full play to the application advantages of modern teaching methods, such as big data and the Internet, Let the students be the protagonists in the class, Clarify the quality of excellent accounting personnel to have, What kind of moral dilemma may the accounting position encounter, Make the right choices in a particular situation, Do not do anything against the professional ethics. In addition to classroom education, professional ethics education should also build an education platform with accounting firms to integrate with the market. Students should adopt professional ethics management, clarify evaluation tasks, set evaluation indicators, and improve the effectiveness of professional ethics education through evaluation. For example, accounting students can investigate the events related to accounting professional ethics in the enterprise, and think about the importance of the practice of abiding by professional ethics through the survey results; the school can employ enterprise experts to analyze professional ethics in the school and use the research cases, publicity board and other carriers to publicize the cases of violating professional ethics and create a cultural atmosphere on campus [4]. In addition, colleges and universities should pay attention to the ideological and moral training of accounting professional teachers, and give full play to the exemplary role of teachers, because the main body of moral education is teachers, and students are the subject of receiving education. In the learning process of accounting major students will be subtly influenced by professional teachers. Therefore, it is very important to play the role of teachers in teaching by words and deeds. Colleges and universities should spare no effort to build a team of high-quality accounting professional teachers, focus on improving teaching ideological and moral quality, integrate teachers' ethics into teacher assessment projects, establish a long-term mechanism, make teachers realize the importance of improving professional ethics, update their educational concepts, and infiltrate accounting professional ethics into students. Accounting teachers should actively participate in the training related to professional ethics, carry out temporary post practice in enterprises, clarify the moral difficulties that accounting industry personnel may encounter, know the solution to problems, enrich their

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knowledge reserve in professional ethics, provide effective guidance for students, and implement the requirements of moral education. **3.5 Optimize the talent training mode**

The "1+X" certificate system requires students from institutions of higher learning to obtain several vocational skills certificates while completing professional courses, integrating academic education and vocational skills training. There are relatively many professions in accounting majors, and the training of applied talents can rely on the "1+X" certificate system to optimize the talent training mode. Taking an institution of higher learning as an example, the university obtained the "1+X" intelligent pilot. In order to improve the comprehensive ability of accounting talents, the university launched the following exploration in the process of talent training: First, the formulation of the talent training program, according to the requirements of the "1+X" system, the accounting professional skills courses are integrated into the accounting professional talent training program, improve the accounting talent training system, ensure the high connection between the certificate and the course module content, and prevent the unreasonable curriculum.

Second, the proportion of accounting practice courses is increased. Under the requirements of the "1+X" system, the corresponding practical training and assessment modules of each level certificate are different. 90% of the primary, middle and advanced assessment modules are practical. For example: the primary certificate assessment of intelligent finance and taxation, there are three assessment modules, one is to share the primary agency practice, the other is the social sharing of outsourcing services, the third is the social sharing enterprise butler, almost the assessment content is practical, requiring students to complete more than 136 class hours. For intermediate and senior certificates, students are required to complete 240 class hours. Colleges and universities integrate the content of accounting grade certificate examination with the training process of accounting professionals, and need to increase the proportion of practical teaching to make it reach 45% of the whole course, reflecting the transformation of course content setting to application-oriented aspects.

Third, the certificate course should be taught to highlight the skill standard and improve the curriculum system. "1+X" system, X content from the real business, usually real business as direct teaching content, need to process, the accounting work into the teaching site, according to the situation analysis, determine the accounting students professional skills training, during the teaching process, teachers should first analyze accounting tasks, combined with post ability requirements, integration of student post required knowledge and skills, make it in line with the students learning rule course, outstanding accounting professional skills for the course system [5].

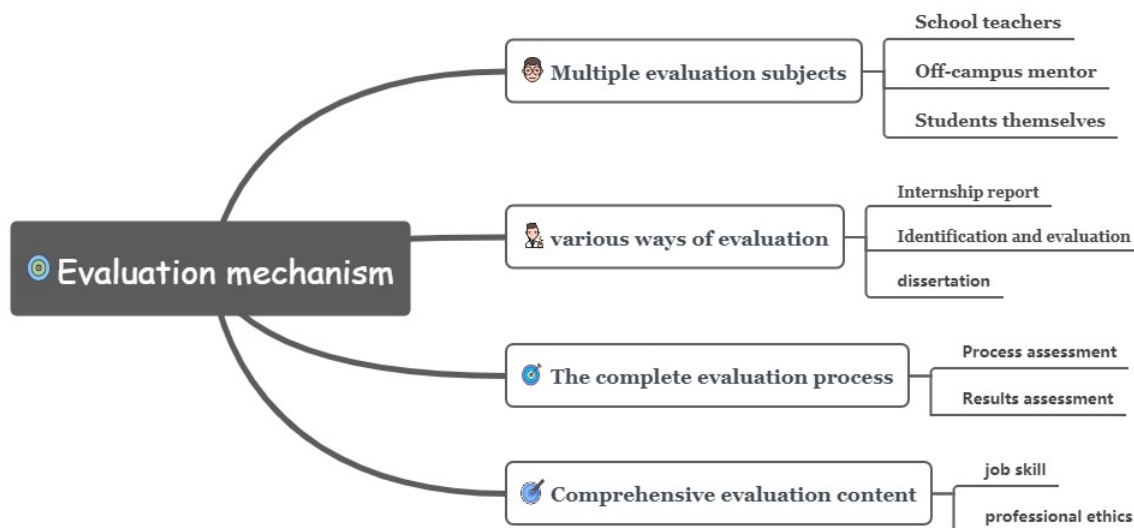
Fourth, integrate intelligent financial and tax grade certificate into the process of accounting education to improve the pass rate of talent certificate. In the process of accounting professional teaching, intelligent finance and taxation and other certificate education, the university should establish a perfect curriculum system, ensure the convergence of courses, reasonably allocate the class hours, optimize the students' learning methods, provide them with learning or training sites, and ensure the rationality of the allocation of teachers. Combined with the evaluation and organization arrangement of intelligent finance and taxation, students are required to participate in the training and assessment for four times a year, and accounting students should participate in the study and assessment for many times, so as to improve the acquisition rate of professional certificates. Integrate talent training and certificate assessment to provide support for the improvement of students' professional ability, just as shown in Table 2

Table 2 Application effect table of accounting talent training mode in colleges and universities in 2022

Number of participants in 2022	Number of first certification examinations	Participate in colleges and universities	General practice pass rate
29922	12162	215	57.68%

3.6 Improve the talent assessment mechanism

Figure 3 Assessment Mechanism mechanism of applied talents



The training mode of applied accounting talents has changed, and the quality assessment mechanism of talent training should also change accordingly. the setting of the evaluation mechanism should consider the talent application ability, choose a variety of evaluation methods, enrich the evaluation forms, and improve the assessment mechanism. From the perspective of the assessment subject, Rerequisite for school teachers, the joint participation of the cooperative unit personnel, Assess students' learning results; For the comprehensive training content, Can be evaluated by each other between the students assessment; From the perspective of assessment mode, By training differences, Set up the different assessment methods, Such as internship report, graduation design, professional qualification certificate, professional defense and internship diary; From the perspective of the assessment process, Attention to the integrity of the assessment process, Using the process evaluation, Break through the deficiency of the traditional outcome evaluation; From the perspective of the assessment content, To involve the students' professional skills, professional quality, working ability, working attitude, Improve the talent evaluation and assessment mechanism, To conduct a fair, fair and comprehensive evaluation of the training of applied talents. Figure 3 Assessment Mechanism diagram of applied talents:

4. CONCLUSION

In summary analysis, accounting professional teaching of higher learning, applied accounting talents training to clear school orientation, improve the curriculum system, encourage talents to participate in professional qualification level certificate examination, combined with the economic development demand for talent training plan, highlight the talent training khalid ents, the application of "1+X" system as the carrier, improve the talent training plan, promote the reform of college

education, show applied accounting talent training characteristics, provide more talent support for regional economic development.

REFERENCES

[1] Zou Yuyou, Kong blue blue. the optimization path of accounting professional talent training in agricultural and forestry universities under the background of new agricultural science [J]. Green Accounting, 2023(05):23-24.

- [2] Han Jing, Zhou Jianshan. Innovative research on the training mode of Big Data and Accounting talents in Higher Vocational Colleges under the background of transformation [J]. Accounting of Township Enterprises in China, 2023(01):186-189.
- [3] Xue Jin. Analysis of the training and reform path of higher vocational Accounting professionals in the Era of Cloud Accounting [J]. Science and technology wind, 2022(01):50-52.
- [4] Yu Junlin, Du Lingfeng, Zhou Yuzhi. the dilemma and countermeasures of accounting professional talent training in local ordinary undergraduate universities under the background of applied transformation [J]. Journal of Yichun College, 2021, 43(08):58-61.
- [5] Mo Jingcong, Zhang Jingxin. Study on the path of accounting professional ethics training in applied colleges under the perspective of Lide education [J]. Foreign trade and Trade, 2021(06):132-134.

The Sustainability Report of Jujube-Sweet Cottage

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Abstract: Having collected significant information from a small organization, this sustainability report is designed to make suggestions that correspond with the business sustainable theory for converting this business into a sustainable one after demonstrating actual procedures and practices.

Since February 3th 2012, Jujube-Sweet Cottage has established itself as an agricultural industry. This report will mainly involve nine components which are a brief overview, an operating cycle, an input-output chart, a triple-bottom-line reporting analysis based on best practices in the agricultural industry, a new product and distribution system design in the form of a closed-loop diagram, recommendations to improve social performance, a concluding discussion of barriers and how to overcome them.

Keywords: Business Sustainability, Agriculture, Renewable Energy, Recycle, Energy Saving

1 THE BRIEF DESCRIPTION

Jujube-Sweet Cottage is a small organization from Wanliangsi village, Cangzhou city which is named “the hometown of Jujube” in China. As for its core activities, Jujube trees are grown and maintained by farmers in a wide field. When the Jujube fruits ripen, farmers harvest all the fruits and dry them up under the sun. After all the procedures, the organization takes the delicious fruit- Cangzhou golden *Ziziphus jujuba* cv. *jinsixiaozao* as the main product [1].

Jujube-Sweet Cottage is a small organization from Wanliangsi village, Cangzhou city which is named “the hometown of Jujube” in China. As for its core activities, Jujube trees are grown and maintained by farmers in a wide field. Then, when the Jujube fruits ripen, farmers harvest all the fruits and dry them up under the sun. After all the procedures, the organization takes the Cangzhou golden *Ziziphus jujuba* cv. *jinsixiaozao* as the main product.

Jujube is a characteristic fruit in China that is popular with its delicious taste, bright red surface, and thin skin but full flesh. Concerning the aspect of regimen, *Jujuba* also has great value in nutrition, which is beneficial to beautify skin and strengthen bodies. Therefore, it is evident that *Jujuba* has a bright market prospect. In Jujube-Sweet Cottage, the products are sweeter, brighter, and more organic with nearly zero chemicals. When it comes to its target, the manager told me they aim to provide more natural and fresher Jujubes for customers, just as shown in figure 1 and 2.

Figure 1 Sweet Jujube for direct eat



Figure 2 Dried Jujube



2 OPERATING CYCLE TEMPLATE

As Jujube-Sweet Cottage is an agricultural foundation where farmers grow the Cangzhou golden *Z. jujuba* cv. *Jinsixiaozao*, I select the growing cycle. This cycle includes eleven procedures that illustrate the detailed course of activities. Above all, to prepare for the growing activities, Jujube-Sweet Cottage purchases the necessary materials like nursery stocks, fertilizer, and tools from agricultural supplies.

After items are transported into the organization, the core activities start. Farmers use the grafting technique that can create sweeter fruit to plant the jujube trees. Then, they start watering, plowing, and fertilizing. As for crop maintenance, in case of insect diseases, farmers should spray the pesticide in time. Besides, regular watering and fertilizing are also significant. There are two selections for harvest. One is farmers picking up the fruit by hand for direct eating. However, if there is a great demand for dried fruit, the other one is fruits are dropped down as planters shake the trunks.

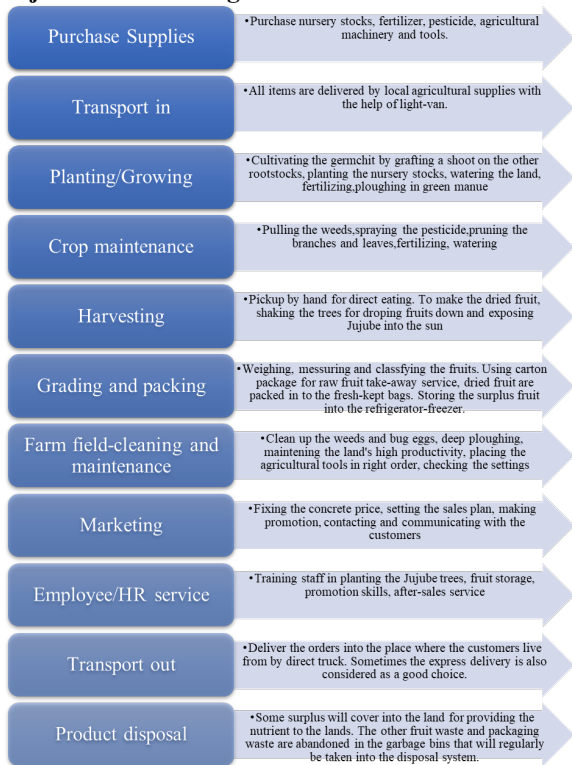
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Then, fruits are exposed to strong sunlight for drying up [1].

After planting activities, staffs weigh and pack up the fruits. Then, before delivering products to customers, they have to clean up the foundation, communicate with customers, and accept the training about how to provide better food service. Eventually, the waste and surplus are pushed into the disposal system.

The growing cycle presents details about specific steps in the following graph. This diagram includes eleven procedures that illustrate the course of activities, just as shown in table 1.

Table 1 Detailed Annotation for Growing Cycle in Jujube-Sweet Cottage



3 INPUT-OUTPUT CHART

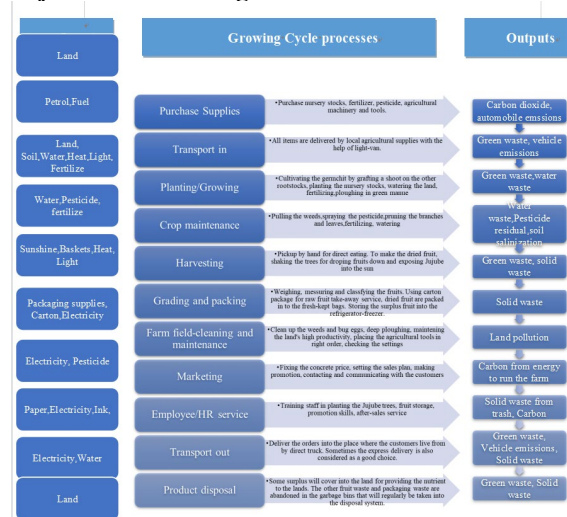
According to the detailed growing cycle processes, I make out the chart of inputs and outputs in Jujube-Sweet Cottage below. Having shown in the chart following, as an agricultural organization, natural resources like land, soil, heat, light, and water are the main inputs. These natural resources are the essential parts that contribute to planting Jujube trees. Land provides the place. Soil provides nutrition. Heat and light promote photosynthesis. Besides, there are also other inputs. Petrol and fuel make the vehicle run. When using the machine or storing the fruit, electricity is also critical for keeping them up [2]. Regarding the outputs, land pollution is the main problem. the use of broad irrigation not only leads to water waste but also attributes to soil salinization(Hackett 2022). Green waste is also common because some fruit would be destroyed or left when transported, harvested, or failed to be sold out.

There are vehicle emissions and carbon dioxide because of transportation. the trash like plastic and carton becomes solid waste. Because of the world's limitation, others will not be described in detail, just as shown in figure 3 and table 2.

Figure 3 Soil Salinization



Table 2 Input/Output Chart for Grow Cycle in Jujube-Sweet Cottage



4 SUSTAINABLE BUSINESS BEST PRACTICE

Triple bottom lines theory concentrates on sustainability. Under the requirements of this theory, any business should weigh its activities on three aspects: economic sustainability, social sustainability, and environmental sustainability (Moscardo etal. 2013). In order to find practical ways to help Jujube-Sweet Cottage become sustainable, I did some research on sustainable best practices and benchmarks from websites. These best practices lined with the triple bottom lines will be introduced as follows.

4.1 Environmental

By utilizing renewable resources like solar energy for production, fossil fuel is taken place and the process of desalination pushes forward. This is beneficial for building an environmentally-friendly society. With the innovative technology-the Sundrop System, Sundrop breaks agriculture's dependency on finite resources using nature (Sundrop n. d.). This

organization utilizes concentrated solar power (CSR) to turn seawater drawn from the spencer Gulf into fresh water for irrigation. This action increases the utilization of water resources and pushes forward the process of desalination.

Besides, the steam generated from the CSR is taken to provide electricity by feeding into a steam turbine. Electricity is widely needed to power critical equipment in the greenhouse. Furthermore, Sundrop also uses CSR for providing heat to the greenhouse so the fruits have rapid growth and avoid freezing to death. This method even reduces the reliance on burning fossil fuels. Therefore, less carbon dioxide and harmful gas exist.

All in all, by developing technology that integrates solar power, electricity generation, freshwater production, and hydroponics (Sundrop n. d.), Sundrop produces better quality, good taste, and non-genetically modified fruits. This action corresponds with the theory of Eco-efficiency principles (Benn 2021) that said “Focused on stocks and flows of ecological materials (in this passage is solar energy) and their efficient usage in technical production (Concentrated solar power) and consumptions systems, by optimizing material and energy flow”, just as shown in figure 4.

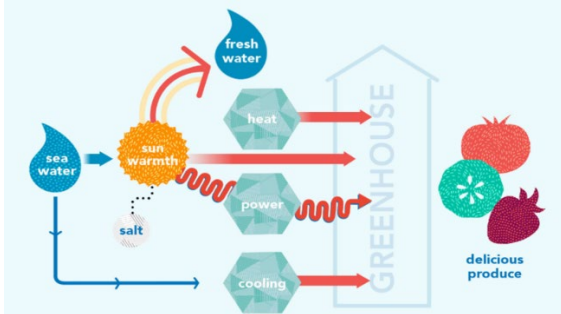


Figure 4 the system of Sundrop farms

4.2 Social

By implementing practical measures for efficient transport, noise and air pollution will be solved. Surrounding citizens will live in a better environment [3].

The local government throughout California declared some practical measures for efficient transport. the measures include constructing the infrastructure for electric vehicle charging and natural gas vehicle fueling for agency vehicles and the community (Institute for Local Government 2022). This policy also broadens the views on agriculture. More clean and renewable energy like natural gas, hydrogen, and electricity should be fed to the transport vehicle instead of the fuel and fossil resources nowadays.

Besides, with respect to California’s practices, it mentioned: “make reducing vehicle-miles traveled (VMT) high-priority criteria in the program, and project proposals and alternatives (Institute for Local Government 2022). ” Producers try optimizing the traffic routes to reduce vehicle emissions and noise pollution.

4.3 Economic

By adopting drip irrigation where a perfect number of water and nutrients are directly delivered to roots, plants achieve maximum growth. the gain of agricultural production adds value and economic income [4].

Israel’s drip irrigation is an ingenious invention that works by delivering water and nutrients through pipes called “dripper lines” with smaller units called “drippers” (Hasbara 2021). For saving water and getting off soil pollution-soil salinization, this special design structure only allows the correct amount of water and nutrient to leak directly into the roots of plants at the right time. Therefore, the plants are given the perfect number of nutrients required so that is possible to achieve maximum growth. What is amazing is that the amount of water is dynamic but not still which can be altered for the circumstances. This makes the increase of crop fields possible. the limited output of water averts unnecessary waste. the idea of watering directly into the roots also prevents the water table from rising rapidly. In conclusion, this method improves the dilemma of soil pollution and water waste and realizes their efficient management of them, just as shown in figure 5.

Figure 5 Drip irrigation



5 IMPROVEMENTS IN THE DESIGN

5.1 Improvements to the product design:

5.1.1 Drip irrigation is an ingenious invention for saving water and improving the dilemma of soil salinization and land subsidence.

It efficiently waters plants by delivering the correct amount of water and nutrients through pipes called “dripper lines” with smaller units called “drippers” to leak directly into the roots of plants at the right time, which makes it possible to achieve maximum growth for the plants (Hasbara 2021). After using drip irrigation instead of flood irrigation, the level of groundwater will decrease so that the salt won’t accumulate on the surface, and water is saved. Besides, with the possibility of achieving full growth, Jujube will be juicier and sweeter [5].

This design corresponds with the fourth principle of natural capitalism-reinvest in natural capital. Natural capitalism is an economic system that incentivizes profit based on proper care of the environment and

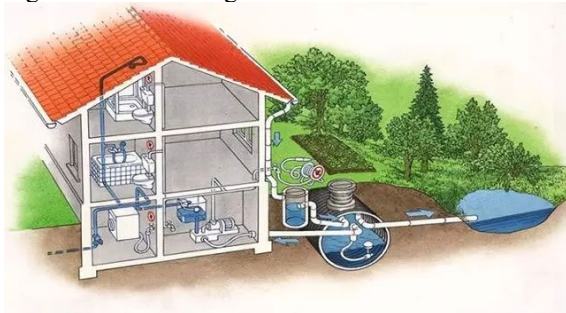
assigns an economic value to stewardship of the planet (SustainableSA 2022). By adopting drip irrigation, Jujube-Sweet Cottage can attract more customers with a fresher taste and also protects the environment.

5.1.2 Install water storage from rain and use it in watering the Jujube plants.

This method is a wonderful solution to the shortage of water in Jujube-Sweet Cottage. Besides, using nets to collect water from the air is also an intelligent way with lower cost. By employing these designs, more water resources can be saved and farmers can reduce the usage of groundwater. Therefore, the fruits will become succulent and luscious [6].

These designs conform to the biomimicry principle. Biomimicry aims to take inspiration from natural selection solutions adopted by nature and translate the principles to human engineering (you matter 2020). the method that uses nets to collect water from the air is an imitation of the *Stenocara* beetle shell. Under the cover of small, smooth bumps, *Stenocara* takes the bumps as the points for condensed water or fog. This is the original theory of collecting water from the air by nets, just as shown in figure 6.

Figure 6 Water storage from rain



5.1.3 Compared with the past chemical pesticides and chemical fertilizers, I suggest selecting a sustainable supplier with organic fertilizer and biopesticides.

Organic fertilizers are those fertilizers that are sourced from plants and animals like vermicompost, manure, and bone meal. Biopesticides are those pesticides that generate from natural sources or self-made mixtures from organic soaps and ethanol, such as neem, salt spray, and Chrysanthemum Flower Tea. These organic substitutes are easier to degrade and have more nutrients but less toxic residuals, which creates more organic, healthier, and fresher Jujube.

The reinvesting of organic fertilizers and biopesticides accords with the principle of natural capitalism. Because this design makes use of natural resources to create profits and does something good to the environment.

Choose a local sustainable supplier with organic fertilizer and biopesticides. Utilize nets to collect water from the air for growing succulent and luscious fruits. Install LED light for night growth of plants [7].

5.2 Improvements to the distribution system:

5.2.1 As for the packaging materials, choose reusable and biodegradable foam boxes rather than carton boxes or plastic kept-fresh bags.

The foam boxes will be collected again after customers use them and will be devoted to the packaging again. Not this way only prevents deforestation and can organically decompose in nature, but also saves the package cost. Recycling is such an environmentally-friendly way that increases the sustainability and efficiency of packaging utilization.

Cradle to cradle protocol envisages their redesign into circular nutrient cycles through production systems in which value, once created, remains of worth to both man and nature (INNOCHEM 2022). This recycling method applies to the principle of cradle to cradle, just as shown in figure 7.

Figure 7 Biodegradable foam boxes



5.2.2 Use clean energy like hydrogen, solar, and electricity to fuel vehicles as substitutes for petrol, which conforms to the principle of dematerialization.

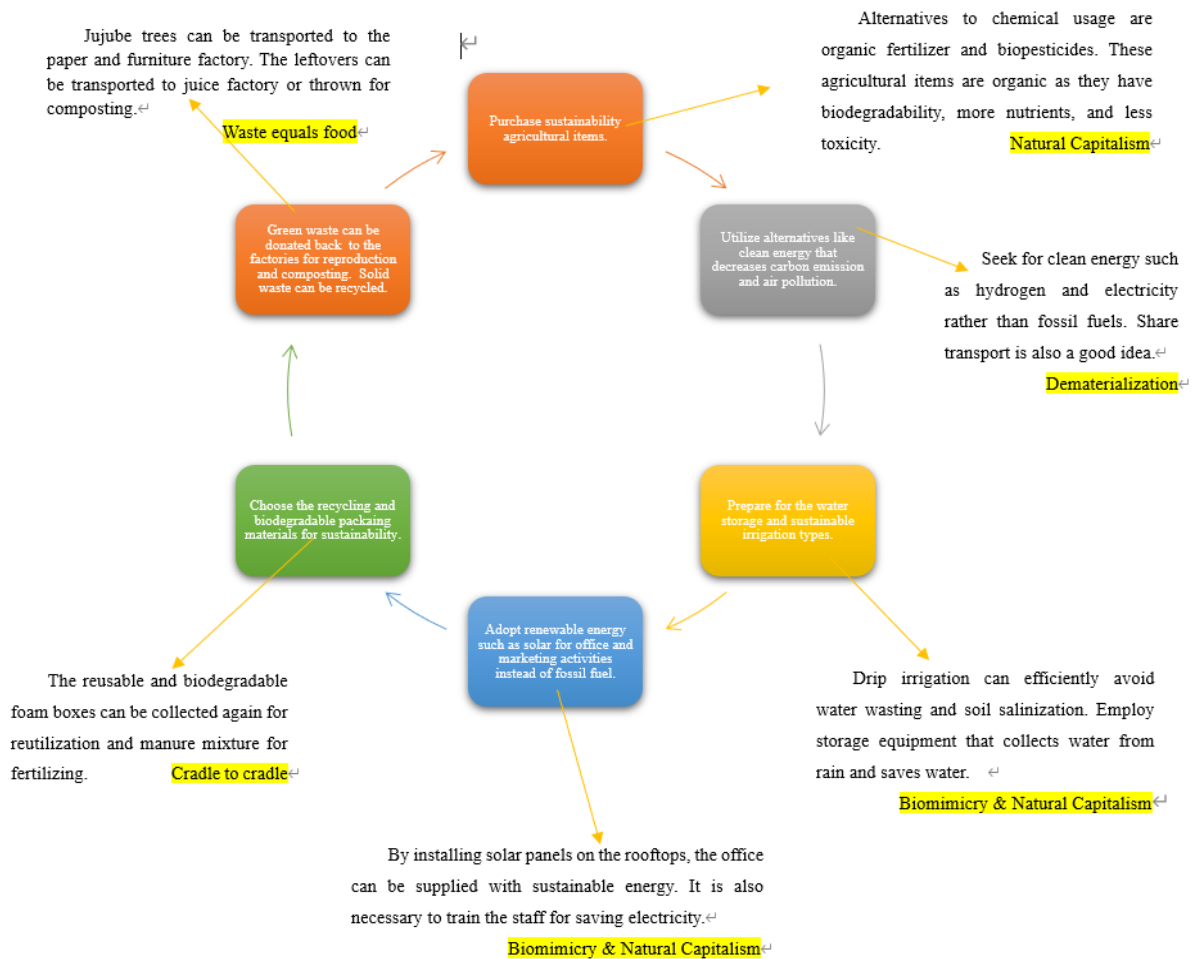
Dematerialization is defined as the reduction of the quantities of materials needed to serve an economic function, or the decline over time in the mass of materials used in industrial end products (Wernick et al., 1999). With the use of clean energy, we can reduce the use of fossil fuels [8].

5.2.3 Regarding the leftovers like Jujube trunks, fruits, and even packaging material, I advise adopting the principle of waste equals food rather than landfill.

Waste equals food means the redesigned economic systems operate in which there is no such thing as waste (McDonough 1998). Instead of throwing into a wasteyard, Jujube trunks can be transported into the furniture factory as raw materials. Jujube fruits that haven't been sold can be the source of the Jujube juice factory or become green waste. the leftovers of packaging can be recycled again.

By not outputting waste, Jujube-Sweet Cottage utilizes these materials to maximum potential.

Transport Jujube trunks into the furniture factory as shortening distance in transport, just as shown in table raw materials. Choose the optimal routine for 3. Table 3 Cradle-to-Cradle Design for Jujube-Sweet Cottage



6 SOCIAL IMPACTS

As Jujube-Sweet Cottage [9] is a small organization, it is positioned as a community social entrepreneur whose target is to serve the social needs of a community within a small geographical area. (Net Impact 2021)

Figure 8 Working farmers



The internal social impacts have been identified as agriculture is extremely hard work. On the one hand, employees work from dawn to dusk all year round. On

the other hand, they have to farm under the intense heat in summer, just as shown in figure 8.

Jujube-Sweet Cottage [10] is advised to supply healthy and abundant diets which must include fruit, vegetables, legumes, nuts, and whole grains. The free diets can replenish enough energy for tired farmers.

Besides, it is also necessary to set up a shelter for farmers to rest and avoid intense sunlight. The shelter should also provide pure water, fruit, and even air conditioning. This gives farmers the opportunity to have breaks during busy work.

The external social impacts have been identified as entrepreneurs should donate profit back to the community for improving the living lives of residents. It is recommended that Jujube-Sweet Cottage should help the community build an orphan home for homeless kids who suffers abandonment by donating funds. Jujube-Sweet Cottage can also paste posters of homeless kids on the Jujube package for seeking their adoptive parents. These actions give the children the opportunity to find a home.

It is also a good idea that Jujube-Sweet Cottage donates some profit back to rebuild and repair infrastructure which provides a better living community for residents. The actions have a dual purpose that not only improves positive social impacts but also attracts more customers who have strong customer loyalty [11].

7 THE CONCLUDING DISCUSSION OF BARRIERS

According to the sustainable closed-loop system, transformations for Jujube-Sweet Cottage are major in technical aspects, like installing drip irrigation equipment, solar panels on rooftops, biodegradable foam packaging materials, and a water storage system from rain.

Therefore, the main barrier to sustainable transformation is how to break through key technology and obtain patent rights. If Jujube-Sweet Cottage doesn't acquire patent rights, it's illegal to utilize specific technology. Furthermore, the lack of key technology will block the critical stage for becoming sustainable and utilizing renewable energy. the technical barrier has to be settled at once. the detailed suggestions for overcoming barriers are stated as follows.

Devote more capital to the study of establishing drip irrigation systems and solar power energy. By training and educating employees concerning sustainable practices and processes, farmers accumulate professional skills for growing Jujube in a more sustainable and highly efficient way. Employ agricultural experts and specialists for overcoming technical difficulties in sustainable practices like solar panels and water storage systems. For legal purposes, it is also advised that Jujube-Sweet Cottage directly outsources the biodegradable foam packaging materials from supplies that have patent rights [12].

REFERENCES

[1] Benn, Suzanne, et al. (2021). Sustainability. Taylor & Francis, p. 56.

[2] Hasbara Fellowships (2021), Drip Irrigation: Israel's Ingenious Invention - Hasbara Fellowships, Hasbara Fellowships website, accessed 25 September 2022.

[3] Hawken, P., Lovings, A. and Lovins, L. H. (1999), Natural Capitalism: Creating the Next Industrial Revolution, 1stedn, Little Brown and Company, New York.

[4] INNOCHEM (2022), Cradle to Cradle: INNOCHEM Wasser GmbH (innocchem-online. com), innocchem website, accessed 30 September 2022.

[5] Institute for Local Government (2022), Sustainability Best Practices Framework - Institute for Local Government (ca-ilg. org), Institute for Local Government website, accessed 25 September 2022.

[6] Liu, P 2022, 'The Sustainability Report of Jujube-Sweet Cottage', unpublished creative writing assignment, Southern Cross University, Lismore, NSW.

[7] McDonough, W. & Braungart, M., 1998. the next industrial revolution. the Atlantic Monthly, 282(4).

[8] Moscardo, G., Lamberton, G. & Wells, G. et al. (2013) Sustainability in Australian business: principles and practice, Chapter 1, pp. 3–12. Milton: John Wiley & Sons.

[9] Net Impact (2021), The Four Types of Social Entrepreneurship | Net Impact, Net Impact website, accessed 8 October 2022.

[10] Sundrop (n. d.), Our Technology - the Sundrop System - Sundrop Farms, Sundrop website, accessed 24 September 2022.

[11] SustainableSA (2022), Natural Capitalism - SustainableSA. com (sustainablesanantonio. com), SustainableSA. com website, accessed 30 September 2022.

[12] Youmatter F (2020), What is biomimicry? Definition and examples of biomimicry (you matter. world), you matter. world website, accessed 30 September 2022.

The marketing strategy of Singapore Airlines

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Abstract: The purpose of this marketing program was to evaluate Singapore Airlines' marketing strategy in the local market. the airline is the national carrier of Singapore and the most influential airline in the region. This report aims to analyse various aspects of Singapore Airlines' marketing strategy, where key models such as PESTEL and SWOT are used in the scenario analysis to provide detailed information on the external environment that affects the company's operations, such as competitors. In addition, the internal factors that affect the current marketing strategy decisions of Singapore Airlines will also be analyzed. In addition, with the help of the SMART key model, a deliberate study of marketing objectives is carried out to determine the necessary marketing strategies to meet market demand and enhance the company's brand image in the minds of consumers. Thereafter, the report points out that the methods of estimating budgets, monitoring the implementation of plans, the strict management of factors that would lead to the exclusion of the possibility of negative results, etc., provide constructive suggestions for the development of a successful marketing strategy. Relevant tables and data sources are included in order to illustrate the information in the report more effectively.

Keywords: Airline, Marketing, Analysis, Strategy

1. INTRODUCTION

The purpose of this article is to provide a detailed analysis of the macro and micro environment of Singapore Airlines. SIA is one of the major international airlines and, with the support of the government, is a key player in the Singapore aviation market. It caters primarily to the international travel market and has a number of subsidiaries. Singapore Airlines has shown a stable entity in the Asian and Australian markets, especially in Southeast Asia, and is expanding in the North American and the Middle East market (Singapore Airlines, 2019). the objective of the analysis is to illustrate the efficiency of the company's operations in the current market environment. Furthermore, the purpose of this report is to identify strategic issues and opportunities that are likely to be delayed due to the company's lack of business areas, as well as the recent market direction. Following the analysis, the report sets out the strategic objectives for solving the problems and plans the strategies and tactics to achieve the desired objectives. In order to implement the strategies and tactics, a

comprehensive action plan is developed and finally a short control plan is presented [1].

2. SITUATIONAL ANALYSIS

2.1 PESTES analysis

2.1.1 Political

Singapore is considered to be a politically stable country that is very friendly to businesses managing in the country. In particular, the airline tourism industry, the Singaporean offers a lot of help and plans for constant expansion (Kaur, 2018). Moreover, the Singaporean government has a 60% share in the voting rights of the airline. Therefore, the national government has invested a lot of effort in Singapore Airlines [2] (Singapore Airlines, 2014).

2.1.2 Economic

Singapore's economy has been ranked among the top in Southeast Asia. There is a greater dependence on trade development (BBC, 2018). the Gini coefficient of country has been stable amidst growing per capita household income (Statistics Singapore, 2018). However, the prices of petrol and fuel have risen significantly over the past year (Trade Economy, 2020). This has caused airline revenues to plummet and airlines, including Singapore Airlines [3], have had to raise fares in response (The Straits Times, 2018).

2.1.3 Social

The management orientation of airlines is gradually changing, influenced by social conditions. the affluent members of society pursue high- end and comprehensive services, preferring comfort and entertainment while travelling (Shafer and Victor, 1997). However, since the 1990s, the continuous increase in people's incomes and their increased disposable income has meant that more and more people can afford to travel by air, something that was previously unimaginable. At the same time, the continuous influx of LCC and the expansion of the aviation market have gradually led consumers to move away from high-end travel methods in favour of low-cost travel. Therefore, as a high-end marketing strategy, Singapore Airlines also realised that it needed to choose to integrate into the low-cost airline market in order to better meet current needs. (Air Transport World, 2014)[4].

2.1.4 Technological

Singapore Airlines have evolved technologically, with constantly improved cabin equipment making the airline safer and more competitive during long distance travel, and suppliers have spent effort on research and development (Powley and Peggy, 2015). As a result, technological innovation has also allowed Singapore

Airlines to make a good impact in the industry with a young fleet, having adopted innovative technology as an advantage, such as electric footrests, pneumatic lumbar cushions, and a "Silver Edge World" personal entertainment system in every seat (Singapore Airlines, 2020).

2.1.5 Environmental

In Singapore, due to growing concerns about environmental protection, such as the country's goals in reducing carbon emissions and the continued rise in global energy prices (Heracleous and Wirtz, 2014), the general public is beginning to prefer and choose companies that are better able to meet their environmental obligations, and this preference will continue to grow. This is evident in the response to a survey by the World-Wide Fund for Nature, which showed that approximately 70% of people strongly resist substances that are bad for the environment (Hicks, 2019). Singapore Airlines has begun to address the issue of environmental pollution by incorporating the reduction of carbon emissions and ensuring environmental sustainability into its marketing plans and corporate social responsibility policies. This has created a good corporate image in the minds of some consumers who are already aware of sustainability [5].

2.1.6 Legal

There are strict legal and policy requirements for governments in terms of the regulatory framework for airlines. Different countries also take different strategic approaches, for example, the United States has seen a marked change in the way passengers are regulated for air travel screening in the wake of the 9/11 terrorist attacks (Heracleous and Wirtz, 2014). Airlines need to comply with the letter of the law, from engaging the proper use of aircraft to taking countermeasures that will ensure the passengers safe (Singapore Airline, 2019).

2.2 Porter's five forces analysis

2.2.1 Threat of new entrants

Competition from most other companies both domestically and overseas has saturated the airline industry and as a result, regions are limited to one or two state-run airlines with government support and assistance, thus some powerful airlines gain monopoly dominance and new entrants pose a threat that is significantly mitigated (Guizhou Province and Parrot, 2014). At the end of the day, new airlines report the prerequisite of investing a lot of money and long-term preparation. This means that many new airlines fail for a reason. While new entrants are vulnerable in all areas of long-haul airlines, we have seen the success of new entrants such as low-cost carriers in short-haul passenger transport [6].

2.2.2 Threat of substitutes

With globalization, there is increasing investment in various modes of transport between major geographical hubs, for example, the possibility of high-speed rail links between major Eurasian cities in the future (Richards, 2012). In addition [7], the

proliferation of internet and real-time communication technologies and the increase in virtual businesses, the tendency of some business travellers to move remotely instead of wasting time working from home, also make up the passenger market in Singapore. Airline consumers have a variety of options to choose from and threats.

2.2.3 Bargaining power of customers

Providers of products and services must pay particular attention to the needs and requirements of their customers if they are to expand and maintain their market share. Customers in the airline industry have strong negotiating power. The cost of switching between airlines is very low. By switching costs, we mean the emotional, financial and time costs that customers feel when choosing a supplier. The industry believes that with the reduction of airline offices and travel agencies and the popularity of the internet. In recent years, the cost of connecting passenger flights has dropped significantly (Lim and Lee, 2012). With almost all airlines, passengers can search, book, and pay for tickets on standalone web sites and mobile apps, and passengers holding tickets search Priceline.com and XieCheng app etc. using web sites and apps in general. Using these websites and apps, passengers can compare fares for the same services and routes, thus making it easier to choose (Lim and Lee, 2012)[8].

2.2.4 Bargaining power of suppliers

In the aviation industry, the only suppliers of aircraft fleets are Boeing and Airbus, while the supply of engines is monopolized by three companies - General Pratt and Whitney, Rolls Royce and General Electric. Because of the small number of suppliers operating in the aviation sector and the high degree of concentration in the industry, aircraft suppliers have greater bargaining power. Airlines are at a relative disadvantage when it comes to bargaining with suppliers (Olienyk and Carbaugh, 2011).

2.2.5 Competitive rivalry

The aviation industry is a highly competitive and mature market. With the easing of regulations and the signing and entry into force of a series of free trade agreements, the number of businesses in this industry has increased. At the same time, the industry has become highly competitive due to the high exit barriers in the aviation industry and the economic downturn (Heracleous et al, 2006). In recent years, the industry [9] has become more competitive with the consolidation and restructuring of the airline industry. Singapore Airlines has responded to the fierce industry competition by avoiding the traditional and budget airlines and finding gaps in the market to offer passengers what they do not expect and do not want to do. A place in a fiercely competitive industry.

2.3 SWOT analysis Strengths

Leading-edge hardware facilities, modern and large fleet of aircraft are renowned in the global market.

A safe and comfortable flying environment, as well as state-of-the-art cabin entertainment and

communication systems, make passengers feel right at home.

Highly qualified service staff to match the high level of service quality.

A good brand image enhances consumer loyalty (Heracleous and Wirtz, 2014).

2.3.1 Weaknesses

Equipment and maintenance costs are high, so the high cost of investment leads to more expensive tickets and unattractive fares.

It is difficult to break through, as the main international routes are concentrated in Asia leaving the airline without more potential long-haul routes in North America, South America and the Middle East (Pearson and Merkert, 2014).

2.3.2 Opportunities

Joining Star Alliance, the world's largest airline alliance organization, will enable Singapore Airlines to enhance its marketing and promotional capabilities and expand its service network (Heracleous et al, 2006).

[10] There is an ability to expand services to meet consumer demand, for example, SIA is increasing its expansion of ultra-long-haul routes such as the North American market to reduce unnecessary in-flight transfers for long-haul passengers.

2.3.3 Threats

Competition from other national carriers is fierce, especially from Emirates, which is very similar to SIA in terms of both market positioning and business model. The introduction of cheap flight services is a huge threat to SIA's high-cost investment.

Vulnerable to economic recession and the general international environment, such as this outbreak of COVID-19, which has undoubtedly had a huge impact on SIA (Singapore Airlines, 2020).

3. OBJECTIVES

Specific: Increasing brand awareness and expanding overseas.

Measurable: Increase in international routes and destination markets and consumers.

Attainable: Use of digital marketing tools, e. g., on popular websites.

Realistic: This helps to stimulate consumer interest.

Time-bounded: It will be determined to be achievable between 2021 and 2022.

Using the PESTEL model, Porter's Five Forces Analysis and SWOT analysis for SIA, this report will set the following marketing objectives for SIA:

To increase the company's market share in international markets by adding more international routes and destinations, and to expand into new regional locations such as the Americas and the Middle East. Increased carrier services on extra-long-haul routes to cater for the needs of international travelers travelling long distances.

Given that Singapore Airlines is a full-service premium airline with high fares, it is likely that some fare-sensitive consumers will choose other airlines. In this aspect, the company can divide its full-service

operational offerings into two categories, a bonus product and quality, luxury travel experience, and a low-cost full-service operator with compulsory business equipment such as LED displays.

In order to compete in global markets and make brands more visible to overseas consumers, companies need to re-integrate their global advertising operations and increase brand awareness through digital technologies, such as with Facebook and Ins.

4. STRATEGY

4.1 Target market

In order to achieve the above strategic objectives more effectively, it is recommended that airlines consider the following target markets:

For the less price-sensitive, they are more willing to pay to avoid the transit process during their journey and enjoy an uninterrupted travel experience. With this in mind, the airline will now be able to cater for those who wish to travel to North America on extra-long flights.

In addition, for the price-sensitive consumer, they want versatile entertainment, delicious meals, LED displays, Wi-Fi and AC power that they won't find on low-cost long-haul flights. Low-cost long-haul carriers such as Scoot will not have such facilities.

Singapore Airlines targets passengers between the ages of 20-50 years old, as well as the general intending audience as its target audience. With mobile phones and social media becoming more popular and updated in the daily lives of humans, people can quickly keep up to date with the latest information and developments through well-known websites or software, such as Facebook and Instagram. Therefore, SIA's marketing strategy can approach this age group through the use of online media.

4.2 Competitor targets

Singapore Airlines faces competition from the Middle East market in the form of Emirates, especially in the Asian market. With the introduction of the long-haul carrier's innovative full-service aspect and ultra-long-haul routes, the airline will be ready to compete with Emirates [11].

4.3 Competitive advantage

SIA already has a very different portfolio covering a wide range of pricing points. By refining its proposal services, it has become a one-stop-shop for various carriers to achieve cost leadership and high-quality service.

5. IMPLEMENTATION AND TACTICS

Based on the proposed market objectives and specific target markets, the following list of new market portfolio products:

5.1 Marketing mix - 7P's

5.1.1 Product

Providing customers with comfortable flights and related services is a key marketing product for the airline. Singapore Airlines offers a full range of products from cabin, audio-visual to catering. For long-haul flights, some seats in the cabin can be

flattened, plus there will be a power footrest, pneumatic lumbar cushions, item organisers, AC power and reading lights. In addition, each person will be provided with audio and video entertainment on-demand services, and personal LCD screens and soundproof headphones can also be found next to the seats. Not only that, passengers in business class can choose a menu according to their personal taste 24 hours before boarding, and enjoy a variety of after-dinner drinks.

5.1.2 Price

For guests who are not price sensitive but are looking for comfort and convenience for long-haul business travel, as well as those who travel on their own and are price sensitive, Singapore Airlines can set different prices depending on the level of the guest. With competitive pricing, Singapore Airlines can cater to customers from different economic backgrounds. Fares also vary depending on the route and airspace covered by the flight

5.1.3 Place

SIA operates to over 60 destinations worldwide. It has a number of fixed offices and distribution offices in Singapore. Consumers can book tickets at SIA counters or travel agents, or directly through their official website and mobile booking software. As the airline is based in Singapore, short-haul flights are available to Asia and Australia. Long-haul flights are also available to Europe and North America [12].

5.1.4 Promotion

SIA will promote its brand through discounts on fares, mileage offers, hotels and pick-up services. Offering promotions on newly launched routes, for example,

can build consumer awareness of the route more quickly. It is also possible to attract more customers by using points only for mileage redemption and upgrades. In addition, hotel and pick-up services can also help SIA gain a competitive edge, creating value for customers and increasing customer satisfaction and loyalty.

5.1.5 People

SIA is a leading airline service brand and in order to better provide customers with a more comfortable flight, airlines should focus on putting their employees first. From the selection and development of professional ground staff, pilots to cabin crew, in order to create a unique customer experience and increase repeat business.

5.1.6 People

Singapore airlines is a major airline service brand and in order to better provide customers with a more comfortable flight, airlines should focus on putting their employees first. From the selection and development of professional ground staff, pilots to cabin crew, in order to create a unique customer experience and increase repeat business.

5.1.7 Physical evidence

To increase the freshness of customers, airlines can accomplish their goals by updating their aircraft equipment, catering menus and preparing some shows.

5.1.8 Process

There are many ways in which airlines can create value for their customers. For example, multifunctional lounge services, diverse in-flight entertainment systems [13].

6. ACTION

Actions	Operation	Organization	Timetable
Acquiring approval for the strategic plan	The company's progress report and market research are presented to the Board of Directors and the company's keystoneholders in the meeting. They are made aware of the need and importance of the strategic plan and receive feedback.	Senior management	One month
Strategic planning and growth projects	The project team is organized to make the necessary plans in order to implement the planned responses.	Board of directors Senior management Head of department	One month
Determination of needs in relation to the financial budget	A budget will be developed for the planned expansion.	Board of directors Senior management Finance department	Two months
Clearly planned and communicated to staff	Develop and communicate plans in detail to all members of the organization. Meetings are held to announce the various strategic plans.	Senior management HR department Head of department	Two months
Building infrastructure and expanding the aircraft fleet	Investments in equipment are made for the purchase of equipment, aircraft and recreational facilities.	Senior management Board members	Six months

7. CONTROL

After the planned actions have been implemented, it is important to evaluate the development of the overall strategic actions and the influence on the total capability of the company. The final stage is therefore the evaluation of the results of the marketing plan. Based on the monthly capability evaluations, reports are generated for tracking performance. And, benchmarks are produced using industry reports and

established marketing targets. To analyse the effectiveness of the marketing plan, these are compared with the performance evaluation. It also captures feedback from customers, which is used to analyse Singapore Airlines' customer preferences and to assess the passenger experience. In this way, management can not only gain insight into the audience experience, but also further identify areas for improvement. In order to assess and track performance,

the project team is responsible for producing a performance appraisal report containing details of the company's financial and non-financial performance. the performance appraisal report will be presented to the Board of Directors and senior management. At the performance appraisal meeting, the recorded findings are evaluated and the set performance targets are analysed. In addition, on the basis of the recorded data, senior management can analyse possible gaps in the process and whether the planned active work is moving in the right direction [14].

8. CONCLUSION

The report provides a detailed analysis of SIA. At this point, a thorough analysis of the market environment, both micro and macro, is required. Therefore, companies that are able to target opportunities and problems through the report can be seen to have reached market success. Ultimately, it was found that the company only focused on passengers on short-haul international flights and did not provide additional convenience for airline services on long-haul flights. the same could be said for the chance to increase income. In addition, Singapore Airlines faced stiff competition with Middle Eastern airlines for price-sensitive business travellers, threatening the company's full-service offering. In this regard, the airline could respond to the stiff competition by increasing its low-cost long-haul services for business travellers.

Finally, the survey found that many companies, particularly North Asia Airlines, are developing ultra-long-haul carriage services in order to reduce connecting flights. However, the company does not specialise in very long-distance services. This is why the company is rarely able to offer services to passengers travelling to North America and the Middle East. the company is therefore expanding its services in North America by introducing ultra-long-haul carriers, thereby increasing its market share. the report also presents the progress management and evaluation plan for the implementation and market plan [15].

REFERENCES

- [1] BBC., (2018). Singapore country profile. BBC. Retrieved from <https://www.bbc.com/news/world-asia-15961759>
- [2] Ben, L., (2015). What has been shaking up the airline industry. One Mile at a Time. Retrieved from <https://onemileatitime.com/singapore-airlines-unprofitable/>
- [3] CAPA, (2014). Singapore Airlines SWOT: challenges continue as competition intensifies as shown by1QFY2015 results. Information Markets. Retrieved from <https://centreforaviation.com/analysis/reports/singaporeairlines-swot-challenges>
- Continue as competition intensifies as shown by

1qfy2015-results- 180289

- [4] Euro monitor International, (2019). Airlines in Singapore. Euro monitor International. Retrieved from <https://www.euromonitor.com/airlines-in-singapore/report>
- [5] Hicks, R, (2019). Is Singapore's green movement for real?Eco Business. <https://www.eco-business.com/news/is-singaporesgreen-movement-for-real/>
- [6] IBIS World, (2019). Global Airlines Industry - Market Research Report. IBIS World. Retrieved from <https://www.ibisworld.com/global/market-research-reports/global-airlines-industry/>
- [7] Kaur, K., (2018). Parliament: Changi Airport to put part of profits into government funds to support expansion, deal with crises. Singapore Press Holdings Ltd. Retrieved from <https://www.straitstimes.com/politics/parliament-changi-airportto-put-part-of-profits-into-govt-funds-to-support-expansion-deal>
- [8] Olienyk, J. and Carbaugh, R. J., (2011). Boeing and Airbus: Duopoly in Jeopardy?. Global Economy Journal, 11(1), p. 1850222.
- [9] Powley, T., and Hollinger, P., (2015). A new era of 'ultra-longhaul' aviation. the Financial Times Ltd. Retrieved from <https://www.ft.com/content/689a1618-814d-11e5-8095-ed1a37d1e096>
- [10] Singapore Airlines., (2014). Financial Results for Year Ended 31 Mar 2014. Singapore Airlines. Retrieved from <https://www.singaporeair.com/saar5/pdf/InvestorRelations/Annual-Report/annualreport1314.pdf>
- [11] Singapore Airlines, (2017). Annual Report. Singapore Airlines. Retrieved from <https://www.singaporeair.com/saar5/pdf/InvestorRelations/Annual-Report/annualreport1617.pdf>
- [12] Singapore Airlines, (2019). Annual Report. Singapore Airlines. Retrieved from <https://www.singaporeair.com/saar5/pdf/InvestorRelations/Annual-Report/annualreport1819.pdf>
- [13] Statistics Singapore., (2018). Key Household Income Trends, 2018. Department of Statistics Singapore. Retrieved from <https://www.singstat.gov.sg/-/media/files/publications/households/pp-s25.pdf>
- [14] Straits Times., (2018). Airfares set to rise as airlines grapple with higher fuel prices. Singapore Press Holdings Ltd. Retrieved from <https://www.straitstimes.com/singapore/transport/air-faresset-to-rise-as-airlines-grapple-with-higher-fuel-prices>
- [15] Trading Economic., (2020). Singapore Gasoline Prices. Trading Economics. Retrieved from <https://tradingeconomics.com/singapore/gasoline-prices>

A Review on Syntactic Predictive Processing

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Abstract: The process by which readers understand sentences by processing and integrating incoming linguistic information is called syntactic processing. Syntactic processing allows readers to predict textual information in advance, which effectively improving language processing efficiency. However, whether syntactic predictive processing follows bottom-up processing or top-down processing has been a topic of debate among many researchers, and different researchers have proposed two different types of syntactic theories: syntactic prediction locality theory and content-based expectation theory. the former argues that syntactic prediction processing follows a bottom-up modular processing style which means that syntactic prediction hinders sentence processing, while the latter argues that prediction processing is a bottom-up and top-down interaction, which means syntactic prediction contributes to sentence comprehension. This paper reviews the two main theories and their main influences on syntactic predictive processing with corresponding experimental evidence. Besides, this paper outlines the current state of research and future trends in syntactic predictive processing.

Keywords: Predictive Effects; Cognitive Processing Of Language; Syntactic Processing; Erp; Eye Movement Studies

1. BACKGROUND AND SIGNIFICANCE OF THE STUDY

prediction, as known as expectation or anticipation, is an advanced cognitive activity that plays a crucial role in human language processing and acquisition (borovsky et al. 2012; mani & huettig 2012)[3] [37] . in the process of language processing, readers will predict the information that will come after the current input, such as semantic, syntactic and contextual information, and process it in advance, which can improve the processing efficiency to a certain extent. in recent years, the study of predictive processing of language has become a popular research topic in the fields of psycholinguistics and second language processing and acquisition (kaan et al. 2016; kaan & grüter 2021; nieuwlant & kazanina 2020; pickering & gambi 2018)[28] [29] [40] [41] with the rapid development of technology, many precision instruments are used in the field of sentence processing research to explore the deeper processing mechanisms and psychological phenomena of individuals. at the same time, more precise data are used to explore how syntactic processing affects sentence comprehension. the process of reading cannot be separated from the

integration and transmission of linguistic information, which does not simply rely on the top-down input of sentence constituents in a specific order, but rather on the top-down processing of sentence continuation by constructing higher-level representations of meaning in combination with currently available lexical information, and such higher-level representations will have a positive impact on the sentence to be presented (yue et al., 2021)[56] . sentence processing includes both syntactic and semantic processing, with syntactic processing being the process by which an individual processes the input lexical combinations and constructs a syntactic structure as a way to facilitate sentence comprehension (bingel, barrett, & søgaard, 2016)[2] . individuals use the meaning of the words they hear or read to construct the meaning of the entire sentence and achieve understanding of the meaning of the sentence. there are two types of processing in sentence processing: top-down processing and bottom-up processing. the former is concept-driven while the latter is data-driven. there has been a disagreement about exactly what kind of processing is followed during syntactic processing. researchers who support the way of bottom-up processing argue that the underlying graphemic-phonetic processing is not affected by the top-level syntax and context. in contrast, researchers who support the top-down processing argue that the underlying processing must be influenced by top-level processing. there are two main types of theories in the debate about how syntactic prediction is processed. one is the syntactic prediction locality theory, and the other is the theory of content-based expectancy. although both of two theories have been supported by a variety of experimental evidence, there is not an agreed conclusion. therefore, this paper aims to sort out the theoretical lineage, influencing factors and experimental evidence of syntactic predictive processing.

2. TWO MAIN THEORIES OF SYNTACTIC PREDICTIVE PROCESSING

related research has provided a number of experimental evidence on how people process sentences, and the two types of sentence processing parsing that have been identified are top-down and bottom-up parsing. in top-down parsing, readers are able to use grammatical information to construct a representation of the syntactic structure of a sentence prior to full linguistic input. the opposing view is that readers follow the principle of gradual integration based on lexical input during sentence processing, and this bottom-up syntactic parsing puts nodes into phrase

tokens, through which the sub-nodes associated with them contribute to the construction of higher-level nodes. in order to apply the top-down strategy, the parser must be able to construct the syntactic structure before it encounters any of the lexical input needed to build that structure. chen et al. (2005)[7] argued that there was a processing cost to holding syntactic predictions in memory, with more predictions corresponding to slower reading. nakatani et al. (2008) [39] used a self-paced reading paradigm to investigate japanese sentence comprehension in terms of the syntactic prediction costs. the results showed that readers would have anticipation costs when an additional verb and complement were expected. next, two different theories will be introduced in detail.

2.1 syntactic prediction locality theory

syntactic prediction locality theory (spl) (gibson 1988) [17] has two components: an integration cost component and a memory cost component. the memory cost is quantified as the number of syntactic categories required to complete the current input string as a grammatical sentence. to complete a syntactic prediction, readers first need to store the syntax in memory, which will produce memory cost. in addition to the information predicted by the reader during sentence comprehension is stored in working memory. as a result, the greater the number of predicted information, the greater the storage cost incurred. in addition, the category of information predicted must be retained in working memory until the prediction is fulfilled, and the longer it is stored, the greater the cost of maintaining that prediction. besides, the longer the distance between the input word and the central word to which it is connected, the greater the integration cost. in the process of subsequent information input, the new information will be verified and integrated with the originally stored syntactic prediction information, gradually forming a complete syntactic structure. at the same time, the brain continues to predict the subsequent new information. there will be two kinds of results. one is that if the new information is accepted, it will be integrated into the cognitive system and continue to make predictions. the other result is that if the new information is not accepted, it will only be stored in working memory, increasing the cost of memory. in this process, the cognitive resources spent by the reader are defined as integration cost. the later the content of the syntactic prediction appears, the higher the memory cost will be, and the sentence processing time will be the longer. a recognized phenomenon explained by theories of the relationship between sentence processing mechanisms and available computational resources is that the complexity of object extraction is higher than that of subject extraction in relational clauses. for example:

1a [_S *the* reporter [_{S'} who [_S the senator attacked]] admitted the error].

1b [_S *the* reporter [_{S'} who [_S attacked the senator]] admitted the error].

in 1b, the relational pronoun “who” was extracted from the subject position of the relational clause, whereas in 1a the same pronoun was extracted from the object position. it was concluded that object extraction was more complex by means of phonological monitoring, online lexical decisions, reading time and accuracy of responses to probe questions (ford, 1982)[14].

the syntactic prediction locality theory suggests that longer sentences are more difficult to process than shorter ones because the input successor is more distant from the syntactic central word in longer sentences, resulting in greater integration and memory costs, thus increasing the difficulty of reading and processing the whole sentence. another more general class of complexity effects is the high complexity associated with nested (or center-embedded) structures, where increasing the number of nests. as a result, it is quite difficult for the reader to process sentence structure in a short time (chomsky, 1981)[9]. for example:

2a [_S *the* intern [_{S'} who [_S the nurse supervised]] had bothered the administrator [_{S'} who [_S lost the medical reports]].

2b [the administrator [_{S'} who [_S the intern [_{S'} who [_S the nurse supervised]] had bothered]] lost the medical reports].

comparing 2a and 2b, the former contains a single-nested rc structure, while the latter contains a double-nested rc structure, for example, *who the nurse supervised* is nested within *who the intern... had bothered*, and is also nested within the peripheral sentence *the administrator lost the medical reports*, making it difficult for readers to process long sentences. as experimental researches on syntactic predictive processing continue to deepen, researchers used different languages and different syntactic structures to provide experimental evidence for the syntactic prediction locality theory. frazier used ambiguous sentences as the study material to examine the effect of event plausibility on immediate sentence analysis. the result suggested that syntactic processing precedes lexical processing, and there is no facilitation effect on syntactic prediction. chen, gibson and wolf (2005)[7] used three experiments of self-paced reading to test online syntactic storage prediction costs in english. the study compared reading times in sentence regions and varied syntactic prediction costs. they found that the syntactic prediction of the reader was fastest in the no-verb condition, followed by syntactic predictions with one verb present, and slowest in the two-verb condition. in addition, they investigated whether readers also incur storage costs when processing sentences with “filler-void” syntactic relations. the results showed that readers were slower to read key areas with fillers than the condition without them. the results of these experiments demonstrated the role of online syntactic

storage costs in sentence processing. alexopoulou and keller (2007) [1] examined the differences in subjects' processing in the wh-filler region by using three languages: english, greek, and german. they investigated the memory resources required for sentence prediction processing in wh-questions under a range of syntactic structures (no spacing, weak spacing and strong spacing). the results indicated that subjects required greater memory costs under the conditions where the syntactic structure is no spacing and weak spacing, supporting syntactic prediction locality theory. vasishth, brüssow, lewis, and drenhaus (2008) [53] and levy's experiments (levy, keller, 2013; levy, fedorenko, & gibson, 2013) [33] [34] examined sentence comprehension and processing using german sentences ending in verb and found that sentence processing was facilitated when the verb was preceded only by an auxiliary verb. however, sentence processing was impeded when the verb was preceded by an auxiliary verb and other collateral information. these results support the syntactic prediction locality theory, but the syntactic prediction is limited and memory cognition needs to be taken into account during online syntactic processing and comprehension. it can be seen from the above experiments that most of the experiments examined syntactic prediction by varying the number of verb phrases and their positions to increase the memory cost of the subjects. in addition, the researchers examined the syntactic structure of different language families. however, regardless of language families, the more prediction clusters that the sentence has, the more difficult it is to process the sentences, and the memory cost and integration cost of the subjects will be higher.

2.2 content-based expectancy theory

in contrast to the prediction cost assumption of the syntactic prediction locality theory, content-based expectation theory (taraban & mcclelland 1988) [49] suggests that top-down and bottom-up processing work in tandem and interact in the comprehension processing of sentences. and the context of the preceding predicts the following content, which accelerated the speed of reading. interactive analytic models of speech processing (britt, perfetti, garrod, & rayner, 1992; taraban & mcelelland, 1988)[4] [49] suggest that there are two processes involved in reading. one is an underlying input of information such as graphemes or sounds of words, which is the textual information that the reader receives at first. then there is a gradual progression towards the higher levels of development and integration to form semantic connections. the other process is top-down processing, which means syntax is responsible for sorting out and integrating the relationships among the various parts of the underlying information. this model assumes that all the information that has been input is analyzed interactively during reading comprehension. and in this processing, both syntactic and semantic roles exist at the same time in order to help the reader construct

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high-level and meaningful representations and make predictions about upcoming syntactic structures as well as lexical categories (pickering & garrod 2013)[42]. the process can facilitate language processing and comprehension. frazier *et al.* (2000) [13] examined the processing of compound sentences by using self-paced speed method and found that subjects were faster in reading sentences with syntactic predictions. the results of their research proved that predictive processing could facilitate sentence processing and comprehension. van gompel *et al.* (2005) [52] used eye-tracking research methods to examine whether there was a predictive effect when subjects read and process ambiguity sentences, such as:

3a the carpenter sanded the shelves he attached onto the kitchen wall yesterday morning, according to the foreman. (globally ambiguous sentence)

3b the carpenter sanded the shelves he will attach onto the kitchen wall yesterday morning, according to the foreman. (high attachment sentence)

3c the carpenter will sand the shelves he attached onto the kitchen wall yesterday morning, according to the foreman. (low attachment sentence)

the results showed that it was easier for subjects to read and process globally ambiguous sentence (such as 3a) than ambiguity resolution sentences, suggesting that information was processed not as whole-sentence integration, but as an interactive analysis of multiple pieces of information. the end of the information input also marked the end of the whole-sentence analysis. in addition to the study of syntactic prediction effects in sentence processing, researchers have also focused on whether or not the appearance of certain words was predicted subjects to examine whether syntactic prediction effects occur. for example, staub and clifton jr (2006) [48] used the sentence pattern "either... or..." as the experimental material and examined the syntactic prediction effect by recording subjects' eye-tracks. the experiment sentences consist of double noun phrases and sentences involving two independent clauses. the results showed that when the experiment sentences contained "either...or", subjects read faster when they read to the word "or" and the information after it. both sentence types showed the similar results, demonstrating the existence of a syntactic prediction effect. these results suggest that syntactic parsers can build predictable syntactic structures before the corresponding lexical input is encountered.

similarly, experiment evidence in chinese also supports the conclusion of syntactic predictability. for example, chen *et al.* (2010) [8] used eye-movement technology as an experimental method to examine the syntactic prediction effect and the structural representation characteristics of parallel sentences during sentence reading comprehension. they found that there was a syntactic prediction effect during the processing of temporary ambiguous sentences. besides, the presence or absence of syntactic prediction significantly affected subjects' reading comprehension of critical regions

containing temporary ambiguity and post regions with disambiguating effects, suggesting the presence of syntactic prediction reduced readers' sentence processing difficulty. wei *et al.* (2023) [55] used a self-paced reading task with the structure "either... or" and examined whether medium-level chinese english learners could predictively process sentences based on the word "either" and its connected sentence constituents. the results suggested that when "either" appeared, the response time in the critical area was significantly faster than that when "either" did not appear, indicating that "either" had a syntactic predictive effect on "or" and its connected constituents. the subjects were able to predictively process syntactic structures connected with "or" according to the syntactic structure of "either" and its connected constituents, which could increase subjects' processing speed.

in a conclusion, the above two theories are supported by different experimental evidence. both theories affirm the existence of syntactic analysis, but the difference between them is that the syntactic prediction locality theory believes that syntactic processing follows the top-down principle and syntactic prediction hinders sentence processing, while the content-based expectation theory believes that syntactic processing is an interactive top-down and bottom-up process and syntactic prediction facilitates sentence processing. however, there is no specifically experiments specifically designed for these two theories, so a more scientific experimental paradigm needs to be further explored. li *et al.* (2017) [35] believed that the difference between the two theories lies in the role of memory cost. an increase in working memory load will lead to an increase in prediction cost, which means that syntactic prediction facilitates sentence processing when the predicted content does not increase the memory load too much. but it hinders sentence processing when the predicted content reaches a certain value or the prediction fails. therefore, further experimental evidence is needed to illustrate exactly to what extent memory load hinders sentence processing.

3. THE FACTORS OF THE LANGUAGE PREDICTIVE PROCESSING

prediction effects in native language processing can occur at the syntactic, semantic, and discourse levels (pickering & gambi 2018)[41] . the question is that whether there are prediction effects in second language processing for second language speakers. actually, the predictive processing mechanisms of second language learners are more complex than those of native speakers. they are affected by a variety of factors. and in the few studies that have been conducted, the conclusions have been highly divergent, with the main controversy focused on whether second language speakers have the same predictive processing abilities as native speakers. some researchers stated that second language speakers have the same predictive processing

ability as native speakers (ito *et al.* 2016)[25] . however, some researchers have also claimed that non-native speakers have low predictive ability or found no evidence of prediction in non-native speakers (grüter *et al.* 2012; 2014)[19] [18] . recent studies have argued that without the representational and processing conditions under which bilingual prediction occurs, it is not so meaningful to simply debate the question of whether prediction exists. therefore, research has begun to turn to the influencing factors of prediction (wang & wang 2020)[54] . wei *et al.* (2023) [55] pointed out that the reliability of the prediction signal and the quality of the representation of the target structure have an important influence on the prediction effect of the bilingual utterance method. the prediction reliability and the quality of the representation are in turn closely related to the complexity of the target structure, the similarities and differences between the native language and the bilingual, and the bilingual level of the subjects. these factors are intertwined and work together to influence the occurrence of second language prediction effects. only by systematically examining these factors and their relationships can we reveal the conditions and mechanisms of the occurrence of the bilingual prediction effect and construct a more reasonable theory of bilingual prediction processing. as methods and techniques such as reaction time, eye movement, eeg, and fmri have been widely used for the measurement of predictive effects, the research process of language predictive processing has been greatly promoted. therefore, it is important to sort out and summarize the influencing factors and experimental evidence of language predictive processing.

3.1 the effect of L1 experience on the second language predictive processing

during bilingual processing, the native language of the bilingual speaker is activated at the same time, which means that the native language also plays a role in bilingual comprehension. does native language experience facilitate or hinder bilingual processing? when the native language and the bilingual structure are similar, native language experience facilitates predictive processing of the second language and reduces processing difficulty. in contrast, when native language and second language structures are less similar, it interferes with second language predictive processing. related studies have shown that native language experience affects bilingual predictive processing at the phonological, lexical, and syntactic levels (grüter *et al.*, 2014)[18] . delayed lexical access to the target language occurs when the words activated by both the native and the second language do not match the expected meaning (kroll *et al.*, 2005)[30] . findings on syntactic predictive processing are also divergent. some studies showed that structural similarity between native language and target language has a significant effect on second language predictive processing. for example, sabourin & stowe (2008) [45]

investigated event-related potentials for neural processing of grammatical structures in dutch-german learners and native dutch speakers. they found that learners had a p600 effect only when the structure of the mother tongue and the second language were similar, suggesting that similar neural processing is likely to occur under the condition where the structure of l1 and l2 are similar. martin et al. (2013)[38] and focart et al. (2014) [15] examined reading processing in english spanish learners and french spanish learners by using erp techniques and similar experimental designs. however, they got completely opposite conclusions. the reason is that in addition to subtle differences in experimental design, native and second language structural variability cannot be ruled out. focart *et al.* (2014) [15] had similar structures in french and spanish, whereas martin *et al.* (2013) [38] had structural differences in spanish and english. torentino & tokowicz (2011) [50] sorted out whether similarities between the first language (l1) and the second language (l2) affect syntactic processing in the l2. results from functional magnetic resonance imaging (fmri) and event-related potential (erp) studies showed that non-native speakers can exhibit native-like online syntactic processing behaviors and neural patterns, suggesting that cross-linguistic similarity is an important factor of influencing l2 syntactic processing. however, trenkic *et al.* (2014) [51] investigated how chinese english learners make predictions when comprehending grammatical structures that have persistent output difficulties and are unique to the second language. and the results showed that although articles do not exist in chinese, both native english and chinese native english learners were able to restrict the referential domain by using articles, suggesting that prediction occurs when the native language and the target language are not structurally similar. the reason may be that native language experience does not work alone in the processing of the second language, and its role is affected by the level of the second language (hopp 2013)[22]. therefore, future research should consider what specific factors mediate this role.

3.2 the effect of second language proficiency on predictive processing

kaan et al. (2016) [29] used erp technology and investigated the processing and integration of predictive of cross-clause syntactic information by second language learners. the results suggested that there are differences in repair strategies or resources, which can explain the differences in bilingual predictive behavior compared to native speakers, so linguistic proficiency has a significant effect on predictive processing. dussias et al. (2013) [12] used a visual-situational eye-tracking paradigm to examine the processing of article-noun collocations in spanish l2 learners whose l1 are english and italian. nouns and articles in english do not require gendered feature collocations, while articles and nouns in italian and spanish require gendered collocations, but it turned

different in different cases. it was found that when italian and spanish used the same articles, italian-spanish bilinguals were able to make predictions for nouns based on the gender marking of the article as spanish native speakers. for english-spanish bilinguals, the prediction effect was influenced by the level of bilingualism: high level subjects were able to make predictions as native speakers, but low and middle level subjects were unable to make predictions. this finding suggested that the ability of bilinguals to predict like native speakers cannot be generalized, but rather depends on factors such as cross-linguistic differences in the target structure and the subjects' second language proficiency. other researchers have made similar findings by using different experimental techniques and materials, such as focart et al. (2014) [15] who documented event-related potentials in spanish monolinguals, late french-spanish bilinguals, and early spanish-catalan bilinguals when they read and processed spanish sentences. the results showed that at least when the two languages were closely related, bilinguals were able to predict upcoming words in a similar way to monolinguals. leal et al. (2017) [32] explored that to what extent native english-speaking learners of spanish were able to anticipate upcoming information in linguistic signals. they found that the behavior of second language learners depended on second language proficiency. the conclusion they got is that the higher the proficiency they have, the more their behavior can reflect the native speakers' processing.

most of the current studies used high-level second language learners as subjects (trenkir et al. 2014; brothers et al. 2017)[51] [6], and there are very few studies on predictive processing for low and mediate level speakers. the reason probably is that the predictive effect of low level second language speakers is weak and often fails to reach the statistically significant level (dussias et al. 2013)[12]. therefore, it is expected that there will be reasonable experimental designs that can examine language learners with different level of language proficiency in the future. in addition, there are few studies focused on the predictive processing of early second language learners, so more evidence is needed to elucidate the developmental process of predictive processing in second language learners of different study ages and study time.

3.3 contextual influences on predictive processing of the two-sentence approach

vocabulary processing during reading is inevitably affected by context, and the words that appear next under a given context will show varying degrees of contextual predictability depending on the level of contextual restrictiveness. hartsuiker et al. (2016) [20] examined dutch-english bilinguals' restricted and neutral contexts for native and second language predictive processing. the results showed that subjects in restrictive contexts would browse the target object

before the target word appeared. highly restrictive contexts limit the words that may appear afterwards to a smaller range, and readers were able to make high predictions based on the given context (frisson et al. 2017)[16] . whereas, low restrictive contexts have a wide range of what comes after them and readers are not able to make high predictions (frisson et al., 2017)[16] . compared to unpredictable words, predictable words can be processed more quickly (liu et al. 2020; delong et al. 2005; rayner et al. 2005; rayner & well, 1996)[36] [10] [44] [43] . besides, lagrou et al. (2013) [31] examined dutch-english bilinguals' prediction of end-of-sentence words when they listened to the sentences. they found that bilinguals processed meaningful bilingual sentences faster. zeng et al. (2021) [57] examined the cost of prediction error in chinese reading by manipulating contextual restriction and target word prediction type to explore contextual prediction processing by using eye-movement technology. the results showed that unpredictable words were processed faster in highly restrictive contexts than in low restrictive contexts. it suggests that readers are affected by context in bilingual sentence prediction processing, bilingual lexical access, and prediction error.

however, whether predictive processing is highly context-dependent is disputed by different experimental results. mani & huetting (2012) [37] examined whether children can predict upcoming linguistic input through a listen-and-watch experiment, and they found that differences in the length of time subjects viewed the target resulted in differences in predictions. children's predictive ability was significantly correlated, suggesting that whether subjects predicted or not was consistent with their perception of the situation they were in. huetting & mani (2016) [23] assessed the idea that prediction is necessary for language learning. they pointed out that not all language speakers were able to predict language, and suboptimal input often makes prediction very challenging. in addition, prediction was highly context-dependent and hampered by resource constraints. another view is that researchers regarded prediction as a processing strategy. for example, brothers et al. (2015)[5] measured electrophysiological responses to predicted and unpredicted target words in passages that provided varying degrees of contextual support. erp results suggested that the effect of prediction occurred faster, approximately 100ms before the facilitating effect of context, suggesting that prediction was uniquely and temporarily priori to facilitate lexical acquisition. prediction is not always automatically generated by prior context. future research on predictive processing in natural contexts should be expanded (wang & wang 2020)[54] .

3.4 the effect of working memory on predictive processing

as mentioned in the syntactic prediction locality theory, there is integration cost and memory cost in syntactic predictive processing. predictive processing occurs by integrating sentence information, the visual environment, and the readers' memory (slevc & novick 2013)[47] . the integration mechanism requires memory extraction and processing, so predictive processing may be affected by working memory load, and cognitive load may interfere more strongly with prediction (wang & wang 2020)[54] . in the field of language processing, cognitive load mainly refers to the burden on working memory caused by online processing and integration of language. we have mentioned in 3.2 that low and intermediate level l2 learners do not predict the upcoming information, perhaps due to the differences in cognitive resources. when predictive processing requires complex cognitive resources, l2 learners' cognitive resources are weakened (segalowitz & hultstijn 2005)[46] . ito et al. (2018) [24] used an eye-tracking paradigm to investigate the effect of cognitive load on predictive processing in l1 and l2 subjects. the researchers randomly assigned tasks with and without memory to native and second language speakers of english. the results suggested that both l1 and l2 speakers were able to make predictions, but cognitive load affected subjects' predictive processing. however, the cognitive load in this study was generated by the additional task of word memory rather than by sentence processing itself, and the extent to which the prediction effect is affected by cognitive load needs to be further investigated (wei et al. 2023)[55] . gibson (1998) [17] pointed out that the further apart the syntactically dependent sentence constituents are, the more they need to be stored in working memory, and the heavier the cognitive load generated (see detail in 2.1). however, in previous studies, the prediction signal was usually adjacent to the predictor (dussias et al., 2013; ito et al., 2020)[12] [26] or at a fixed distance (kaan et al., 2016; leal et al., 2017) [29] [32] , which did not allow us to effectively test whether the prediction effect was affected by changes in cognitive load. to address this issue, wei et al. (2023)[55] used a self-paced reading task with *either... or* structure as the experimental material to investigate syntactic prediction effects in bilingual sentence reading for intermediate-level chinese english learners. the results showed that bilingual prediction can occur without explicating morphological markers and that cognitive load had no significant effect on bilingual prediction processing. however, the *either... or* structure in this study is relatively simple, it is possible that cognitive load has an effect on second language syntactic prediction processing in the case of more complex target structures and online processing that requires more cognitive resources, so the specific solution of this problem need to be examined in the future.

in conclusion, predictive processing as an important cognitive mechanism, is inextricably linked to
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cognitive factors, especially working memory and cognitive load. but there are few researches about the effect of working memory on second language predictive processing. in the future, more attention should be paid to the study of the syntactic predictive processing effect of bilingualism. and more importantly, emerging technological tools and more reasonable experimental designs should be used to provide direct evidence for the influence of cognitive load on the predictive effect of bilingualism.

4. EXISTING LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

predictive processing is a core cognitive function of the human brain, which has important research value in both language processing and language acquisition. the prediction effect can effectively improve the efficiency of significant language processing. in this paper, we sort out the two main theories of syntactic prediction as well as the influencing factors and experimental evidence of bilingual syntactic predictive processing. although the existing studies have advanced our knowledge of predictive processing to a certain extent, they still have certain limitations.

first of all, the kinds of experimental materials for studying predictive processing are limited, currently only involving structures such as garden path clauses, relational clauses, passive voice, definite articles, infinitives, etc., and there are few studies on complex sentence types, which do not put much burden on the cognitive load of subjects' online processing and there is no direct experimental evidence on whether cognitive load influences second language predictive processing. if cognitive load influences second language predictive processing, we need to explore to what extent cognitive load influences it. working memory is one of the most significant factors in both top-down and bottom-up processing. future research should focus on complex sentence patterns in different language families. second, current research on predictive processing has been conducted in experimental settings, and there is a relative lack of research on predictive processing in natural language use. besides, most of the current experiments are research frameworks constructed from tasks and stimulus materials. there are many differences in experimental materials, tasks, and research methods, which caused different experimental results supporting two different predictive theoretical perspectives (hatfield, & artos, 2016)[21]. future research should include an examination of predictive processing in natural contexts as well. in addition, although the experimental results directly or indirectly proved the existence of the syntactic prediction locality theory and the content-based expectation theory in terms of data, the discussion of the psychological mechanisms that produce predictive effects is still not deeply studied. and the psychological significance of some experimental indicators, such as the first gaze time and the number of retrospective glances in the eye-

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movement studies, needs to be further analyzed in depth. finally, in future more diversified studies and factors such as subjects' prior experience, thinking patterns, visual cues, and socio-cultural contexts should also be taken into account. that is because prediction is not specific to an isolated event, and a variety of factors are interacted and work together to influence the occurrence of the bilingual predictive effect (wei *et al.* (2023)[55]. researchers can conduct multilingual and multifactorial studies by controlling variables to be able to design more appropriate syntactic materials for different age groups of subjects. we believe that systematic examination of factors at all levels can better reveal the conditions and mechanisms of bilingual predictive processing and help to construct a more comprehensive and more rational theory of syntactic predictive processing.

REFERENCES

- [1] Alexopoulou, T., & Keller, F. (2007). Locality, cyclicity and resumption: at the interface between the grammar and the human sentence processor [J]. *Language*, 83:110-160.
- [2] Bingel, J., Barrett, M., & Søgaard, A. (2016). Extracting token-level signals of syntactic processing from fMRI-with an application to PoS induction. *Meeting of the Association for Computational Linguistics*, Berlin, Germany.
- [3] Borovsky, A., Elman, J. L. & A. Fernald. (2012). Knowing a lot for one's age: Vocabulary skill and not age is associated with anticipatory incremental sentence interpretation in children and adults [J]. *Journal of Experimental Child Psychology*, (4):417-436.
- [4] Britt, M. A., Perfetti, C. A., Garrod, S., & Rayner, K. (1992). Parsing in discourse: Context effects and their limits [J]. *Journal of Memory and Language*, 31:293-314.
- [5] Brothers, T., Swaab, T. Y. & M. J. Traxler. (2015). Effects of prediction and contextual support on lexical processing: prediction takes precedence [J]. *Cognition*, (3):135-149.
- [6] Brothers, T., Swaab, T. Y. & M. J. Traxler. (2017). Goals and strategies influence lexical prediction during sentence comprehension [J]. *Journal of Memory and Language*, (4):203-216.
- [7] Chen, E., Gibson, E., & Wolf, F. (2005). Online syntactic storage costs in sentence comprehension [J]. *Journal of Memory and Language*, 52:144-169.
- [8] CHEN Qingrong, TAN Dingliang, DENG Zhu, XU Xiao-Dong. (2010). Syntactic Prediction in Sentence Reading: Evidence from Eye Movements [J]. *Acta Psychologica Sinica*, (06):672-682.
- [9] Chomsky, N. (1981). Knowledge of language: Its elements and origin [J]. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 295:223-234.
- [10] DeLong, K. A., T. P. Urbach & M. Kutas. (2005). Probabilistic word pre-activation during language

- [11] comprehension inferred from electrical brain activity [J]. *Nature Neuroscience*, 8(8):1117-1121.
- [12] Dussias, P. E., et al. (2013). When gender and looking go hand in hand: Grammatical gender processing in L2 Spanish [J]. *Studies in Second Language Acquisition*, 35(2):353-387.
- [13] Frazier, L., & Clifton, C. Jr. (2000). On bound variable interpretations: the LF-only hypothesis [J]. *Journal of Psycholinguistic Research*, 29, 125-140.
- [14] Ford, M., Bresnan, J., & Kaplan, R. M. (1982). A competence-based theory of syntactic closure [J]. *Journal Orthopedology Sports Physical Therapy*, 14.
- [15] Foucart, A. et al. (2014). Can bilinguals see it coming? Word anticipation in L2 sentence reading [J]. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 40(5):1461-1469.
- [16] Frazier, L., & Fodor, J. D. (1978). the sausage machine: a new two-stage parsing model [J]. *Cognition*, 6:291-325.
- [17] Frisson, S., Harvey, D. R., & Staub, A. (2017). No prediction error cost in reading: evidence from eye movements [J]. *Journal of Memory and Language*, 95:200-214.
- [18] Gibson, E. (1998). Linguistic complexity: Locality of syntactic dependencies [J]. *Cognition*, 68:1-76.
- [19] Grüter, T., Hurtado, N., Marchman, V. A. & A. Fernald. language exposure and online processing efficiency in bilingual development [A]. In T. Grüter & J. Paradis (eds.). *Input and Experience in Bilingual Development* [C]. Amsterdam: John Benjamins Publishing Co. 2014:15-36.
- [20] Grüter, T., Lew-Williams, C. & A. Fernald. (2012). Grammatical gender in L2: A production or a real-time processing problem? *Second Language Research*, (2):191-215.
- [21] Hartsuiker, R. J., Beerts, S., Loncke, M. & S. Bernolet. (2016). Cross-linguistic structural priming in multilinguals: further evidence for shared syntax [J]. *Journal of Memory and Language*, (10):14-30.
- [22] Hatfield, H., & Artos, T. (2016). the locus of processing for object relative clauses and the impact of methodology [J]. *Language, Cognition and Neuroscience*, 31:190-195.
- [23] Hopp, H. (2013). Grammatical gender in adult L2 acquisition: relations between lexical and syntactic variability [J]. *Second Language Research*, (1):33-56.
- [24] Huettig, F. & N. Mani. (2016). Is prediction necessary to understand language? Probably not [J]. *Language, Cognition and Neuroscience*, (1):19-31.
- [25] Ito, A., M. Corley & M. J. (2018). Pickering. a cognitive load delays predictive eye movements similarly during L1 and L2 comprehension [J]. *Bilingualism: Language and Cognition*, 21(2):251-264.
- [26] Ito, A., Corley, M., Pickering, M. J., Martin, A. E. & M. S. Nieuwland. (2016). Predicting form and meaning: Evidence from brain potentials [J]. *Journal of Memory and Language*, 86:157-171.
- [27] Ito, A., et al. (2020). Prediction of phonological and gender information: an event-related potential study in Italy [J]. *Neuropsychologia*, DOI: 10.1016/j.neuropsychologia. 2019.107291.
- [28] JI Yue & LI Xiaoxiang. (2019). the ERP Evidence of Prediction Processing in L2 Complex Sentences: A Case Analysis of English Present Participles [J]. *Contemporary Foreign Language Studies*, (01): 77-86.
- [29] Kaan, E. & T. Grüter. (2021). *Prediction in Second Language Processing and Learning* [M]. Amsterdam: John Benjamins Publishing Company.
- [30] Kaan, E., Kirkham, J., & Wijnen, F. (2016). Prediction and integration in native and second-language processing of elliptical structures [J]. *Bilingualism: Language and Cognition*, 19:1-18.
- [31] Kroll, J. F., Sumutka, B. M. & A. I. Schwartz. (2005). A cognitive view of the bilingual lexicon: Reading and speaking words in two languages [J]. *International Journal of Bilingualism*, (1):27-48.
- [32] Lagrou, E., Hartsuiker, R. J. & W. Duyck. (2013). the influence of sentence context and accented speech on lexical access in second-language auditory word recognition [J]. *Bilingualism: Language and Cognition*, (3):508-517.
- [33] Leal, T., R. Slabakova & T. A. Farmer. (2017). the finetuning of linguistic expectations over the course of L2 learning [J]. *Studies in Second Language Acquisition*, 39(3):493-525.
- [34] Levy, R., Fedorenko, E., & Gibson, E. (2013). the syntactic complexity of Russian relative clauses [J]. *Journal of Memory and Language*, 69, 461-495.
- [35] Levy, R. P., & Keller, F. (2013). Expectation and locality effects in German verb-final structures [J]. *Journal of Memory and Language*, 68:199-222.
- [36] LI Lin, LIU Wen, SUI Xue. (2017). Prediction effect during syntactic processing and experimental evidence [J]. *Advances in Psychological Science*, 25(7):1122-1131.
- [37] LIU Zhifang, TONG Wen, ZHANG Zhijun, ZHAO Yajun (2020). Predictability impacts word and character processing in Chinese reading: Evidence from eye movements [J]. *Acta Psychologica Sinica*, 52(9):1031-1047.
- [38] Mani, N. & F. Huettig. (2012). Prediction during language processing is a piece of cake-but only for skilled producers [J]. *Journal of Experimental Psychology Human Perception & Performance*, (4):843-847.
- [39] Martin, C. D., Thierry, G., Kuipers, J. R., Boutonnet, B., Foucart, A. & A. Costa. (2013). Bilinguals reading in their second language do not predict upcoming words as native readers do [J]. *Journal of Memory and Language*, (4):574-588.
- [40] Nakatani, K., & Gibson, E. (2008). Distinguishing theories of syntactic expectation cost in sentence comprehension: evidence from Japanese [J]. *Linguistics*, 46:63-86.
- [41] Nieuwland, M. S. & N. Kazanina. (2020). the neural basis of linguistic prediction: Introduction to the Special Issue [J]. *Neuropsychologia*. DOI: 10.1016/j.neuropsychologia. 2020.107532.

- [41] Pickering, M. J. & C. Gambi. (2018). Predicting while comprehending language: a theory and review [J]. *Psychological Bulletin*, 144(10):1002-1044.
- [42] Pickering, M. J. & S. Garrod. (2013). An integrated theory of language production and comprehension [J]. *Behavioural and Brain Sciences*, (4):329-347.
- [43] Rayner, K., & Well, A. D. (1996). Effects of contextual constraint on eye movements in reading: a further examination [J]. *Psychonomic Bulletin & Review*, 3(4):504-509.
- [44] Rayner, K., Li, X. S., Juhasz, B. J., & Yan, G. L. (2005). The effect of word predictability on the eye movements of Chinese readers [J]. *Psychonomic Bulletin & Review*, 12(6):1089-1093.
- [45] Sabourin, L. & L. A. Stowe. (2008). Second language processing: When are first and second languages processed similarly [J]. *Second Language Research*, (3):397-430.
- [46] Segalowitz, N. & J. Hulstijn. (2005). *Automaticity in bilingualism and second language learning* [A]. In J. F. Kroll & A. M. B. de Groot (eds.). In J. F. Kroll & A. M. B. de Groot (eds.). *Handbook of Bilingualism: Psycholinguistic Approaches* [C]. New York: Oxford University Press.
- [47] Slevc, L. R. & J. M. Novick. (2013). Memory and cognitive control in an integrated theory of language processing [J]. *Behavioral and Brain Sciences*, (4):373-374.
- [48] Staub, A., & Clifton, C., Jr. (2006). Syntactic prediction in language comprehension: Evidence from *either... or* [J]. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 32:425-436.
- [49] Taraban, R., & McClelland, J. L. (1988). Constituent attachment and thematic role assignment in sentence processing: Influences of content-based expectations [J]. *Journal of Memory and Language*, 27:597-632.
- [50] Tolentino, L. C. & N. Tokowicz. (2011). Across languages, space, and time [J]. *Studies in Second Language Acquisition*, (1):91-125.
- [51] Trenkic, D., Mirkovic, J. & G. T. M. Altmann. (2014). Real-time grammar processing by native and non-native speakers: constructions unique to the second language [J]. *Bilingualism: Language and Cognition*, (2):237-257.
- [52] van Gompel, R. P. G., Pickering, M. J., Pearson, J., & Liversedge, S. P. (2005). Evidence against competition during syntactic ambiguity resolution [J]. *Journal of Memory and Language*, 52(2):284-307.
- [53] Vasishth, S., Brüssow, S., Lewis, R. L., & Drenhaus, H. (2008). Processing polarity: How the ungrammatical intrudes on the grammatical [J]. *Cognitive Science*, 32:685-712.
- [54] WANG Furong & WANG Min (2020). Prediction in language processing: A critical review and directions for future research [J]. *Journal of Xi'an International Studies University*, (03):59-64.
- [55] WEI Hang, Wu Yifan, YUAN Fang, WANG Min(2023). Syntactic Prediction in Chinese EFL Learners' Comprehension of "either... or" Structure [J]. *Journal of PLA University of Foreign Languages*, 46(1):87-95.
- [56] YUE Jinxing, BU Yuwei, LI Jiayin. (2021). ERP Evidence of Predictive Sentence Processing [J]. *Modern Foreign Languages*, 185(01):133-142.
- [57] ZENG Tao, ZHAO Long. (2021). A study on EFL learners' processing of temporarily ambiguous sentences [J]. *Foreign Language Education*, 207(01):53-58.

The Research of Applying EVMS to Civil Aircraft System Development Management

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Abstract: The paper aims to present the cost and schedule management of civil aircraft system development projects. Civil aircraft system development is facing four “high” challenge: high complexity, high technology, high risk and high cost. the author figures out the method of utilizing the EVMS (Earned Value Management System) to solve the four “high” challenges to control the schedule and cost and also gives well defined pathway when implementing the EVMS in Civil aircraft system development.

Keywords: Civil aircraft Systems; Project Management; EVMS

1. INTRODUCTION

Technology is transforming the way that civil aircraft systems are designed, constructed and operated. the goal of developing the civil aircraft system is the production of the systems within the constraints of scope, time, and budget. To achieve these objectives, project performance must be monitored and measured periodically to identify the performance variances and figure out corrective actions. the EVMS (Earned Value Management System) is a better way to measure project progress, meanwhile it considers the interrelationship between production, costs and time in the project’s forecasting to establish appropriate corrective measures.

2. BASIC KNOWLEDGE ABOUT EVMS

Traditional method of project management dividing a project into six phases, which makes it possible to lead in the best possible direction. the total work load of a project is divided into smaller components, thus making it easier to monitor.

1. Initiation phase
2. Definition phase
3. Design phase
4. Development phase
5. Implementation phase
6. Follow-up phase

Adopting the six phases creates clarity in a project, thereby making it easier to administer. Usually, four components, team, goal, limited resources and uncertainty(risk) are involved in the projects. Besides, in uncertainty characteristic: time, money, quality, organization, information are often treated as the ‘control factors’. These control factors are widely used in project plans, progress monitoring and project

reporting.

EVMS methodology use the follow attributes for project monitor, see table 1 for EVMS formulas and table 2 for Performance measures for data analysis (PMBOK Guide).

EVMS formulas	
Schedule Variance (SV)	EV – PV
Schedule Performance Index (SPI)	EV/PV (>1 ahead, < 1 behind)
Cost Variance (CV)	EV- AC (+under, - over)
Cost Performance Index (CPI)	EV/AC (>1 under, < 1 over)
Estimate to Complete (ETC)	(BAC – EV)/CPI
Estimate at Completion (EAC)	AC +ETC
Variance at Completion (VAC)	BAC – EAC (+under, - over)
To Complete Performance Index (TCPI)	To achieve EAC: (BAC – EV)/(EAC – AC)
	To achieve BAC: (BAC – EV)/(BAC – AC)

Table 1 EVMS formulas

Performance Measure	Schedule			
	SV>0 & SPI>1.0	SV=0 & SPI=1.0	SV<0 & SPI<1.0	
Cost	CV>0 & CPI>1.0	Ahead of schedule under budget	On schedule under budget	Behind schedule under budget
	CV=0 & CPI=1.0	Ahead of schedule on budget	On schedule on budget	Behind schedule on budget
	CV<0 & CPI<1.0	Ahead of schedule over budget	On schedule over budget	Behind schedule over budget

Table 2 Performance measures for data analysis (PMBOK Guide)

3. PROJECT SCHEDULING

Project schedules depict the time frame required to accomplish the defined work. the scheduling process supports multiple levels of related schedules, with each succeeding level more fully defining the work to be accomplished. the various schedules depict a continuous logical sequence of in-house and contract milestones from the Top Level schedule down to the detailed schedules, and from the beginning of the project to final delivery.

The schedule development process is initiated upon receipt of the following project specific documentation: scope definition, Work Breakdown Structure (WBS) and WBS Dictionary, Program Plan and Project Plan, Test and Verification Plan, internal Task Agreements,

project cost estimate, funding guidelines, contract SOW or Project Proposal. These documents are used to define the structure and time frame for authorized implementation activities. Utilizing a product oriented WBS provides a logical outline of the scope of work that can be further decomposed within the schedule. When developing the IMS(Integrated Master Schedule) Baseline in civil aircraft projects, the following areas need to be considered:

- a. Ensure that tasks, milestones, and schedule logic are established by product within detailed schedules for specific work packages, leading to separate and specifically defined deliverable.
- b. Ensure that schedule detail represents the approved scope of work and is aligned with the appropriate WBS element and/or specific work package.
- c. Ensure the level of schedule detail provided is adequate to ensure objective status reporting by the managing and performing organizations.
- d. Identify and segregate external efforts (e. g., contractor, university partners) in alignment with the WBS. Analyze the manner in which performance of these tasks are captured and validated.
- e. Identify and document schedule risk items, (i. e., technical/schedule risk, complexity, and criticality of effort) to meet implementation requirements.
- f. Ensure that an appropriate and allowable amount of schedule margin is included in the IMS.
- g. Consider schedule visibility required by management for controlling the element of work.
- h. Ensure that all formats of presented schedule data are traceable to and representative of the content of the IMS.

Detail schedules that adequately describe the work to be done for effort contained in all Work Breakdown Structure (WBS) elements are essential in the development of a credible project schedule. Integration of all detail schedules and applicable contractor schedules form the project IMS. the detail-level schedules are the level at which the schedule network logic is created. the network logic is simply a model for how the project effort will be implemented. Network logic incorporates the five key schedule components listed below that enable the scheduling tool to accurately time phase and sequence all project tasks.

- a. Tasks and milestones at a discrete and measurable level of detail
- b. Task duration (recommended in day time units)
- c. Task inter dependencies (predecessors/successors using Finish to Start, Start to Start, Finish to Finish, and Start to Finish relationships)
- d. Tasks Constraints (i. e.; Start No Earlier Than, Must Finish On, etc.)
- e. Task calendars

When the above schedule components are appropriately integrated within the project IMS, the result should be an accurate and usable IMS which provides sound forecast dates, proper sequencing of

tasks, total slack calculations for all tasks/milestones, and the capability to identify the project critical path. Resource loading can be done in an automated scheduling tool, in an external spreadsheet, or in a robust Earned Value Management System (EVMS)/cost management tool. To ensure adequate cost and schedule integration, however, it is generally recommended to implement resource loading within an automated scheduling tool. Prior to assigning resources to IMS tasks, it is recommended that a listing of potential resources (resource pool) be established within the automated schedule tool. the resource pool should contain all types of resources that will be needed for the project, regardless if it is workforce, equipment, or consumables.

Figure 1 shows the examples of Civil Aircraft System software IMS, Table 3 - Table 4 shows IMS corresponding to Resource Loading Hours and FTE (Full Time Engineer)for project resource management.

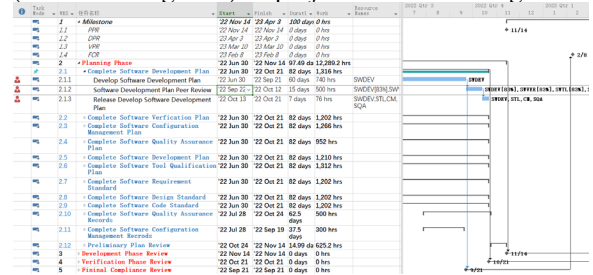


Figure 1 Civil Aircraft System Software IMS Example

Resource Name	Hours	Jun	Jul	Aug	Sep	Oct	Nov
SWDE V	3, 281	41	854	805	862	655	65
SWVE R	1, 407	8	168	184	502	492	53
SWTL	751				326	372	53
SQA	2, 419	8	184	368	734	1, 060	65
CERT	1, 527	8	168	184	558	556	53
STL	583				112	459	12
CM	1, 539	8	184	368	332	583	64
TOOL	720	8	168	184	176	120	64
PM	64						64
Grand Total	12, 289	81	1, 726	2, 093	3, 600	4, 296	493

Table 3 IMS Resource Loading Hours Example

Resource Name	FTE	Jun	Jul	Aug	Sep	Oct	Nov
SWDEV	25	0	7	6	7	5	1
SWVER	11	0	1	1	4	4	0
SWTL	6	0	0	0	3	3	0
SQA	19	0	1	3	6	8	1
CERT	12	0	1	1	4	4	0
STL	4	0	0	0	1	4	0
CM	12	0	1	3	3	4	0
TOOL	6	0	1	1	1	1	0
PM	0	0	0	0	0	0	0
Grand Total	95	1	13	16	28	33	4

Table 4 IMS Resource Loading FTE Example

4. PROJECT COST ESTIMATING

The NASA Cost Estimating Handbook Version 4.0 defines a “how to” twelve step process for performing a cost estimate and cost risk analysis. These steps can

be grouped into three parts: Project Definition; Cost Methodology; and the Estimate as depicted below in Figure 2.

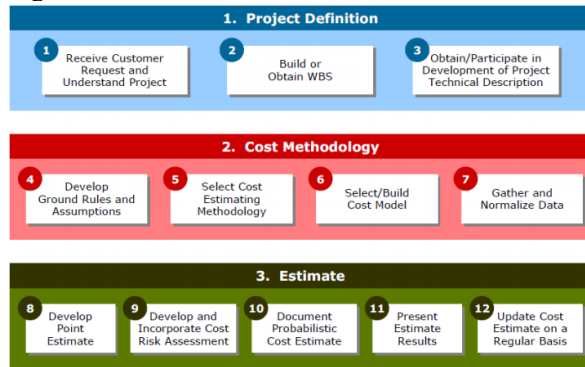


Figure 2 Cost Methodology Process

Detail steps of these 12 tasks are described as followed:

Task 1: Receive Customer Request and Understand the Project

Task 2: Build or Obtain Work Breakdown Structure (WBS)

Task 3: Obtain/Participate in the Development of Project Technical Description

Task 4: Develop Ground Rules and Assumptions

Task 5: Select Cost Estimating Methodology

Task 6: Select/Construct Cost Model

Task 7: Gather and Normalize Data

Task 8: Develop Point Estimate

Task 9: Develop and Incorporate Cost Risk Assessment

Task 10: Document Probabilistic Cost Estimate

Task 11: Present Estimate Results

Task 12: Update Cost Estimate on Regular Basis

After these 12 steps, calculate IMS Cost budget, refer to table for IMS Resource Loading budget example.

Resource Name	Dollars	Jun	Jul	Aug	Sep	Oct	Nov
SWD EV	\$65,627	\$813	\$17,080	\$16,107	\$17,231	\$13,094	\$1,301
SWV ER	\$28,133	\$160	\$3,360	\$3,680	\$10,031	\$9,841	\$1,061
SWT L	\$15,013	\$0	\$0	\$0	\$6,511	\$7,441	\$1,061
SQA	\$48,373	\$160	\$3,680	\$7,360	\$14,671	\$21,201	\$1,301
CERT	\$30,533	\$160	\$3,360	\$3,680	\$11,151	\$11,121	\$1,061
STL	\$11,653	\$0	\$0	\$0	\$2,240	\$9,173	\$240
CM	\$30,772	\$160	\$3,680	\$7,360	\$6,640	\$11,653	\$1,279
TOOL	\$14,399	\$160	\$3,360	\$3,680	\$3,520	\$2,400	\$1,279
PM	\$1,279	\$0	\$0	\$0	\$0	\$0	\$1,279
Grand Total	\$245,784	\$1,613	\$34,520	\$41,867	\$71,995	\$85,925	\$9,863

Table 5 IMS Resource Loading budget Example

Setup Baseline for cost and schedule for IMS, and distribute to the project team members, each product project needs to assign a planner to update the schedule, and each employee needs to update time card when

perform working on this project.

5. MEASURING THE PROGRESS OF THE PROJECT

The EVMS allows the measuring of efficiency in the progress and performance of a project’s execution in terms of production costs and time simultaneously, by comparison with the programmed values. the three main indicators used to analyze the progress of the project are the schedule variation (SV), the cost variation (CV).

Performance analysis consists of measuring the work that has been accomplished (in-house/mission support and contracted) against the technical, cost and schedule baseline, and identified risks against this integrated baseline. Variances from the baseline that breach the established thresholds should be identified so that the specific drivers or causes of the variance can be determined and documented.

This analysis also helps the project team develop corrective actions and report the projects current status to customers. In addition, it provides trend data which can help project future performance. Performance analysis demonstrates the cost and schedule effectiveness, and provides estimates for completing the remaining work. In the following paragraphs, the discussion will be focused on various data analysis techniques.

A key point is that measuring the project’s cost performance is only one step of the analysis process. For a complete picture of the projects’ overall performance the analysis should include a review of the technical accomplishments, a schedule status, and an analysis of cost and other resources associated with the work objectives. After reviewing data from each source, comparisons can be made between the baseline plan from both a cost and schedule standpoint. the resulting variances are compared to established percentages and dollar thresholds to determine the significance of the variances.

In Figure 3, the schedule status is added to the chart, which results in a different assessment of the current state of the project. the schedule status is based on the technical content that was completed or accomplished at time now. Although it appears on the previous chart that the project was in a positive position in regards to cost, and now appears to be in a negative position in regards to cost and schedule. This can be determined by the fact that the schedule status is below the actual costs and the baseline budget lines. Therefore, what the project had anticipated to be completed at time now for the budget estimate at time now has not been completed, resulting in both a cost overrun and schedule slip. Based on the current project status, analysts can make projections that forecasts the final cost and finish date. This is a good example of why the project analysis needs to include the three key components of technical context, schedule, and cost. Remember that the analysis process is a continuous process which should provide information that can be

used to make management decisions.

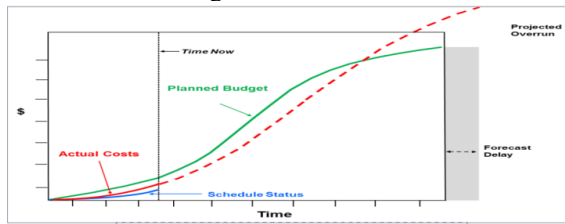


Figure 3 Budget vs. Actual Costs vs. Schedule Status

6. CONCLUSIONS

The EVMS is an integrated management control technique for assessing, measuring, understanding and quantifying project performance and progress in an objective manner, combining measurements of relevant information only at the final stages of its implementation.

This contribution is not a tool to be applied in a direct and simple way by practitioners, but aims to serve as a starting point for specialists in order to develop user-friendly and practical computer applications that provide solutions for the problems of uncertainty in project management. This proposed approach may

serve to develop software that could be put on the market and used by practitioners in the subject and project managers. This software can be implemented in commercial computer applications as well known and easy to use as Microsoft© Excel©; this is one of the lines of research that the authors are currently pursuing.

REFERENCE

- [1] Anbari, F. T., 2003. Earned value project management: Methods and extensions. *Project Management Journal*, 34(4).
- [2] Wouter Baars. *Project Management Handbook*. Version 1.1 - July 2006.
- [3] CS40 MSFC TECHNICAL STANDARD PROJECT PLANNING AND CONTROL HANDBOOK. REVISION A. September 25, 2017.
- [4] *Cost Estimating Handbook* Version 4.0.
- [5] José Luís PONZ-TIENDA, Eugenio PELLICER, Víctor YEPES. Complete fuzzy scheduling and fuzzy earned value management in construction projects. 2012 13(1):56-68.

An Effective Way to Cultivate and Promote the Innovative Consciousness of College Students

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Abstract: In recent years, the number of college graduates has increased year by year, the employment pressure has increased, and the competition for jobs has become increasingly fierce. This paper aims to let more students understand and enhance their innovation awareness, tap their own innovation potential, and then improve their innovation ability, laying a foundation for better career selection and entrepreneurship.

Keywords: Higher vocational colleges, Innovation consciousness, Students' innovation ability.

1. THE MEANING AND CHARACTERISTICS OF INNOVATION

The word "innovation" first appeared in the Biography of the Empress of the Southern Song Dynasty, meaning to create or create something new. Xinhua Dictionary says that innovation means discarding the old and creating the new. In fact, innovation does not completely abandon the old, rather it should be abandoned. In a general sense, the so-called "innovation" refers to a transcendence on the basis of predecessors. As long as there are new discoveries on the existing achievements of predecessors or others, new insights are proposed, new fields are opened up, new problems are solved, new things are created, [1] or existing achievements are creatively applied, it can be called "innovation". It has three meanings: Renew, create something new, change. [2]

Innovation, as a theory, was formed in the 20th century. the famous innovation scholar, Austrian American economist and Harvard University professor Joseph Schumpeter, introduced innovation into the economic field for the first time in 1912. He proposed innovation from an economic perspective, arguing that innovation is a function of production, achieving combinations that have never been possible before. In his Theory of Economic Development, he defined innovation as "the process by which new or reconstituted or rediscovered knowledge is introduced into an economic system." [3] Innovation is a concept that people can easily imagine and talk about, literally speaking, innovation is to put aside the old, create the new, is to abandon the old and welcome the new. Innovation is a process of intellectual activities in which people mobilize known information and existing knowledge according to the established purpose, and produce some novel, unique and socially valuable new concepts, or new ideas, new

theories, new technologies, new processes, new products and other new achievements through innovative thinking. In a sense, it can be said that innovation is the process of turning innovative thinking into real results, and innovation is a beneficial activity that "negates" the status quo and creates unique and novel results when all human physical and intellectual strength is in a highly tense state. It is mainly manifested in the main activities of creation and innovation, such as conceptual conception, scientific discovery, technological invention, organizational change, social revolution and social reform. [4] the above definition suggests the essential attribute of innovation: innovation is a kind of mental activity with purpose and value, which is based on knowledge and produces original results. the above definition also reveals the connotation of innovation: innovation is the integration of innovative motivation, innovative thinking, innovative ability, innovative skills, innovative practice and other elements.

1.1 NOVELTY

Innovation is to solve problems that have not been solved by predecessors, not to imitate and recreate, and its results must be novel. the innovative thinking based on innovation is not confined to fixed thinking patterns and methods, and the innovative practice generated is not limited to some ready-made rigid working procedures and methods.

1.2 CREATIVITY

It is characterized by breaking the rules, daring to adopt new methods, new ideas, the courage to explore, and bold new attempts, including new ideas, new experiments, new measures, etc., which is the most essential feature of innovation. the product development concept of "people without me, people with me, people with me" proposed by successful enterprises reflects the originality of innovation ability. [5]

1.3 SCIENTIFIC

Innovation is not only based on individual subjective will can be successful, it must be guided by scientific cognition, namely dialectical materialism and historical materialism. Any innovative activity must follow the development law of objective things, conform to objective reality, stand the test of practice, and have a convincing scientific nature. "Seeking differences" that lacks scientific basis and goes against

scientific laws is by no means innovation, but a kind of blind novelty, or even whimsical and disorderly. [6]

1.4 COMPREHENSIVE

Innovation activity is a comprehensive creative and pioneering behavior process. First of all, it involves many factors such as the spirit of innovation, innovative consciousness, innovative thinking, innovative ability, innovative techniques, and so on. Problems and deficiencies in any of the elements will directly affect the overall effect of innovation.

Innovation ability is a kind of advanced comprehensive ability, which is the integration and combination of information acquisition ability, absorption ability, observation ability, judgment ability, memory ability, independent thinking ability, analysis and synthesis ability, creative imagination ability, organization and management ability, practical operation ability, coordination and social ability, expression ability, self-learning ability and many other abilities.

"In the process of entering the new century, the best kind of education is for people to be innovative, to become more thoughtful, to pursue more ideals and insights, to become better and more successful people," former Harvard University President Lu Dengting said in a speech at Peking University. Therefore, innovation consciousness is very important for the cultivation of a person's innovation ability.

Innovation consciousness refers to a psychological orientation of learners to actively discover problems, actively explore ideas and methods to solve problems, so as to give full play to their potential. Innovation consciousness is the starting point and internal motivation of innovation activities, the premise of innovation thinking and innovation ability, and the foundation of innovation ability.

2. FAVORABLE FACTORS FOR CULTIVATING INNOVATION CONSCIOUSNESS

The development of innovation depends not only on internal motivation, but also on external conditions. The influence and restriction of social environment on innovation are reflected in all levels and fields of social life.

2.1 FAMILY ENVIRONMENT

Family living environment is the earliest environment for a person to breed innovation. Countless data show that most people who have innovative achievements are influenced by a good family life in their early years. A good family life is one that is both strict and democratic. Here, children can be strictly trained from an early age, and at the same time, they can freely express their own opinions and develop their own autonomy and innovation.

2.2 SCHOOL ENVIRONMENT

Good schools not only teach students knowledge, but also teach students the ability to use and update knowledge, encourage students to think independently and develop in an all-round way. In this way, students can sail freely in the ocean of knowledge, and their innovation can be continuously extended.

ACADEMIC PUBLISHING HOUSE

2.3 GROUP ENVIRONMENT

People are more innovative activities in the form of groups. The ultimate goal of a good group is to tap the innovation potential in the group and cultivate innovative talents. Good groups are good at resolving conflicts and contradictions, and turning the tension within the group into a sense of fair play, into an inspiration rather than a destructive force. In such a group, the individual's innovative power is brought into play in the group structure, and its benefits are multiplied.

2.4 NATIONAL POLICY

History has proved that autocratic and idiotic rule will extinguish the creativity of the people. A good state system is an enlightened and democratic system. It has both solemn laws and a rich and diverse political, economic and cultural life. It requires both the united will of the country and the development of the independent personality of each individual, so as to base their political program and economic prosperity on the great exploitation of the creative power of the entire people.

2.5 SOCIAL ATMOSPHERE

In a society, everyone's admiration and respect for invention and innovation is the highest reward for innovators and the greatest incentive for national innovation. In this society, everyone must be willing to innovate, and innovative talents will emerge in large numbers. On the contrary, if everyone follows the crowd, lives in the mean, does not seek merit, but seeks no fault, the nation's ability to innovate will wither. Many nations that were once glorious in history have since fallen behind, and some have even disappeared from the history of civilization. This is what happens when you suppress your creativity.

In short, no matter what level, what field of social environment, will affect people's creativity. It either encourages the growth and development of innovation, or represses the growth and development of innovation, its role is not negligible.

3. WAYS TO DEVELOP AND IMPROVE INNOVATION CONSCIOUSNESS

3.1 ADVOCATE NOVELTY AND DEVELOP THE SPIRIT OF INITIATIVE

Initiative is to do others have not done, did not think of things, innovative is essentially a strong enterprising spirit and the courage to open up the thinking consciousness, is a dare to be the first in the world, dare to be the spirit of innovation. The pioneering and innovative spiritual and material achievements have contributed greatly to us and are of pioneering significance. It provides new ideas and platforms for future generations, and some achievements can promote social progress. With this spirit, we can have the motivation for innovation, find innovation points, and have the basis for cultivating innovation habits.

3.2 STIMULATE THE DESIRE TO EXPLORE AND DEVELOP A CURIOUS MOOD

Throughout the ages, there have been many inventions, and insights have been obtained through constant exploration. And people's desire to explore is often expressed as a strong curiosity. The ancients said: "failure is the mother of success", the Western proverb also says: "curiosity is the father of research, the mother of success", curiosity can make people interested in things and people. And have an interest will want to question, to explore, like to get to the bottom of the matter. Once a person is curious about a certain issue, he will have a rich knowledge reserve in this area, and at the same time, his attention will be concentrated, he will pay more attention to this matter, more devoted to it, and his thinking will be particularly active, and his potential can often be released at this time, so that people can play an immeasurable role. At this time, human creativity will be unprecedentedly high.

For example, we can use the targeted training in class or after class to stimulate and cultivate students' innovative consciousness; There are three people, A, B, and C, each of whom is either an honest person or a liar. A said: "We are all liars." B said, "One of us happens to be an honest man." Please tell whether A, B and C are honest people or cheats respectively. Answer: A and C are liars, B is honest.

3.3 STRENGTHEN THE TENACIOUS CONSCIOUSNESS AND DEVELOP THE ABILITY TO WITHSTAND SETBACKS

People can not be smooth sailing, will encounter difficulties, encounter setbacks. If there is no super ability to withstand setbacks, there is no indomitable perseverance, but the fear of hardship and difficulty, and the risk will stop, so that it will never be successful, let alone achieve innovative results. In fact, difficulties, setbacks are also a wealth. In times of crisis, people tend to be motivated, active thinking, and more

determined. Only by not being afraid of difficulties, to concentrate, to solve contradictions, to overcome difficulties, it is easier to stimulate creative thinking.

3.4 ESTABLISH LOFTY IDEALS AND CULTIVATE DEDICATION

Through the ages. How many heroes and heroines, people of lofty ideals and aspirations, all fulfilled this truth, all from a young age to set up lofty ideals and aspirations, and strive for it, tenacious struggle, and finally realized. Each of us has the same potential, the same time, and the same opportunities as the outstanding achiever. The energy of each of us can be harnessed if we have high ideals and dedication.

REFERENCES

- [1] Deng Weina, Yang Junjie, Xiao Lin. College Students' Innovation and Entrepreneurship Practice Dalian: Dalian University of Technology Press 2018.09.
- [2] Zhang Rushan. Innovation and entrepreneurship education for college students. Higher Education Press, 2020.
- [3] Xu Liufan Zhu Dingxiu. College students innovation and entrepreneurship guidance course. Shanghai: Shanghai Jiao Tong University Press, 2016.
- [4] Zhang Xianglan Cheng Peiyan Shi Cheng An Gao Ping. College students innovation and entrepreneurship foundation. Beijing: Tsinghua University Press, 2018.
- [5] Connor. Communication, cooperation and innovation - "three steps" to enhance workplace competitiveness. China University of Petroleum Press 2017.
- [6] Zhao Haijun. Research on college students' innovation and entrepreneurship ability. China University of Petroleum Press 2021.8.

Reform and Practice of the Teaching Mode of the Course "Sensor Application Technology"

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Abstract: This paper puts forward a hybrid teaching mode based on the concept of Flipped classroom, and carries out teaching design and practice for the course of sensor application technology according to this mode. With the help of modern network resources, it can improve the amount of information in classroom teaching, fully mobilize students' learning enthusiasm, and improve classroom teaching.

Keywords: Blended learning, Classroom teaching reform, Flipped classroom.

Flipped classroom originated from the "Woodland Park" High School in Rocky Mountain, Colorado, the United States. When the teachers of the school considered how to make up lessons for students who could not attend the classroom teaching, they found a software that can record presentations, record their own teaching courseware, and put it on the website for students who were absent to learn. The absent students cherish this opportunity to make up lessons they had left behind. However, students who have never been absent also use online materials, mainly to review and strengthen classroom teaching content. Then, the teacher began to rethink how to make good use of classroom teaching practices, and thus proposed the concept of the Flipped Classroom, which was widely welcomed by students. [1]

The so-called Flipped classroom is a teaching mode in which teachers record videos before class and upload them to the Internet, students watch teachers' explanations in their spare time, and students return to the classroom to communicate with teachers face to face or complete homework. Of course, this kind of Flipped classroom does not use online videos to replace teachers, nor online courses, [2] nor allow students to study in disorder and isolation, but creates an environment responsible for their own learning, creates a time for real interaction and personalized communication between teachers and students, and will not be left behind because of absence. It is a classroom where students actively learn and provide personalized teaching for all students.

The hybrid teaching based on the concept of Flipped classroom is a "online"+"offline" teaching method, which combines traditional teaching and online teaching relying on Internet technology, and leads learners' learning from shallow to deep to in-depth. The Flipped classroom refers to the readjustment of the learning time and content in and out of class, and the

students can choose their own time and space for learning. Before class, teachers need to propose knowledge requirements, and students need to use all online resources to access relevant materials and acquire relevant knowledge. During the precious classroom time, teachers no longer teach these knowledge, but instead focus more on the application of knowledge and the completion of learning projects, thereby enabling students to have a deeper understanding of relevant knowledge. Teachers also have more time to communicate with students, promote personalized learning, make learning more flexible, diverse, and increase student engagement. This new type of blended teaching provides new ideas for our education and teaching reform. Taking the course "Sensor Application Technology" as an example, we will introduce our exploration and practice. [3]

1. COURSE DESIGN PLAN

The course of Sensor Application Technology is a core course for the major of electrical automation technology in higher vocational colleges. Sensor technology is one of the comprehensive and high-tech intensive frontier technologies that cross many disciplines, such as measurement technology, semiconductor technology, computer technology, information processing technology, Microelectronics, optics, acoustics, precision machinery, Bionics and material science, and is an important foundation of modern new technology revolution and information society. It is an indispensable and important component of automatic detection and control technology. At present, sensor technology has become an indispensable pillar industry of the national economy. The application penetration rate of sensors in the industrial sector has been regarded by the international community as an important indicator of a country's intelligence, digitization, and networking. [4] The organization and arrangement of the teaching content of this course: introduced by examples, completed gradually according to the parts of "task proposal", "relevant knowledge", "task implementation", "other cases", and "training". Adopting task led project course teaching, the knowledge and skill points of sensors and detection technology are integrated into the work tasks of the project, completing the work tasks by learning the mechanisms, principles, and application circuit design of various commonly used sensors, and cultivating

students' ability to use sensor technology to complete intelligent electronic product design. In order to enhance students' interest in learning and stimulate their initiative in autonomous learning, I have selected the first four chapters of teaching content to reform and explore teaching methods.

The first chapter mainly studies the basic concepts of sensors and automatic detection technology, as well as the basic knowledge of measurement errors and error processing. It is suitable for classroom teaching with multimedia assistance. To lay a solid foundation for subsequent software learning and correct programming. Extracurricular students can utilize the relevant resources of our provincial high-quality course "Sensor Application Technology" to deepen their understanding of professional knowledge.

Starting from Chapter 2, the basic principles, characteristics, signal conditioning circuits, and applications of various commonly used sensors, such as strain type, inductive type, resistive type, piezoelectric type, magnetoelectric type, photoelectric type, and thermoelectric type, are introduced in categories. the course is guided by work task orientation, and various work projects are designed. Each project includes multiple work tasks, mainly introducing common structures, working principles, usage scenarios, and methods. Each temperature sensor is designed with typical cases as learning tasks. Each work task starts with typical detection objects, selects appropriate sensors, and recognizes the appearance, performance indicators, and the basic structure and concepts, as well as the introduction of measurement principles, are introduced. On the basis of mastering basic knowledge, corresponding measurement conversion circuits and signal processing circuits are introduced to complete the detection task. Arrange another training session for learners to master knowledge and improve skills in practice.

The design of course content is particularly suitable for classroom lectures and partial Flipped classroom, so as to mobilize students' learning initiative and master the use of sensors as soon as possible.

When discussing the basic working principle of sensors, the concept and characteristics of sensors, and the basic functions of each sensor, the content is very scattered and boring, but it is also the most basic knowledge. This part of the content is suitable for classroom teaching and multimedia assisted teaching.

On the basis of learning the basic knowledge of sensors, when comprehensively using various sensors to complete specific tasks, they are divided into different types of tasks according to different sensors. Each type of sensor learns one content, and each type is in parallel relationship. This content is very suitable for teaching in the form of a full Flipped classroom.

In the whole teaching, partial Flipped classroom and complete Flipped classroom account for 50% of the total class hours. In the classroom, the main focus is on individual and group research and reporting activities,

with the aim of encouraging all students to participate and gain from the activities, experiencing a sense of achievement after hard work and the joy of sharing with others. Below is a teaching case to illustrate the specific implementation method.

2. TEACHING CASES

Temperature sensors refer to several typical temperature sensors, including thermocouples, thermistors, semiconductor thermistors, and integrated temperature sensors. the online resources related to this part of the content are very rich, so I asked students to check the materials on the website in advance. Through video learning, and combined with the textbook content, I designated several study groups to complete different design methods, and asked each group to summarize the design ideas, circuit diagrams, etc. of the method, forming a speech report. In class, each group will report their learning achievements, and let students understand the working principles, advantages and disadvantages, and applications of different sensors through group comparison and debate. the teacher provides supplementary explanations on key content or content that students have not covered, and answers students' questions. After class, students can study each group's reports and materials in detail again to improve together. the specific teaching process is shown in Table 1.

Table 1 Teaching process

Learning stage	Teacher work	Student Tasks
Before Class	Publish learning tasks Guidance group report	Watch video open classes, engage in self-learning activities, and complete group presentations in study groups
In class	Teacher comments, triggering discussions Supplementary explanation Answering questions and resolving doubts Assign homework	Student group report Communication between teachers, students, and groups Deepen understanding and raise questions
after class	Communication	Self study video Complete the group report Finish one's homework

3. COMPARISON BETWEEN FLIPPED CLASSROOM AND TRADITIONAL CLASSROOM

3.1 DIFFERENCES IN TEACHING CONCEPTS

In traditional classrooms, although the emphasis is also on "student-centered", the presentations and teaching aids prepared by teachers before class are difficult for all students to accept, leading to some students being unable to keep up with the teacher's ideas and ultimately giving up on themselves. the Flipped classroom really achieves "student-centered". the PPT prepared by the teacher before the class is recorded with software, but the recorded content is very detailed, so that each video can explain a question and then upload it to the Internet. Students can watch videos in advance at home or off campus, and when they return

to class, the teacher will provide individual tutoring for each student based on their homework situation. We have truly achieved individualized teaching, where teachers provide individual guidance based on students' individual problems. They will come with questions in class and eventually solve their own problems through homework. This teaching mode effectively controls the pace of the classroom, increases students' confidence in learning, and enables them to have the ability to independently solve problems.

3.2 CHANGES IN THE ROLES OF TEACHERS AND STUDENTS

In traditional classrooms, teachers act as disseminators of knowledge and impart teaching content to students, while students, as passive receivers, always take notes while listening. In the classroom, few students engage in intense discussions and express their own opinions. In the Flipped classroom, students can control their learning by using videos. Students will arrange and control their learning according to their own conditions. They can also learn in a relaxed and pleasant environment, and will not miss important knowledge points because of their own distraction. Students can freely browse videos and control their speed according to their own situation. In the Flipped classroom, the interaction between teachers and students is comprehensively improved.

The role of teachers has shifted from being knowledge presenters to facilitators of learning. Teachers can participate in student group discussions, provide certain opinions, answer students' questions, and provide guidance to individual students. Students can learn independently at their own pace, truly become the protagonist of the entire classroom, and finally master the knowledge points of this lesson in a pleasant environment.

3.3 CHANGES IN TEACHING PROCESSES

In traditional classrooms, students learn new knowledge according to the teacher's teaching ideas and strengthen practice by doing homework after class. Students have varying levels of understanding in class, resulting in varying degrees of homework completion. In the Flipped classroom, students use the network courseware to study independently before class, accept the teaching of knowledge, use the time in class, each learning group will have a heated discussion on the homework, and then develop a plan. Each group member will carefully complete the homework, discuss problems encountered, or consult the teacher; In the classroom, teachers carefully answer each

student's various questions, so that the knowledge and skills learned by students can be applied to practical life on their own.

In Flipped classroom, students become the center of the classroom, while teachers focus on student activities and serve students. Teachers should first carry out course development, recording each knowledge point into small videos, so that students can learn outside of class. In the classroom, students can consolidate their learning content by completing homework. Teachers provide individual guidance to students with problems, and finally, students and teachers evaluate and provide feedback on the homework. This process includes collective guidance and personalized guidance. During the learning process, students not only enhance their ability to learn independently, but also develop their thinking ability and cultivate the ability to independently solve problems in production and life.

4. TEACHING SUMMARY

Through teaching practice, I realized that the mixed teaching mode with the concept of Flipped classroom can really mobilize students' enthusiasm for independent learning to a large extent. Students are no longer passive acceptors in the classroom, but participate in the classroom process. The classroom atmosphere is active, students dare to express themselves, and the teaching effect is significantly improved. However, it also requires teachers to have higher levels of knowledge, informatization, and practical skills in order to better practice blended teaching.

REFERENCES

- [1] Jiang Guihong Blended teaching reform of "organization and work design" based on project tasks- Journal of Xiangyang Vocational and Technical College.
- [2] Lu Shengxian Research on the New Hybrid Teaching Mode of Electrical Basic Course Based on Flipped classroom - Guangxi Education.
- [3] Li Yongguang Teaching reform of professional courses of vocational education in the era of "Internet plus"- Taking the course of navigation technology "Navigation" as an example [J]. Vocational & Technical Education Forum.
- [4] Yu Miao, Yu Lan Discussion on Teaching Reform of "Internet plus Vocational Education" [J]. Exam Weekly.

The Application of Critical Thinking in the Teaching Process

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Abstract: Taking the course “Micro-controller Application Technology” as an example, this article explores the application of critical thinking in the teaching process. The aim of this article is to advocate the introduction of critical thinking in the teaching of “Micro-controller Application Technology” to cultivate and improve students’ innovative abilities and problem-solving skills.

Keywords: Critical Thinking, Teaching Process, Innovative Abilities.

1. WHAT IS CRITICAL THINKING?

Critical thinking refers to the ability to analyze, evaluate, and reason about information, perspectives, and situations in order to form well-founded judgments and decisions. [1] Critical thinking includes questioning and challenging established viewpoints, identifying logical fallacies, understanding complex problems, and providing logically sound explanations. When faced with problems or situations, critical thinking not only helps us accept surface-level information but also guides us to think deeply, analyze the underlying causes of the problems, and propose potential solutions. In simple terms, critical thinking is a thinking skill and tendency that evaluates thinking based on certain standards and aims to improve thinking. It is reflective and rational thinking. Critical thinking has been widely recognized as one of the goals of education, especially higher education. Therefore, critical thinking should be given sufficient attention and applied in vocational education.

2. THE CURRENT SITUATION IN THE TEACHING OF “MICRO-CONTROLLER APPLICATION TECHNOLOGY”

The traditional teaching model for micro-controllers usually involves a combination of classroom lectures and practical experiments. While this approach has some effectiveness, it also has the following issues:

(1) **Disconnection between theory and practice:** In the traditional model, theoretical knowledge is usually taught in the classroom, but opportunities for actual operation and experiments are limited. Students may feel a disconnection between theory and practical application, making it difficult to apply the learned knowledge to real projects.

(2) **Lack of sufficient real-world projects:** In the traditional model, students may only perform simple experiments, lacking experience in complex projects in

the real world. Consequently, when faced with real engineering challenges, they may feel lost.

(3) **Lack of connection with practical applications:** Micro-controllers are commonly used in electrical control and embedded systems. However, the traditional teaching model may lack methods to connect micro-controllers with practical application scenarios.

(4) **Lack of teamwork and innovation:** the traditional model is often based on individual learning, lacking opportunities for students to collaborate with peers to solve problems and engage in innovation. In actual work, completing a project usually requires teamwork and collaboration.

(5) **Lack of interdisciplinary content:** Modern embedded systems often involve multiple disciplinary fields such as hardware design, software programming, and communication. The traditional model may not be able to effectively integrate these interdisciplinary contents.

(6) **Lack of personalized teaching:**[2] Students have different learning progress and backgrounds, but the traditional model often struggles to meet the personalized needs of different students.

[3] In order to solve these problems, in the current teaching of single-chip micro-controller in vocational colleges, teaching is increasingly inclined towards a practical and project-oriented teaching mode, emphasizing students' practical skills, teamwork spirit, innovative thinking ability, and the ability to apply the knowledge learned in practical applications.

3. INTEGRATE CRITICAL THINKING INTO THE TEACHING PROCESS OF MICRO-CONTROLLER

In the teaching process of single-chip micro-controllers, the application of critical thinking can help students better understand and apply the knowledge they have learned, cultivate their problem-solving ability and innovative thinking. Taking the teaching of single-chip microcomputer interruption knowledge as an example, critical thinking is applied to the entire project teaching by designing and making intersection traffic lights:

(1) **Question:** How to release emergency vehicles when they need to pass through an intersection? Guide students to analyze knowledge points through reading, using interrupts to achieve the release of special vehicles, and further consider which interrupt can achieve project efficiency. This can encourage students not only to accept existing knowledge, but also to ask questions, question the applicability of theories, and

address limitations in practical applications during the learning process. This can stimulate students' curiosity and prompt them to think deeper questions, such as where different interrupts are applied, and which pin of the micro-controller should be connected to the signal wire when using interrupts.

(2) Analysis and evaluation: In the design of traffic light projects, multiple times are required, such as green light release, red light prohibition, green light countdown reminder (green light flashing), yellow light warning, etc. Each process has different delay time, how can different time be obtained? Guide students to determine the selection of timing/counters through analysis and evaluation, and through comparison, adopt appropriate working methods to achieve basic delay time, and analyze how to apply basic delay time to obtain other different delay time. This approach can guide students to analyze and evaluate the timing/counter, working mode setting, initial value calculation, delay algorithms, and techniques they have learned, and reflect on the advantages and disadvantages of different methods. It helps to cultivate students' judgment and comparative analysis abilities.

(3) Solution: Design an algorithm for interrupt and delay time, followed by connecting hardware circuits and software programming. Guide students to consider which parts should be included when designing hardware circuits, such as traffic light wiring at two intersections, interrupt simulation buttons, crystal oscillator circuits, and reset circuits. Software programming should include main functions, interrupt functions, delay functions, etc. Complete traffic light design through hardware design and software programming, and finally achieve traffic light rotation release through software and hardware joint debugging. In the process of solving practical problems, students are encouraged to consider multiple methods and approaches to evaluate the advantages and disadvantages of each method, and choose the most suitable solution. This can cultivate students' ability to solve the practical problems.

(4) Critical reading: Guide students to read and analyze textbook knowledge related to micro-controller interrupt technology, and provide engineering projects with interrupt functions and micro-controller related learning websites to help students analyze relevant technical materials, extract interrupt technology from them, judge whether the selected method is effective and reliable, and improve students' ability to distinguish, filter, and judgment ability.

(5) Innovative thinking: In the above project design, encourage capable students to add countdown function, and design hardware to achieve software programming. Through this approach, guide them to try new design methods and functions in micro-controller projects, motivate them to think about how to improve existing solutions, and propose new ideas, thereby cultivating innovative thinking abilities.

(6) Teamwork: Project production requires teamwork, requiring students to collaborate in groups to solve problems. The project production involves multiple tasks, such as hardware circuit design and connection, component selection, software programming, and design report writing. These tasks require teamwork among team members, encouraging effective communication and reasonable division of labor during the collaboration process. Each person puts forward different opinions and thinks about problems from different perspectives, brainstorming, and ultimately achieving successful project design.

(7) Reflection and Summary: After completing an experiment or project, encourage students to review the entire process and evaluate their decisions, methods, and results. In order to cultivate their self-reflection and continuous improvement abilities.

(8) Continuous learning: Cultivate students' awareness of continuous learning of new technologies and methods, enabling them to keep up with industry development and apply their knowledge and skills to constantly evolving professional fields.

[4] By integrating critical thinking into micro-controller project teaching, students can deepen their understanding of professional knowledge, cultivate their ability to analyze and solve problems, and apply the knowledge and skills they have learned more proficiently and confidently in future job positions.

4. APPLY CRITICAL THINKING TO MICRO-CONTROLLER PROJECT EVALUATION

In order to get the teaching effectiveness, it is necessary to evaluate the micro-controller projects designed and produced by students. Applying critical thinking in the evaluation process can help students more comprehensively consider the implementation functions of the project, reflect on their mastery of the knowledge learned, provide direction for further learning, and improve students' innovation. Consider using critical thinking from the following aspects.

(1) Determine project objectives: Have students clearly defined the project objectives and expected accomplishments before starting to design a micro-controller project? And check if the project design has solved actual problems or met specific needs. This helps students clarify the design purpose and direction of their efforts.

(2) Evaluate feasibility: At the beginning of the project, evaluate the feasibility of the project. Have students considered factors such as required hardware resources, technical limitations, and scheduling. Critically consider whether the project is achievable under existing conditions, or whether adjustments to goals or methods are necessary.

(3) Multiple solutions: Have multiple solutions been proposed during the design phase, rather than being limited to one solution. Do you propose multiple different design ideas, compare their advantages and disadvantages, and determine the final implementation plan? This helps cultivate students' innovative thinking.

(4) Risk assessment: Analyze potential risks and issues that may arise during the project implementation process, such as hardware shorts and time errors, their potential impact on project success. Consider how to mitigate or respond to these issues to ensure the smooth implementation of the project.

(5) Prototyping and testing: During the production process of the micro-controller project, is it considered to produce initial works as early as possible and conduct testing? [5] Critically evaluate the functionality, performance, and stability of the initial work. Identify problems through testing and make timely improvements to avoid serious problems in the later stages.

(6) Subsequent maintenance and sustainability: Critically consider the maintenance needs and sustainability after the project is completed. Is it easy to maintain after the project is completed? Do you need to consider upgrading or expanding?

(7) Summary and Reflection: After the project is completed, summarize and reflect. Review the entire project process, evaluate what goals the project has achieved, which areas can be improved, and what knowledge has been learned from it.

By applying critical thinking to the project design and evaluation process, students will be able to consider various factors more comprehensively, thereby designing more innovative, feasible, and practical micro-controller projects.

5. THE FUTURE APPLICATION OF CRITICAL THINKING MAY INCLUDE THE FOLLOWING ASPECTS:

(1) Innovative Design and Solutions: By cultivating critical thinking, students will be able to propose innovative designs and solutions to address different challenges and problems, and promote the innovative development of micro-controller technology.

(2) System optimization and performance improvement: Critical thinking can help students analyze various aspects of the system in depth, and find optimization strategies to improve performance and reduce power consumption, making micro-controller applications more efficient.

(3) Cross disciplinary integration: Applying critical thinking to micro-controller teaching can encourage students to integrate knowledge from different fields and create more comprehensive solutions, such as combining micro-controller technology with fields such as sensors and communication.

(4) Risk assessment and safety considerations: Critical thinking enables students to be more sensitive to potential risks and safety hazards, thereby placing greater emphasis on safety and reliability in the design and application of micro-controllers.

(5) Continuous learning and adaptation to change: [6] Cultivating critical thinking helps students establish

awareness of continuous learning, enabling them to continuously adapt to the rapid changes in micro-controller technology development and maintain competitiveness in this field.

6. THE EFFECT OF CRITICAL THINKING IN MICRO-CONTROLLER TEACHING

Critical thinking can help students develop the ability to analyze problems, evaluate information, and solve difficult problems. Through critical thinking, students can gain a deeper understanding of the working principles of micro-controllers and be able to ask key questions, thereby deepening their understanding of knowledge. In addition, critical thinking can also stimulate students' innovative thinking, encourage them to try different solutions, and cultivate the ability to think independently. [7] In short, critical thinking can help improve students' learning effectiveness and skill development in micro-controller teaching.

In summary, the future application of critical thinking in the teaching of "Micro-controller Technology and Applications" will cover multiple aspects such as innovation, optimization, integration, and safety, which will help cultivate students' more comprehensive technical abilities and comprehensive literacy.

REFERENCES:

- [1] Ouyang Lin. Critical Thinking and Middle School Chinese Language Learning [M] Beijing: China Renmin University Press, 2017
- [2] Yu Wensen. Core Literacy Oriented Classroom Teaching [M] Shanghai: Shanghai Education Press, 2019:9
- [3] Chen Xuhui, Zhang Rongsheng. Project development, teaching design of project teaching and its application in CNC milling machine operation teaching [J]. Vocational Education Forum, 2008, (9)
- [4] Xu Han. Thinking about the reform of vocational education curriculum in my country [J]. Vocational and Technical Education, 2005, (31) from China Labor Market Network
- [5] Zhang Dingqiang. Research on the Positioning of Information Technology in the New Mathematics Curriculum System [J]. Audio-visual Education Research, Issue 08, 2004.
- [6] Cao Wei, Shao Zhongliang. Exploration of the examination reform of the principle and application of the single-chip microcomputer [J]. Journal of Guangdong Technical College of Water Resources and Electric Power, Issue 02, 2004.
- [7] Tranquility, Xiao Jie, Miao Baiqi, Dai Xiaoli, Song Changnai. A study on the correlation between college entrance examination scores and college scores [J]. Higher Education Science Education; 2001 03.

A Preliminary Study of Online Course Evaluation

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Abstract: This paper analyzes the characteristics of online course, studies the current research progress of online course evaluation at home and abroad, and puts forward the basic principles of online course evaluation and the problems that should be paid attention to.

Keywords: Online course, Evaluation, Learning, Principle.

As a representative of the information age, computer network is expanding to every field of social life. Under the guidance of learning theory, learning as a continuation of the existing material cultural achievements of human beings has been transformed from the traditional classroom-based "teacher-learning-student learning" model to a variety of ways to achieve. [1] the Internet gives learners a more flexible and efficient way of learning, and opens up an alternative way to acquire knowledge and qualifications for those who are unable to enter the halls of higher education.

1. FEATURES OF ONLINE COURSES

Network courses break the limitations of region and time and space, and realize multiple functions such as two-way interaction, real-time multi-point communication, wide dissemination, and fast data and information collection. Relying on network communication technology and multimedia technology, network courses provide a technical framework for constructivism teaching theory, and provide an unprecedented teaching platform for active exploration, collaboration and communication under the constructivism teaching mode. [2-4] the network course has special advantages in learning information manufacturing, storage and delivery, and overcomes the shortcomings of teachers' communication in TV education. It not only provides students with a completely personalized learning environment, but also provides strong support for collaborative learning, and gradually becomes an important part of modern education.

2. THE NECESSITY AND SIGNIFICANCE OF ONLINE COURSE EVALUATION

At present, the network teaching blindly pursues the form, and covers up some things in the essence that are worth thinking and studying. What is successful online teaching? How to construct online courses suitable for learners' own learning characteristics? Evaluation is one of the important means of scientific decision-

making and quality control. Without evaluation, it is often difficult to ensure the teaching quality and the realization of teaching objectives. the quality of online courses is a key link that restricts the quality of online education. the evaluation standard of online courses is an important problem that must be solved as soon as possible in the development of online education. Network course is a key factor to determine the quality of network education. the quality and level of network course construction will directly affect the teaching ideology, teaching method, teaching means, teaching mode and many other important aspects of distance education. With the development of online education, the number of online courses is also growing rapidly. Establishing a set of effective quality assessment system to effectively monitor and manage the quality of online courses can avoid many low-level repetitive development work and ensure the quality of online education. [5]

The network course is the sum of the teaching content and teaching activities of a certain subject expressed through the network. As an important digital learning resource, it is also the key to carry out distance education and integrate information technology with curriculum in colleges and universities. the quality evaluation of online courses is not only an important measure to promote the development of online education and improve the level of online teaching, but also an important means to research and development, market development, selection, macro guidance and quality management of online teaching software. Network teaching is a new thing developed recently, and there is little experience in this area. In addition, there are many factors affecting multimedia network teaching, and each factor affects each other, so it is not easy to evaluate. [6-7] Therefore, the evaluation of multimedia network courses is indeed a very urgent task, which is the bottleneck problem affecting the development of network teaching. If this problem is not solved, the construction of network teaching will be blind, the goal will be unclear, the direction will be unclear, and it will affect the healthy development of network teaching. At present, there is no set of more authoritative, widely recognized, feasible online course evaluation standards, some foreign evaluation standards have a very important reference value, put forward a lot of fresh ideas, broaden our thinking, but the domestic and foreign after all different, can not copy the foreign evaluation standards. For this reason,

it is extremely necessary to conduct evaluation research on online courses. [8-9]

3. CURRENT RESEARCH STATUS OF ONLINE COURSE EVALUATION AT HOME AND ABROAD

At present, the evaluation of e-learning has been paid much attention in foreign countries, and the construction of e-course, e-learning tools and environment has been deeply studied. Some developed countries in the world have long started to apply the Internet to teaching and learning, and there is no shortage of inspiring information. Here are two valuable criteria:

E-Learning Certification Standards (E-Learning Certification Standards), this draft standard evaluates e-learning in three aspects: usability, technical and instructional. From the perspective of instructional design, the standard puts forward 18 sub-items in the aspects of goal, content, strategy, media, evaluation and so on. [10]

Quality On the Line, which includes: the 7 aspects of architecture, curriculum development, teaching/learning, curriculum structure, student support system, teacher support system, evaluation and evaluation system are further segmented into 24 essential core sub-indicators and 21 optional sub-indicators.

The "Principle of Good Practice for Online Teaching" in the United States involves 6 main premises and 22 standards, which are classified into 7 categories, providing a basis for the evaluation of online courses. Although some other literatures do not put forward comprehensive evaluation criteria, they provide a specific case study of online course evaluation, and there are many valuable strategies for reference. "Evaluation of a," May 1998 issue of the journal *Technology & Distance Education*

Based on the Web-Based Course framework proposed by Khan in *Web-based Instruction (Web-based Instruction)*, An evaluation of an Internet-based course in Earth Sciences offered by Montana State University and the Burns Communications Center. Student Evaluation of Web-Based Instruction (Student Evaluation of Web-based Courses) is mainly conducted from the perspective of students to obtain their evaluation of the Internet: Communicating, Accessing & Providing Information is the evaluation of this online course. the method of communicating, Accessing & Providing Information is by questionnaire. the results are presented in the form of statistical ICONS.

In our country, there are CELTS (Chinese E-Learning Technology Standardization) series standards. the goal of CELTS-22 standard is to put forward the index system and evaluation guide for the quality evaluation of online courses in the fields of higher education, vocational training and basic education.

Looking at the current evaluation of foreign online courses, in addition to meeting the basic requirements

of traditional courses, such as clear teaching objectives, complete knowledge system, effective homework and exercises, and reasonable evaluation methods, we can find some features related to the network as follows: (1) highlighting the importance of interaction; (2) Attach importance to the creation of learning environment; (3) the evaluation content of teaching management and support occupies a large proportion.

4. BASIC PRINCIPLES OF ONLINE COURSE EVALUATION

The evaluation of online courses should start from the macro and start from the micro. Think about it from many angles, from many sides. We should not only consider the teaching management, the whole network course market, the teaching design Angle, but also consider the Angle of teachers and students. It can be summarized in the following aspects:

(1) Individuation principle: Individuation is the unique quality of online education. Network students can choose network learning according to their own characteristics, so they should adopt personalized evaluation. In other words, online course evaluation should be appropriate for people, can not engage in "one-size-fits-all" "standardization", online course evaluation should not only pay attention to human nature, but also pay attention to personality, which is conducive to personality development.

(2) the principle of bidirectional: Online course evaluation should evaluate both online teachers and online students; It is necessary to evaluate not only the content of network course, but also the supporting system of network teaching. It is necessary to evaluate both people and computers and networks.

(3) Diversification of evaluation subjects: experts, instructional designers, media personnel, technicians, subject experts, teachers and students participate in the evaluation to ensure the objectivity and comprehensiveness of the evaluation. In other words, in the evaluation, external criteria (need and possible) and self-criteria (need and possible) are combined.

(4) Developmental principle: Since the basic goal of online courses is to promote the healthy development of online students, the evaluation of online courses should adhere to the developmental principle. First, the principle of development requires attention to summarize the shortcomings of online courses; Secondly, the principle of development requires the adaptation of network courses based on the development of people and the perfection of network courses. Thirdly, the principle of development also requires attention to both summative evaluation and formative evaluation.

(5) the principle of combining comprehensive qualitative evaluation with quantitative evaluation: it means that the evaluation of online courses should not only explain problems through statistical data, but also elaborate conclusions by means of interviews, questionnaires, audio or video surveys. In other words, humanistic evaluation means and technical evaluation

means should be combined. Moreover, attention should be paid not only to the quantification of knowledge and skills, but also to the qualitative evaluation of emotions, attitudes and values.

(6) the principle of purpose: it means that the evaluation of online courses pays attention to the purpose of online courses, the purpose of each content module of online courses, and the thematic nature of each module.

(7) Operability principle: Due to the complexity and particularity of network technology and network education, as well as the dispersion of online students, the difficulty of online course evaluation is greater than that of traditional school course evaluation. Therefore, online course evaluation should pay particular attention to operability.

(8) Interactivity: It refers to the human-computer interaction and everyone interaction embodied in the design and content of online courses (between online teachers and students, online teachers and online students). This kind of interaction contains the necessity of teaching feedback, and the evaluation of online course should pay attention to the evaluation feedback, so as to realize the improvement and perfection of online course through the evaluation of feedback information. At the same time, it emphasizes the rendering of classroom culture and the integration and communication of emotions between teachers and students, so that classroom discipline depends on students' self-discipline. When designing problem situations in the classroom, teachers should pay attention to the issues involved and should be able to achieve effective classroom communication and communication with students. the design and implementation of online courses facilitate discussion, cooperation and competition among online teachers, students and teachers and students.

(9) Facilitate teaching management. the design of network course should be combined with teaching management to provide convenience for teaching management and start from the overall situation of teaching work.

(10) Promoting the healthy development of the online course market. Online courses have a market component, which should be viewed and considered in the long run to form a virtuous circle and promote each other.

5. PROBLEMS THAT SHOULD BE PAID ATTENTION TO IN ONLINE COURSE EVALUATION

Pay attention to the application scope of online courses, applicable personnel. the larger the application, the better; It is also not suitable for all personnel, online courses can not be the whole education. Avoid the phenomenon of valuing hardware over software, and valuing software over the leading role of teachers. Combine personalized learning with teacher-led roles. Thematic: the pages of online courses should highlight the theme, and do not divert students' attention to

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network technology with gorgeous pages. This requirement should be reflected in all pages, but also in the links between pages.

Pay attention to the navigation ability building of the course. It means that the design of online courses, especially the design of online course content and network interface, should highlight the course objectives and prevent online students from losing their way in the massive network information. the navigation system should be clear, explicit, simple, convenient and unified. For learners to accurately determine the current position, and at the same time can quickly and easily enter the next learning content.

Participation: refers to the degree of participation of network students and network teachers in the design and implementation of network courses and the process of network evaluation. the examination of the degree of participation is related to the attitude and emotion of network teachers and network students towards network education.

We should not ignore the cost-effectiveness of online courses for the sake of the long-term development of distance education.

The evaluation research of online courses in our country started late. the network course is neither a simple electronic textbook nor a general CAI courseware. the evaluation of the network course should consider its particularity, and the establishment of a complete evaluation index system of the network course needs to overcome many difficulties. Therefore, it is necessary to conduct a deeper and more detailed research on the evaluation of online courses.

REFERENCES

- [1] Wu Meina, *Instructional Design*, Higher Education Press, 1994.
- [2] *Online Course Evaluation*, Zhu Lingyun, Luo Tingjin, Yu Shengquan, *Open Education Research*, 2002(1).
- [3] *Research on evaluation strategies of online teaching*, Liu Haixue, Han Lingling, Peng Li, *Educational Technology Research*.
- [4] *Theory and Practice of Online Course Evaluation*, Ma Zhiguo, *Liaoning Education Research*, 5th issue, 2004.
- [5] *Discussion on the evaluation system of network distance Education*, *China Audio-Visual Education*, 2002.8, No. 187.
- [6] *Development of evaluation Standards for Online courses*, *Modern Educational Technology*, 2003(1).
- [7] *Analysis and Design of Online Course Evaluation Management System*, Tong Xia, Shi Shuen, *China Distance Education* 2004.6.
- [8] "Quality On the Line" the National Education Association (NEA) and Blackboard Inc.
- [9] *E-Learning Certification Standards*, Lynette Gillis.

[10] the Development of Quality Standards for Online Courses in the United States, Cao Mei, Teaching and Learning of Television University, 1st issue, 2002.

The Problems and Reform Exploration of Cultivating Leisure Sports Talents in Higher Vocational Colleges

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Abstract: Compared with foreign countries, China's "leisure sports" started relatively late and has not yet formed a unified definition in terms of concept. Many people believe that leisure sports are social sports, mass sports, and mass leisure sports activities aimed at entertainment and fitness. Although there are many similarities in content and form between leisure sports and mass sports, there are still significant differences between the two. At present, the majors set up for physical education in vocational colleges in China mainly include sports training, social sports, sports protection, sports art performance, traditional ethnic sports, etc. Although vocational colleges have offered leisure sports majors since 2016, they are mostly for self entertainment. Through the training plan for talents, it was found that the curriculum and schedule of leisure sports majors are basically the same as those of social sports majors. the class hour allocation is simple, the practical ability is small, and the social competitiveness is low. China has not yet formulated a unified national standard for leisure sports professional training.

Keywords: Leisure Sports, Higher Vocational Colleges, Social sports.

1. OVERVIEW OF TALENT TRAINING FOR LEISURE SPORTS MAJORS IN VOCATIONAL COLLEGES

1.1 THE CHARACTERISTICS OF CULTIVATING LEISURE SPORTS TALENTS IN VOCATIONAL COLLEGES

As an important component of the current sports industry, the fitness, exercise, and leisure industry is a series of activities aimed at the development of personal physical and mental health. By utilizing sports, individuals can personally participate in and experience fitness activities, thereby providing good products and services for the masses. [1] Due to the fact that the Leisure Sports major has just been established in recent years, it mainly provides sufficient fitness and leisure industry practitioners for society. Therefore, leisure sports professionals should be proficient in sports and management. Specifically, leisure sports professionals should be proficient in sports professional knowledge, possess good sports skills, and possess comprehensive applied personnel with management theoretical knowledge and practical

abilities, So that they can smoothly embark on their job. [2]

The main purpose of leisure sports major is to promote comprehensive fitness for the people and vigorously develop national fitness. Although leisure sports personnel have many similarities with social sports courses, in the future development, leisure sports has better development prospects, so there will inevitably be a shortage of leisure professionals in the future job market. This is also the reason why vocational colleges offer this major, so that students have more professional skills and knowledge literacy.

1.2 THE TRAINING DIRECTION OF LEISURE SPORTS PROFESSIONALS IN VOCATIONAL COLLEGES

According to the Guiding Opinions of the State on Leisure Sports (Guo Ban Fa [2016] No. 77), the leisure sports major in vocational colleges is determined to cultivate applied talents with good ideological and moral literacy and innovative consciousness, solid three foundations of leisure sports, qualified coaching skills, mastery of operation and management, and proficiency in game planning and organization. [3]

At present, the country is taking measures to continuously accelerate the development of the fitness and leisure industry. In order to adapt to the development, the talents trained in leisure sports majors in vocational colleges should not only have excellent sports knowledge foundation, solid sports skills, and good educational methods, but also have good innovative thinking and ability, as well as good business management awareness and ability of vocational applied talents. In this regard, leisure sports majors require vocational colleges to cooperate with schools and enterprises, comprehensively deepen school enterprise cooperation, innovate talent cultivation models, and allow students to work in social service enterprises, governments, or social organizations after graduation. [4] At present, the employment prospects for leisure sports majors are very promising. Therefore, offering leisure sports majors in vocational colleges can achieve the above goals.

2. CURRENT SITUATION OF TALENT TRAINING IN LEISURE SPORTS

With the continuous improvement of China's economic and industrial structure, the leisure and fitness industry

and other tertiary industries are becoming new growth points in China's social economy. For the shortage of leisure sports talents, it is necessary to increase training efforts, and how to adapt new majors to social development and market demand has become an urgent problem that vocational colleges need to solve.

2.1 THE GOAL OF TALENT CULTIVATION IS NOT CLEAR.

To ensure that the talents cultivated meet the requirements of social development and the market, the first step is to clarify the training objectives, as this determines the employment ability and direction of students after graduation. However, due to the short duration of the establishment of the Leisure Sports major and the lack of experience in vocational colleges, there are still some shortcomings in defining talent cultivation goals. Although the Leisure Sports major has been established in Chinese universities for nearly a decade, there is still a lack of understanding of Leisure Sports, especially in terms of its connotation. Although every student can master professional sports knowledge and skills, most universities add some management courses to their professional courses, which makes the characteristics of leisure sports majors less prominent.

2.2 INSUFFICIENT OPPORTUNITIES FOR TALENT PRACTICE

As an important link in cultivating the professional abilities of leisure sports talents, practical teaching is also the main subject curriculum of various majors in vocational colleges. For any sports major, vocational colleges attach great importance to practical teaching work to improve students' professional abilities and enhance their employment strength, and leisure sports majors are no exception. However, from the current practical teaching setup, the cultivation of leisure sports professionals in China still focuses on theoretical knowledge education and classroom exercise, and the practical teaching content system needs to be improved. Most vocational colleges in China focus on arranging internships in their third year of college, with concentrated internship time, which makes it difficult for students to find shortcomings during the internship process and receive opportunities for tutoring and improvement. This is not conducive to the close integration of course learning and social practice, and the lack of internship experience can affect employers' recognition of students' abilities.

2.3 THE CONSTRUCTION OF PROFESSIONAL TEACHING STAFF IS LAGGING BEHIND

Because there are not many vocational colleges in China that offer leisure sports majors, and the start of leisure sports education is relatively late. Most professional teachers come from social sports or sports management majors, which not only cannot meet the needs of leisure sports teaching, but also leads to an imbalance in the proportion of subject teachers and technical teachers. However, there are significant deficiencies in the theoretical literacy and skill level of

some subject teachers, Unable to meet the professional curriculum teaching needs of leisure sports, and although professional sports teachers have excellent theoretical knowledge and technical skills in sports, their understanding of market changes and industrial development is not deep enough, and they also lack the ability to teach in society. the comprehensive quality of teachers also needs to be further improved.

3. TRAINING STRATEGIES FOR LEISURE SPORTS TALENTS IN HIGHER VOCATIONAL COLLEGES

3.1 CLARIFY TALENT DEVELOPMENT GOALS

At present, leisure sports education in China started relatively late and its development is not yet perfect. How to promote its good and healthy development has become a problem that various vocational colleges must solve. the essence of higher education is professional education, which is an important place for students to enter society. Only by achieving talent transformation during this period can talent cultivation in higher education be successful. Therefore, the goal of talent cultivation must be clear. In this regard, vocational colleges should first conduct a comprehensive and thorough investigation and research on the current talent market, fully understand market needs, hire relevant professionals for analysis, and set training goals that meet the requirements and directions of social and contemporary development. Secondly, in setting talent training goals, it is necessary to always adhere to employment orientation, emphasize capacity building, meet social development needs, and adjust training goals in a timely manner to clarify the direction of professional development. At the same time, vocational colleges should determine the enrollment scale according to the characteristics of their respective regions and local conditions. the government should do a good job in macro control and policy support, actively encourage vocational colleges to establish leisure sports majors. At the same time, universities should combine their own characteristics, educational foundation, and cultural characteristics to set up majors that are suitable for the local area. For the training mode of leisure sports talents, it is also necessary to innovate in a timely manner. the development of the sports industry should be closely combined, strengthen the integration of industry and education, integrate internal and external resources, and carry out talent training positioning and personalization, Realize the diversification of sports talents.

3.2 STRENGTHEN THE REFORM OF PRACTICAL TEACHING

Due to the lack of practical teaching, the professional qualities and abilities of relevant talents cannot be well trained, and their professional abilities are not strong. Therefore, in the process of cultivating leisure sports professionals, vocational colleges should strengthen practical teaching reform. Firstly, optimize the practical teaching process and add relevant courses.

Leisure physical education teachers should utilize existing school courses, strengthen classroom simulations and practical exercises, so that students have a deeper grasp of relevant theoretical knowledge, and add practical activities in various school activities, such as professional internships and extracurricular social practices. Secondly, teachers are encouraged to actively offer practical courses with local characteristics, such as large-scale sports park leisure sports planning activities. After teaching students professional knowledge, teachers encourage them to form different groups and work together to play their own roles. Doing well in activity planning can not only exercise students' thinking, observation and communication abilities, but also improve their practical operation abilities. Finally, it is necessary to fully utilize the resources of the school and strengthen cooperation with enterprises engaged in the leisure sports industry, so that students can participate in various aspects of enterprise management work, have the opportunity to experience skill requirements and practical work skills, and accumulate experience. It can also establish a good practice base, let students actively participate in enterprise practice activities, strengthen school enterprise cooperation, effectively improve the innovation and entrepreneurship ability of leisure sports students, and constantly expand employment channels.

3.3 IMPROVE THE LEVEL OF TEACHERS

The level of teachers determines the quality and efficiency of education and teaching. Currently, due to the late start of leisure sports, the corresponding shortage of teaching staff has hindered the development of leisure sports. The current leisure sports teachers in vocational colleges come from teachers majoring in physical education, social sports, and other sports majors. They have insufficient knowledge and understanding of leisure sports, and have not received systematic training and education on relevant professional knowledge and skills, resulting in the training of leisure sports professionals not being very smooth and unable to adapt to the needs of social development. Therefore, vocational colleges need to strengthen the training of existing teachers' professional knowledge and abilities, and encourage existing professional teachers to go out and exchange

training activities more frequently. Not only did it enhance their professional literacy, but it also expanded their teaching methods and skills, thereby improving the teaching standards of existing teaching units. At the same time, vocational colleges should actively attract outstanding talents with relevant etiquette to enter the classroom team, expand the depth of professional teaching, and provide them with more professional practical assistance.

4. CONCLUSION

In recent years, vocational colleges have continuously opened leisure sports majors based on their own strength, which is not only a new attempt at sports majors, but also a breakthrough in seeking self-development paths. At present, the country has vigorously implemented policies to promote the development of leisure sports, and the leisure sports industry contains huge market opportunities. Therefore, vocational colleges should, based on the school's own strength and background, combined with local characteristics, focus on market-oriented talent cultivation, and continuously increase the construction of leisure sports majors to cultivate more and more outstanding professional talents for leisure sports majors.

REFERENCES

- [1] Discussion on the mode of Training Social sports professionals in colleges and universities [J]. Chen Xuehai; Yu Jie; Qiu Yinxia. *Cultural and Sports Products and Technology*, 2013(06).
- [2] Problems and Reform Exploration of Leisure Sports Professional talent Training [J]. Liu Yang; Wang Jiahong. *Journal of Beijing Sport University*, 2016(11).
- [3] Research on Training Model of Social Sports Professionals based on Social Needs [J]. Xiang Jing; Bao Lihua; Hu Yingzi. *Contemporary Sports Technology*, 2014(16).
- [4] Analysis on the Development of college Sports and Community Sports [J]. Sun Yan; Liu Li; Du Xin. *Heilongjiang Science*, 2018(19).

Research on the Construction of Professional Associations in Higher Vocational Colleges and the Practice of Cultivating Students' Innovative Ability

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Abstract: Professional associations of higher vocational colleges are an important carrier for cultivating innovative talents, as well as a new curriculum system for carrying out teaching activities in higher vocational colleges. Through the learning of professional associations, students can cultivate the ability of innovation and entrepreneurship, so that they can meet the needs of enterprises and social development of the industry after graduation, and thus become the pillars of the country.

Keywords: Higher Vocational Colleges; Professional Associations Construction; Student Innovation Ability

1. THE IMPORTANCE OF THE CONSTRUCTION OF PROFESSIONAL ASSOCIATIONS IN HIGHER VOCATIONAL COLLEGES TO THE CULTIVATION OF INNOVATIVE TALENTS

1.1 Stimulate students' interest in learning professional knowledge

In the past, traditional education was mostly based on the established teaching plan to tell students about professional courses, which was monotonous and boring. Heavy learning tasks would increase the pressure on students intangibles, making students easily bored and negative, and lacking enthusiasm and learning motivation in class. However, the professional association course is different. As the second classroom for students, the professional academic activities carried out in various forms and rich and vivid content can not only activate the learning atmosphere, but also stimulate the desire of students to learn, and give full play to the various potentials of students' understanding and application of professional knowledge, so as to continuously promote the improvement and progress of students' professional ability.

1.2 Improve the Ideological and Moral Quality of Students

Professional associations of higher vocational colleges can improve the ideological and moral quality of students to a certain extent, and deeply

integrate the moral quality of association members with professional knowledge, so as to continuously strengthen the ideological and moral level of students [1]. The professional associations of higher vocational colleges often organize some ideological and moral activities, such as the study of vanguard and model figures in specific festivals and case sharing, so that students must have an in-depth understanding and discussion of socialist core values, and constantly improve their analytical ability of social problems by applying what they learn.

2. THE LACK OF INNOVATION ABILITY OF STUDENTS' ASSOCIATIONS IN HIGHER VOCATIONAL COLLEGES

2.1 Current problems of student associations in higher vocational colleges

2.1.1 The division of labor within the community is unclear.

The professional association of higher vocational colleges is a special association set up by the school for a certain specialty and discipline. Most of the groups organized are students' union, and the internal atmosphere of the association is also active. However, due to the lack of autonomy of students, the division of labor and organizational management of the community are not very clear. In addition, students themselves lack practical experience in community management, so the management plans and measures formulated are not targeted and perfect, resulting in loose internal management of the community.

2.1.2 Students' understanding of innovation and entrepreneurship is not clear.

Professional associations of higher vocational colleges fail to effectively integrate innovation and entrepreneurship with knowledge learning, and unilaterally believe that the main task of students is to learn professional knowledge and skills rather than to stimulate the cultivation of innovation awareness and entrepreneurial ability. They lack a clear and profound understanding of innovation and entrepreneurship, although they have a certain awareness of innovation and entrepreneurship. However, in the process of practice, they often lack a certain degree of self-confidence, initiative consciousness and a series of effective safeguard

measures.

2.2 Solutions to existing deficiencies

2.2.1 Improve the management and operation mechanism of the community

Professional associations should establish and improve targeted and relatively perfect association system according to professional characteristics, regulate the behavior of association members, and establish the operation mechanism and incentive mechanism of the whole association. The association should start from the approval of establishment, the development of activities, the work assessment of association members, the management of association operation expenses, and the cancellation of the association. These processes should be carried out in strict accordance with standardization to enable the sustainable and healthy development of the community [2].

2.2.2 Enhance students' awareness and ability of innovation and entrepreneurship

Student associations in higher vocational colleges need to continuously improve their entrepreneurial thinking and skills if they want to independently enhance their innovative consciousness, so as to ensure that every student can continuously improve their comprehensive quality in the process of participating in community activities. Therefore, the student association must establish a professional team with high execution efficiency to lead the students to have a deeper discussion on the major and expand the knowledge on the basis of the professional knowledge and skills already possessed, so as to stimulate the enthusiasm of students to explore and make the community diversified. Through the activities of the community, the integrated construction of professional skills competition is promoted, and students are encouraged to share resources, exchange experience and make common progress. Learn practical professional knowledge and skills, enrich their spare time, expand their knowledge field, improve employment, career selection, entrepreneurship competitiveness. Let every student benefit from both knowledge and practice, so that every member of the club can master the basic knowledge and skills of the profession. Organize all kinds of competitions related to this major, so as to promote learning through competition and advance learning, and constantly improve our competitiveness in employment, career selection and entrepreneurship. The purpose of club activities is: learning, communication, competition, practice, innovation, entrepreneurship, development.

3. STRENGTHEN THE CULTIVATION OF STUDENTS' INNOVATION ABILITY

3.1 Cultivate the Backbone Team of Students

Higher vocational colleges should conduct a selection system for the leaders of the community, cultivate the ability of the backbone team of the professional community, organize the backbone students to carry

out regular training, constantly improve their organizational ability and cultivate the comprehensive quality of the backbone students, so that they can better lead the professional community [3].

3.2 The establishment of professional associations with dual teacher system - "innovation and entrepreneurship integration, double innovation through the level of progressive" college innovation and entrepreneurship education system

The concept of innovation and entrepreneurship education should be taught by teachers, and the courses of innovation and entrepreneurship should be shared by professional teachers and innovation and entrepreneurship mentors, who should work together to complete the guidance work of professional associations. A community double tutor system should be established, the purpose of which is to cultivate students' dual innovation ability. Let students have the thinking and ability of innovation and entrepreneurship on the basis of learning professional knowledge, so as to ensure that they can realize real innovation and entrepreneurship in the future.

At the same time, through the way of "going out, please come in", some experts from enterprises and industries in the professional field and successful entrepreneurs can be hired to regularly give lessons or share entrepreneurial experience cases, and carry out a series of academic lectures, reports and other activities. It can also lead community members to go deep into the front line of enterprises to observe, discuss and even simulate practical operation, so as to achieve the organic integration of professional education and "double innovation" education.

3.3 Improve the operation system of professional associations - the three-stage model of "community-team-project" (otp)

Innovation and entrepreneurship education in colleges and universities is carried out by relying on the construction of professional and skilled associations. Based on the analysis of the current situation of college and university associations and the theoretical research of "community-team-project" (OTP), "OTP three-level model of innovation and entrepreneurship education in colleges and universities" is created, which is based on professional and skilled associations and takes innovation and entrepreneurship teams as the carrier. Innovation and entrepreneurship education model driven by innovation and entrepreneurship projects.

The organizational form of professional associations will subconsciously affect students' future innovation and entrepreneurship behavior, and also change the practice results of students' entrepreneurship. Therefore, in the early stage of the operation of the associations, it is necessary to assess students' professional skills and appoint some students with strong professional skills to take specific positions in

the associations and share the work of the members of the associations, so as to make the division of labor in the associations more clear. At the same time, the students with weak professional skills and no ability should be selected to improve the overall operation level of the community.

After the establishment of the association, the specific operation of the association should simulate the enterprise structure in the society, set up departments, and reasonably allocate the work of members, so that each student can perform his/her duties and do his/her duty dutifully. Meanwhile, all departments should coordinate and cooperate to jointly complete the daily organization and management of the association, and initially build a relatively complete operation system [4].

After the basic establishment of the community, it is necessary to refer to the registration experience of the community enterprise. When the members of the community withdraw from the community, they are not allowed to take the property of the community, and only students are allowed to leave with the experience learned in the community. At the same time, the club can also find some social enterprises to cooperate with according to its own advantages, so that students can form an intuitive understanding of the future operation of enterprises and accumulate some social practice experience.

3.4 Carry out a series of activities on innovation and entrepreneurship

When organizing community activities, vocational colleges should connect professional communities and carry out a series of innovative activities, such as organizing a series of activities for freshmen "Green years, you and me together". Through photos, letters, postcards and other carriers, students can understand their understanding of college life and better understand the university. Experience time is too short, should cherish the university life, cherish the friendship between students. Through knowledge competitions and small games, students can better understand professional knowledge, transform boring knowledge into small games, learn professional knowledge better in entertainment, and stimulate students' enthusiasm for their major. The most important thing is to enrich the extracurricular life of students through activities, and show the vitality and style of students. During the activities, members' planning and organization ability, communication and

cooperation ability, and professional skills have been significantly improved. Through some interesting entrepreneurial knowledge competitions, scientific and rigorous entrepreneurial knowledge lectures, etc., to create a certain atmosphere of innovation. To create a platform for incubating innovation and entrepreneurship, to popularize the relevant knowledge of innovation and entrepreneurship for students, so that the professional knowledge of various subjects can be exchanged, break through the professional barriers, and reassemble into a professional association for innovation and entrepreneurship.

Through the construction of professional associations, it not only improves students' comprehensive literacy, enriches campus culture, and plays a positive role in building a harmonious campus, but also lays a foundation for students' future employment, career selection, innovation and entrepreneurship. Some of the backbone members of the association have improved their excellent qualities such as team leadership and team cooperation ability through the exercise of the activities organized by the association, and have been well received by the society and employment units after graduation.

4. CONCLUSIONS

To sum up, the construction of professional associations is the second classroom to improve students' innovation ability, which has a great impact on students' innovation and entrepreneurship ability. Therefore, higher vocational colleges must establish a management and assumption mechanism for the establishment of professional associations, so that professional associations can better serve students' innovation and entrepreneurship, so as to achieve the purpose of training talents with characteristics in higher vocational colleges.

REFERENCES

- [1]Li Hongsheng. Technical characteristics and development trends of modern embedded systems [J]. Manufacturing Automation, 2010 (12): 1-2.
- [2]Chen Junqiang. Overview of Embedded Systems [J]. Optical Fiber Communication Technology, 2002 (12): 13-14.
- [3]Feng Feng. Research on the Implementation and Application of Embedded Linux Operating System [D]. Southwest Jiaotong University, 2005.

Research on the Impact of Tourism Intelligent Technology on Tourism Development Mode

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Abstract: With the rapid development of science and technology, the tourism industry is also facing the opportunity of intelligent transformation. This paper discusses the innovation of tourism products and services, consumer behavior change, supply chain and business model transformation, and analyzes the extensive impact of tourism smart technology on the tourism industry. Through in-depth analysis, we will find that smart tourism technology not only improves tourism experience and satisfaction, but also promotes sustainable development, and also brings innovative opportunities for tourism operators in management and decision-making.

Keywords: Tourism Intelligence; Tourism; Development Model

INTRODUCTION

As an important economic activity on a global scale, tourism is constantly influenced and promoted by scientific and technological progress [1]. Among them, the rapid development of intelligent tourism technology has brought extensive influence and change to the tourism industry. With the wide application of technologies such as the Internet of Things and big data, tourism intelligent technology has become an important means to improve the quality of tourism products and services, enhance tourist experience and promote sustainable development.

1. THE EVOLUTION OF TOURISM DEVELOPMENT MODELS

Over time, the way the tourism industry operates in various aspects, market trends, and consumer behavior changes. These changes are influenced by a variety of factors such as technological advances, globalization trends, consumer demand and market competition.

1. Diversification of tourism products and services: the most intuitive embodiment of the evolution of tourism development mode is the diversification of tourism products and services. In the past, tourism was dominated by traditional travel agencies and group tours, with relatively limited options for tourists, including pre-arranged itineraries and fixed tour packages. However, as consumer demand diversifies and personalizes growth, travel products and services are beginning to evolve in a more personalized, flexible and diversified direction. Now, tourists can choose different types of tourism products according to their interests and preferences, such as independent

travel, theme tours, cultural experience tours and eco-tours.

2. Diversification of tourist destinations: As the demand for tourism continues to grow, the choice of tourist destinations is becoming more and more diverse. In the past, tourism was mainly concentrated in traditional popular tourist cities and resorts, but now, more and more regions are actively developing and promoting tourism resources to attract more tourists. Some of the more remote areas are also becoming popular destinations, offering unique natural beauty, cultural heritage or adventure tourism experiences. This diverse selection of destinations provides more opportunities for tourists to explore and discover, and also brings more economic benefits and employment opportunities to the tourism industry.

2. THE IMPACT OF INTELLIGENT TOURISM TECHNOLOGY ON THE DEVELOPMENT MODEL OF TOURISM

2.1 The impact of tourism intelligent technology on the innovation of tourism products and services

Tourism smart technology provides the tourism industry with new ways and tools to improve the design, delivery and experience of tourism products and services. [2]

1. Virtual reality (VR) and augmented reality (AR) technology: Through virtual reality technology, tourists can experience the scenery, culture and activities of a destination through immersive virtual experiences without actually arriving at the destination. This technology can provide visitors with a more authentic and intuitive travel experience and stimulate their interest and needs. On the other hand, augmented reality technology can provide tourists with a richer and more personalized travel navigation, commentary and interactive experience by overlaying virtual information and real scenes. These technologies not only change the perception and understanding of tourist destinations by tourists, but also provide opportunities for more engagement and sense of engagement.

2. Personalized recommendation system: the personalized recommendation system uses big data and machine learning technology to provide personalized tourism product and service recommendations for tourists according to their preferences and historical behavior. By analyzing travelers' interests, travel habits, and needs, personalized recommendation systems can

recommend the most suitable travel destinations, attractions, restaurants, accommodations, and activities for them. This personalized recommendation not only improves visitor satisfaction and experience, but also provides more accurate marketing and sales channels for travel operators. Personalized recommendation systems can also promote the diversification and fragmentation of travel destinations, providing more exposure and opportunities for smaller destinations.

2.2 The impact of tourism intelligent technology on tourism consumer behavior

Tourism intelligence technology has changed the way tourists make decisions, choices and interact in the travel process.

1. Mobile applications and online booking platforms: With the popularity of mobile smart devices, mobile applications and online booking platforms have become one of the main channels for travel consumers to obtain travel information, make reservations and pay. Through the mobile app, visitors can get information about tourist destinations, attraction descriptions, itinerary planning, user reviews, and more anytime, anywhere. This provides visitors with greater transparency of information and autonomy in decision-making, enabling them to better evaluate and select tourism products and services. In addition, mobile apps and online booking platforms provide fast, convenient and secure ways to book and pay, enhancing the buying experience for travel consumers.

2. Social media and online reviews: Social media and online review platforms have become important channels for travel consumers to share travel experiences, get advice from others and express their opinions. Through social media platforms, visitors can post travel photos, share travel stories and interact with each other. This information sharing and social interaction has an important impact on travelers' decision-making and choices, as they can obtain real feedback and suggestions from other travelers, allowing them to more accurately assess the quality and value of tourism products and destinations. Online review platforms also provide opportunities for tourists to rate and comment on tourism products and services, thereby influencing other potential consumers.

2.3 The impact of tourism intelligent technology on tourism supply chain and business model

Smart travel technology has changed the way the tourism industry manages and operates its business.

1. Internet of Things and smart devices: the application of IoT technology in the tourism industry has brought new changes to the tourism supply chain. By connecting various smart devices and sensors, IoT technology can realize the intelligent management and monitoring of tourism resources. For example, hotels can leverage smart sensors and IoT technology to monitor and adjust room temperature, lighting, and electricity consumption in real time to improve energy efficiency and environmental sustainability. Tourist

attractions and transportation systems can also use IoT technology to enable real-time monitoring and dispatch to provide more efficient and convenient services.

2. Blockchain technology: the application of blockchain technology in the tourism supply chain has the potential to improve transparency, trust, and security. Through blockchain technology, tourism operators can realize the traceability and verifiability of the supply chain, ensuring the authenticity and reliability of tourism products and services. For example, by storing travel contracts, booking information, and payment records on the blockchain, the risk of information tampering and fake transactions can be reduced, and the credibility and security of transactions can be improved. Blockchain technology can also provide partners in the travel supply chain with a more efficient and secure data sharing and settlement mechanism, reducing transaction costs and time.

3. CHALLENGES AND OPPORTUNITIES OF INTELLIGENT TOURISM TECHNOLOGY FOR TOURISM DEVELOPMENT MODEL

3.1 Challenges

1. Privacy and data security issues: With the wide application of tourism intelligent technology, a large amount of personal and behavioral data is collected and utilized, which involves the privacy and data security of tourists. Ensuring the protection of tourists' personal information and compliance with data security is an important challenge for the travel industry. Tourism enterprises and stakeholders need to establish strict data protection measures, strengthen the transparency of privacy policies, and ensure the lawful and secure use of data to fully protect the privacy rights and interests of tourists.

2. Cultural and social impact issues: the introduction of smart tourism technologies may have an impact on the cultural and social value of tourism, which is also a challenge to be faced. For example, over-reliance on technology and digitalization can lead to standardization and impersonalization of travel experiences, weakening the local culture and uniqueness of the destination. In addition, the use of smart technologies may raise moral and ethical issues, such as the appropriate use of cultural heritage by virtual reality. Therefore, tourism operators need to balance the application of technology to protect and inherit the cultural heritage of their destinations, while realizing the innovative potential of smart technologies.

3.2 Opportunities

1. Promote sustainable tourism development: Tourism intelligent technology provides important opportunities for the sustainable development of tourism. Through big data analysis and prediction models, tourism operators can better understand the needs and behavior patterns of tourists, optimize the utilization and management of tourism resources, and realize the rational allocation and protection of

resources. In addition, smart navigation and location services can improve the efficiency and sustainability of tourist traffic, reduce energy consumption and environmental pollution. the application of intelligent tourism technology has promoted the green transformation of tourism and promoted the application of sustainable development concept in tourism.

2. Improve tourism management and decision-making: Tourism intelligent technology provides more accurate and comprehensive data support for tourism management and decision-making, and improves the management efficiency and decision-making quality of tourism operators. Through big data analytics and predictive models, travel operators can gain insight into market demand, predict trends and industry changes to optimize product design, pricing strategies, and marketing. In addition, the application of intelligent technology can also provide real-time business data and indicators, help tourism operators to monitor and adjust in real time, and improve the flexibility and response speed of management decisions.

CONCLUSION

The impact of intelligent tourism technology on tourism is multifaceted and multi-level. From the perspective of innovation of tourism products and services, changes in tourism consumer behavior, and transformation of tourism supply chain and business model, tourism intelligent technology has brought a wide range of challenges and opportunities to the tourism industry. Although there are still some difficulties and challenges in the transformation and application of smart tourism technology, such as

privacy and data security issues, digital divide and cultural impact, these challenges also inspire tourism operators, governments and stakeholders to continue to explore innovative solutions. At the same time, intelligent tourism technology has brought great opportunities to the tourism industry. Personalized tourism experience, sustainable development promotion, efficient management and decision-making have provided new impetus and development direction for the development of tourism.

In the future, tourism operators, governments and relevant stakeholders should maintain keen insight, seize the opportunities brought by intelligent tourism technology, actively respond to challenges, and promote sustainable innovation and progress in the tourism industry. Only through cooperation, innovation and continuous development can the tourism industry continue to adapt and lead the changes of the times, provide tourists with a more quality, personalized and sustainable tourism experience, and continue to be an important driving force for global economic and cultural development.

REFERENCES

- [1] Yang Zhen. Research on marketing strategy of Longhu Mountain View [D]. Jiangxi University of Finance and Economics, 2022.
- [2] Chang Jing. the development status and future development trend of China's cultural tourism industry [J]. *Tourism & Photography*, 2023(04):78-80.
- [3] Xu Qin. Review of theoretical research on rural smart tourism [J]. *Western Tourism*, 2023(04):38-40.

Developing practical knowledge of pre-service English teachers through competition-Teaching Skills Competition for Pre-service Teacher as an Example

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For pre-service English teachers, there has always been a problem that they cannot teach after learning a lot of theoretical knowledge. This paper focuses on the analysis of the development of pre-service teachers' practical knowledge in the context of teaching competitions. the study also explores the specific ways to develop pre-service English teachers' practical knowledge through the "competition for learning" approach.

I. RESEARCH BACKGROUND

With socialism with Chinese characteristics entering a new era, China's professional degree graduate education has entered a new stage of development. the Program for the Development of Professional Degree Graduate Education (2020-2025) issued by the Academic Degrees Committee of the State Council and the Ministry of Education points out that the development of professional degree graduate education is an inevitable choice for the economic society to enter the stage of high-quality development, an important path to actively serve the construction of innovative country, and a strategic focus for the reform and development of degree and graduate education. the purpose of this paper is to identify the outstanding problems in the cultivation of traditional pre-service teachers' practical knowledge, propose a path to optimize pre-service teachers' practical knowledge, and ultimately promote the sustainable professional development of pre-service English teachers in the future.

II. RECOUNTING THE PROCESS OF PARTICIPATING IN THE COMPETITION

The research subject of this paper is the author herself, and the narratives of her own participation and observation experiences are used to gain insight into the process of change and development of pre-service teachers' practical knowledge. the research data include two complete teaching designs and teaching lessons. Due to the epidemic, the preliminary stage required each student to submit a teaching video of about 7 minutes, with teaching content selected from the current high school English textbook. I chose the reading text - Festivals and celebrations from unit 1 of Compulsory 3 of the Human Education Edition as the

main content of my lesson. After watching many videos of quality lessons on the Internet, downloading the e-textbook of this unit and reading and analyzing the text carefully, I started to design my teaching. My design included the text, student analysis, objectives, steps and activities, and a final homework assignment. In the process of designing the teaching objectives I felt that I was not clear about the level at which the students were at this stage, and only after consulting the relevant curriculum standards did, I determine the teaching objectives for the classroom. On the day of the video recording, I was confident and thought I was very prepared, but things didn't work out as I had hoped. Although recording a video is much less nerve-wracking than teaching live, the moment I started recording the video and stepped up to the podium, the nerves came out. I was so nervous that I forgot the classroom instructions and the specific teaching steps, so I had to familiarize myself with the teaching process again. In the following days, I conducted many mock lecture rehearsals in the unoccupied classroom until I was able to say every classroom instruction and perform every step smoothly before I started the second video recording. the recording process of the second video recording was much smoother than the first one, and it was not as successful as the first time, but I felt much less nervous than the first time, perhaps because my anxiety and anxiety were reduced because I had a good handle on it. However, when I looked back and edited the video after the recording, I found that I spent too much time on the introduction activity in the teaching step, which led to the time constraint in the later reading session and the problem of being top-heavy. So I cut down the introductory activities appropriately and connected them effectively. After entering the final round, I polished my teaching design for the preliminary round once again with the advice of my teacher. As a result of the instructional design course related to it before the rehearsal, after learning the relevant theories of instructional goal design. Finally, I also made changes to the layout and graphics of the teaching courseware to make it more beautiful and generous, and practiced simulated live teaching, but unfortunately I did not enter the final.

III. PROBLEMS IN THE DEVELOPMENT OF PRACTICAL KNOWLEDGE OF PRE-SERVICE TEACHERS

The role of reflective knowledge in pre-service teachers should not be underestimated. Pre-service teachers should grow from reflection to gain a broader and richer pre-service teaching experience. However, in the interviews, it was found that although pre-service teachers can realize the importance of teaching reflection, they seldom take the initiative to reflect on teaching in their regular study and life. A basic lack of awareness of teaching reflection could be seen in the authors' race narratives. It can be concluded that as a professional master's student, there are few opportunities for reflection and weak self-reflection, which is one of the factors limiting pre-service teachers' practical knowledge development. This is mainly because they do not choose to actively reflect on their own teaching and do not reach a certain level of understanding and thinking about teaching, and their practical knowledge will naturally enter a "bottleneck" state. The second problem is that they lack contextual knowledge. Since pre-service teachers lack real classroom situations compared with in-service teachers, they have less experience in teaching management. Chen, Xiangming (2003) points out that teachers' contextual knowledge is mainly reflected through their teaching resourcefulness. When talking about what knowledge they still lack as pre-service English teachers, pre-service teachers perceive themselves to be lacking in coping strategies in terms of teaching resourcefulness. The handling of special classroom situations relies on whether teachers are sensitive to the context and can adjust their principles of teaching practice according to the differences in the context, including the overall control of the classroom and the overall teaching effectiveness of the classroom. The results of the interviews and self-narratives show that the study participants have a lack of grasp of theoretical aspects of foreign language teaching and are not able to apply educational theory in practice well in practice, respectively. Pre-service teachers think that they do not have enough knowledge about the theoretical aspects of foreign language teaching. They do not have a clear understanding of the main categories of the field. The mastery of subject expertise is not solid, and they can only roughly name a few parts of what they were learning at that time.

IV. CONCLUSION

There are some ways of optimizing the practical knowledge of pre-service English teachers through "promoting learning through competition. First, promoting the development of practical knowledge in many aspects in various types of competitions. The practical knowledge of pre-service teachers is generated and accumulated in specific "problem

situations". In order to improve pre-service teachers' practical knowledge, it is necessary to use specific "practical situations" as an entry point. However, for pre-service teachers, the ways of acquiring practical knowledge are rather limited. Through the form of competition to promote learning, pre-service English teachers can actively participate in simulated education and teaching practice activities, restore and experience classroom teaching, achieve the purpose of comprehensive development of practical knowledge, and thus achieve the purpose of improving their practical knowledge through the process of continuous problem solving. Second, developing the ability of teaching reflection and good reflective habits in the competition. In the interviews with pre-service teachers, we found that some pre-service teachers seldom reflect on their teaching, and the main problem is the lack of awareness of active reflection, and they only reflect passively after some tasks or under special circumstances. Therefore, pre-service teachers themselves should learn to reflect in the process of participating in various competitions and write reflection journals regularly, which helps to develop the habit of reflection through this way.

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REFERENCES

- [1] Shulman, L. S. (1987). Knowledge and teaching: foundations of the new reform [J]. *Harvard Educational Review*, 1987, 57:1-22.
- [2] Freema Elbaz(1983). *Teaching Thinking: a Study of Practical Knowledge* [M]. London: Croom Helm
- [3] Freema Elbaz(1983). *the Teacher's Practical Knowledge Report of Case Study*. *Curriculum Inquiry*, 11, 43-71.
- [4] Connely, F. Michael., Clandinin, D. Jean(1982). *Practical Knowledge at Bay Street School* [J]. *the Educational Resources Information Center*. 1-13
- [5] Sun Johnston(1992). *Images: A way of Understanding the practical Knowledge of Student Teachers*. [J]*Teaching and teacher Education*, 8(2), 123-136.
- [6] Anneke Zanting, Nico Verloop, Jan H. Van Driel(1998). *Explicating Practical Knowledge: an Extension of Mentor Teacher's Roles*. *European Journal of Teacher Education*., 21(1), 11-28.
- [7] Peter D. John (2002). *the Teacher Educator's Experience: Case Studies of Practical Professional Knowledge*. *Teaching and Teacher Education*, 18, 323-341.

The Countermeasures of Youth Track and Field Training Based on The New Characteristics of Track and Field Development

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Abstract: Track and field as a common sports item, when it is applied in the process of physical education, can effectively cultivate the physical quality of teenagers, to ensure their healthy and stable learning and growth and development; Therefore, relevant teachers and school leaders need to work together with the education department to formulate the most appropriate track and field training countermeasures according to the new characteristics of track and field development and the psychological and physiological development of teenagers, so as to fully improve the physical and psychological development level of young students and lay a solid foundation for modern physical education and track and field development. The following is mainly based on the new characteristics of track and field development of youth track and field training countermeasures are analyzed and explored.

Keywords: Characteristics of track and field development; Teenagers; Countermeasures of track and field training

1. NEW CHARACTERISTICS OF TRACK AND FIELD DEVELOPMENT

1.1 Pay attention to speed training

Generally speaking, the long jump, high jump, long sprint, throwing and hurdling all belong to track and field events. In the long jump, athletes need to run fast for a certain distance before jumping. The high jump movement can take the prone type, the back over type, the athlete also needs to have a certain speed; Long-distance running events have high demands on the endurance and rhythm of athletes, and they need to have high speed in the final sprint. Sprint mainly depends on the speed of the athletes, and the squat starting mode can strengthen the speed of the athletes; In hurdle events, athletes need to maintain a high speed throughout the whole process, and even do not need to slow down in the last two hurdles to obtain excellent results [1].

1.2 The types of sports equipment are gradually enriched

In the process of sports training, sports equipment is an important link, which can help athletes improve their sports effect and performance. At the same time, it can also restrict the technical movements of athletes and coaches, adjust and improve irregular movements, ensure their own health and safety, and reduce the probability of sports injuries. For example, in the high jump and pole vault, thicker spongy MATS need to be used together to provide effective protection for the safety of athletes; When running, the plastic track can be used to protect the knee joint and reduce the probability of injury problems. On the other hand, coaches can use laser rangefinder and starting foul indicator to monitor the athlete's starting state and accurately obtain the athlete's running results.

1.3 The scientific nature of training has been continuously improved

In the process of the development of modern track and field, coaches will formulate targeted training plans according to the physical quality and athletic ability of each athlete, and systematically analyze athletic data combined with big data technology, so as to reduce the probability of sports injuries and constantly improve their training results. In addition, coaches can also cooperate with medical personnel, with the help of computers and advanced medical equipment, real-time monitoring of athletes' physical data, to provide full protection for their physical health.

1.4 More and more in-depth theoretical research

In addition, the development of track and field has greatly increased the number and professionalism of sports workers. In daily work, sports workers will continue to study the theoretical content of track and field, such as basic technical movements, body functions, nervous system, prevention, treatment and rehabilitation of sports injuries, as well as sports equipment, so as to provide sufficient theoretical support for later professional training. So as to improve sports performance and their own physical quality development level.

2. INNOVATIVE COUNTERMEASURES TO STRENGTHEN YOUTH TRACK AND FIELD TRAINING

2.1 Strengthening the optimal design of training plans
At present, in order to strengthen the optimization and innovation of youth track and field training, the relevant coaches should first design the training plan reasonably; In actual work, coaches need to fully grasp the theoretical content and special experience of each track and field sports, systematically analyze the physical quality and athletic ability of each athlete before actual training, and formulate the most reasonable training plan for reference; At the same time, teenagers are in the critical stage of physical and mental growth and learning development, and they are facing the pressure of daily study and further study. Therefore, when formulating training plans, coaches need to strengthen communication with athletes, understand their physical conditions and interests, and obtain the support of school leaders and parents, so as to improve the effectiveness of track and field training to the maximum extent [2].

2.2 Strengthen the control of specific track and field training

Track and field in essence belongs to the type of sports, which covers 23 items, each item has its own unique characteristics; Therefore, when making training plans for athletes, coaches need to fully understand the competitive ability structure of different sports, combine the athletes' own psychological, physical and age characteristics, and make timely adjustments according to the growth and development status of teenagers, fully grasp the specificity of track and field training, and improve the development level of track and field training to the greatest extent.

2.3 Strengthen the reasonable planning of training load intensity

Because teenagers are in the critical period of physical and mental development, if the load pressure of track and field training is large, not only can not effectively complete the training content, but also will produce physical damage and psychological pressure, which will cause adverse effects on their growth and development. In order to avoid these problems, coaches need to follow the inherent laws of track and field, and conduct real-time monitoring and investigation of the physical changes of teenagers, rationally plan the training intensity, ensure that the exercise load is always kept within the acceptable range of teenagers, give full play to the value of track and field training, and lay a good foundation for their own growth and development.

2.4 Strengthen the training and improvement of the professional quality of coaches

In general, in the process of youth track and field training, coaches, as the key link, their own professional level and technical ability determine the actual training quality; Therefore, coaches need to actively participate in training and education activities, improve their professional quality, innovation

awareness, etc., to ensure that before daily training, according to the psychological characteristics of young people, some interesting projects can be formulated to attract the attention of young athletes, so that they can actively participate in track and field sports, and improve the development level of youth track and field training.

2.5 Enhance social attention and support

In addition to the above measures, in order to improve the innovative development level of youth track and field training, coaches need to cooperate with school leaders and education departments to actively carry out publicity activities, explain the importance of track and field sports to the growth and development of youth to the public, obtain the attention and support of all sectors of society, obtain sufficient funds, and introduce modern advanced technology and equipment. Effectively improve the quality of youth daily sports and training, and provide a full promotion for the overall development of modern youth track and field sports and sports culture industry [3].

3.CONCLUSION

To sum up, in the process of traditional track and field teaching and training, there is a strong dependence on the professional quality and experience of coaches, and there is a certain gap between the actual teaching results and the expected requirements; With the progress of The Times and the improvement of social development level, the development of track and field sports is driven by the actual training mode to diversify and scientific direction; Therefore, when conducting track and field training for teenagers, relevant teachers and coaches need to innovate their own teaching and training concepts and models, optimize the design of training plans, and reasonably plan the training load intensity. At the same time, they can also obtain the attention and support of education departments and all walks of life, expand the funding channels for track and field training, and introduce modern training equipment. Improve the track and field training site and infrastructure, improve the actual training effect, so as to promote the progress and development of modern youth track and field training.

REFERENCES

- [1] Zuo Jinye. Research on influencing factors and countermeasures of Youth Track and field training [J]. Sports-leisure: Mass Sports, 2021, 000(005):P.1-1.
- [2] LI Haipeng. Research on Youth Track and Field Training Based on New characteristics of Track and field development [J]. Sports Vision,2021(03):71-72.
- [3] ZHONG Lin. Research on the development status and training countermeasures of Track and field sports in China [J]. Love, Marriage and Family: Life Documentary Edition, 2021, 000(002):P.1-1.

Research On the Construction of Student Management Mode Of "Five Education Simultaneously" In Colleges and Universities in the New Era

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Abstract: With the development and progress of education, the educational concept of "five education simultaneously" has been revitalized and promoted the further development of student management mode. the educational concept of "five education at the same time" provides rich theoretical guidance for student management, which can effectively improve the efficiency of student management. This paper first expounds the connotation of "five education and simultaneous education", and then expounds the construction principles and corresponding construction strategies of "five education and simultaneous education" student management mode, in order to provide reference for the development of university management mode.

Keywords: New era; Five children simultaneously; Management mode

1. INTRODUCTION

In recent years, China's education reform continues to advance, the traditional university management system focuses on mandatory management, has been unable to meet the management needs of students. Therefore, colleges and universities should conform to the development trend of the Times, re-understand the relationship between colleges and students, and improve the management mode of students under the guidance of advanced teaching concepts, so as to enhance the management level of colleges and universities. Under the guidance of the educational concept of "five education at the same time", the student management mode of colleges and universities can carry out management work on the premise of respecting the reasonable demands of students, which is to meet the diversified needs of education.

2. THE CONNOTATION OF "FIVE EDUCATION SIMULTANEOUSLY"

The educational concept of "five education at the same time" was first put forward by CAI Yuanpei, whose main purpose was to train qualified citizens with all-round development, which was the performance of conforming to the trend of the Times. Nowadays, the educational concept of "five education

simultaneously" has added the essence of the new era and become the guiding ideology of college management in our country, playing an important role. the connotation of the educational concept of "five education simultaneously" mainly includes the following aspects. As the fundamental idea of "five education simultaneously", moral education is also the main purpose of ideological and political education in colleges and universities, which requires students to be trained as virtuous talents in order to truly contribute to society. Intellectual education used to refer to the cultivation of students' cultural knowledge and skills, but today it focuses more on the cultivation of students' innovative thinking. Sports not only requires students to master sports skills, to achieve the purpose of physical fitness, but also requires students to carry out sports spirit. Aesthetic education refers to the cultivation of students' aesthetic ability, so that students can perceive the beauty in life, and improve students' art appreciation ability. Labor education not only requires students to cultivate labor skills, but also requires students to deeply understand the meaning of labor, and promote the improvement of innovation ability in the labor process [1].

3. THE CONSTRUCTION PRINCIPLE OF "FIVE EDUCATION AND SIMULTANEOUS EDUCATION" STUDENT MANAGEMENT MODE

3.1 Attach importance to the combination of academic guidance and moral education

If we need to construct the student management mode of "five education simultaneously", we should take moral education as the key work, help students to set up the correct three views, and cultivate the students' good virtue. Teachers should communicate with students and play the role of academic guidance. They should not only require students to master solid theoretical knowledge, but also provide practical opportunities for students, so as to play the linkage role of the two and achieve the purpose of improving the comprehensive quality of students. It is worth noting that through teachers' effective guidance to students' studies, students can master solid knowledge, which

can improve students' ability to distinguish right from wrong, good from evil, and thus play a role in moral education. While moral education cannot be separated from practice, colleges and universities should provide students with meaningful opportunities for social practice, so that students can shape a good outlook and a high sense of responsibility in concrete practice [2].

3.2 Attach importance to the combination of explicit education and implicit education

In order to achieve the effect of student management mode, universities should play the role of explicit education, make use of rules and regulations and traditional management means, and effectively implement management work. But we can not ignore the role of implicit education, implicit education can make up for the shortcomings of explicit education, ease the pressure of explicit education on students, and improve the flexibility of management mode. Colleges and universities should make use of recessive education, so that students can get imperceptible influence, and gradually implement the management mode of "five education simultaneously". As for the management of students, it is a work that needs time to settle. Attention should be paid to the long-term development of students. Through the combination of explicit education and implicit education, the linkage between the two can be played, which is conducive to promoting the formation of a good campus atmosphere, so that students can get more effective education effects, and thus promote the all-round development of students.

3.3 Attach importance to the combination of example education and public opinion guidance

The student management mode of "five education at the same time" is conducive to promoting students' self-management. In order to achieve this goal, colleges and universities should attach importance to the role of example education, select excellent propaganda cases from students, give play to the exemplary role of student representatives, and let students feel the charm of people around them, so as to reflect on themselves. By choosing excellent student representatives as cases for students, the distance between students and role models can be shortened, and goals can be set for students, thus enhancing the effect of management model. It is worth noting that the selection of role models should pay attention to the authenticity, in order to get the sincere recognition of students, and conducive to the subsequent publicity and education of public opinion. At the same time, model education should also be combined with public opinion guidance, in order to make model education play a better effect. In addition, it is necessary to choose the publicity method generally accepted by college students, make full use of the network platform, expand the publicity effect, so as to give play to the joint effect of model education and public opinion guidance, so that the management level of colleges and universities can be effectively improved.

ACADEMIC PUBLISHING HOUSE

4. "FIVE EDUCATION SIMULTANEOUSLY" STUDENT MANAGEMENT MODEL CONSTRUCTION STRATEGY

4.1 Improving the overall governance mechanism

In order to construct the "five education simultaneously" student management mode, colleges and universities should improve the overall governance mechanism from the following aspects. First of all, colleges and universities should set up a special "five education" student management department, whose members should include school leaders, college leaders, functional leaders to jointly implement the "five education" management mode. Secondly, we should improve the corresponding system according to the connotation of "five education and simultaneous education" and provide institutional support for the "five education and simultaneous education" student management mode. Relevant departments should, according to the specific situation, fully consider the opinions of students, implement the system construction work, clarify the task arrangement, clarify the work responsibilities, and promote the orderly progress of management work. Finally, colleges and universities should implement the management work, the "five education" education throughout the students' college life. While clarifying the functions of each department, colleges and universities should also establish a feedback mechanism after the event, and adjust specific work contents according to the feedback situation, so as to optimize the management system and improve the efficiency of management work [3].

4.2 Improving information communication mechanisms

If the management system of "five education simultaneously" needs to achieve good results, the development of students should be taken as the key direction, and the information communication mechanism should be improved from the following aspects. First of all, colleges and universities should adopt effective communication methods to understand the real ideas of students, avoid communication barriers with students, and should strengthen the coordination between departments, so that all departments form a joint force, and work together to improve the information communication mechanism. Secondly, the shortcomings of traditional communication mechanism should be improved, and the feedback opinions of students should be collected and sorted out by means of Internet message boards and principal mailboxes, so as to listen to the real demands of students. Finally, colleges and universities should train teachers and counselors, so that they can deeply understand the importance of communication with students and understand the real thoughts of students, so as to promote the further development of management work. In addition, colleges and universities can also give full play to the role of student party members, set up special intelligence collectors,

so that party members can feedback the opinions of classmates around them, so as to deepen the understanding of the student group.

5. CONCLUSION

To sum up, the traditional management mode of colleges and universities has fallen behind the Times. In order to effectively improve the efficiency of the management mode, colleges and universities should deeply understand the connotation of the educational concept of "five-education and simultaneous development", and construct the student management mode of "five-education and simultaneous development" through improving the overall governance mechanism and improving the information communication mechanism, so as to promote the further development of college management.

REFERENCES

- [1] Zhang Xiaoying. Study on the influence of Student management Mode of "Five Education" on Ideological and political education in Colleges and Universities [J]. *the Road to Success*, 2022(33):9-12.
- [2] Chen Buqing. Strategic Research on the integration of the concept of "Five education simultaneously" and student management [J]. *Journal of Jiangxi Electric Power Technical College*, 2022, 35(04):70-71.
- [3] Zhao Rongsheng, Tang Huashan. Research on the integration of labor and innovation under the background of "Five Educations" [J]. *School Party Building and Ideological Education*, 2022(19):61-63.

Supportive Strategies to Promote High-Quality Development of Kindergartens-- A case study of Zibo City, Shandong Province

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Abstract: High-quality development is the requirement for the future development of preschool education in China. the high-quality development of kindergartens can be effectively promoted by creating an intellectual and beautiful atmosphere of kindergartens, guiding teachers to grow independently, consolidating the quality of education and strengthening the leadership of principals.

Keywords: High quality development strategy of kindergarten

1. INTRODUCTION

In recent years, China's preschool education has continuously strengthened the connotation construction, adhered to the high-quality development orientation, and made a series of remarkable achievements. In the investigation of kindergartens in Zibo, Shandong province, the author found that there are some problems in the good situation of vigorous development: for example, the cultural construction of some kindergartens is weak; Some teachers lack of growth motivation, and the quality of teachers varies; Separation of teaching and research activities from scientific research; Some principals pay insufficient attention to teachers' psychological problems. In order to solve the problem and promote the better development of preschool education, the author proposes the following supportive strategies:

2. EDUCATE PEOPLE WITH AESTHETICS AND CREATE AN ATMOSPHERE OF INTELLECTUAL BEAUTY GARDEN.

2.1 Create a good material and spiritual environment for the kindergarten.

Kindergarten is a place where teachers and children live together. the beautiful atmosphere and elegant environment can make children and teachers both physically and mentally happy and have a sense of happiness. the material environment construction of kindergartens should be both aesthetic and practical, reflecting both the warm atmosphere of monks and the taste of the garden culture. Garden environment is also an important part of children's aesthetic education. Therefore, the first step to improve the quality of

education is to improve the aesthetic quality of the principal and the teaching staff, and make use of the existing conditions to create a beautiful, warm and lively environment. Teachers' aesthetic ability can be cultivated through special teaching and research, training and guidance. In line with the principles of beauty, simplicity, practicality and frugality, we will create a beautiful, comfortable, artistic and life-oriented environment in kindergarten with an intelligent mind, and cultivate children's love of life, love of beauty and beauty from childhood.

2.2 Establish a scholarly kindergarten.

Kindergarten is an educational institution, so we should pay attention to the creation of cultural atmosphere. It is an important way to cultivate teachers' and children's interest in reading and to carry out various reading activities. Through the creation of class reading corner, teacher's study room, picture book library and book corridor, a convenient, free and rich reading environment is created for teachers and children, so that the kindergarten can be "bookish everywhere and everyone loves reading", effectively arouse teachers and children's interest in reading, encourage the combination of professional learning and independent reading, and form a good reading atmosphere.

3. TO GUIDE INDEPENDENT GROWTH, TO CREATE "HIGH, FINE, PROFESSIONAL" TEACHERS.

3.1 Awaken the growth drive and realize the teacher's active growth.

The kindergarten in the development of high quality the premise is to have a business capable, wuxi, highly qualified teachers. the professional growth of teachers is the key to improve the quality of teachers. the key is to use scientific methods and encouraging attitude to guide teachers to plan independently, learn independently and grow independently, and stimulate the internal drive of teachers' professional growth. Internal drive is the most important driving force for teachers' self-growth, which is generated by teachers' inner heart and externalized into the concrete behavior of teachers' self-growth. the drive can be stimulated by

effective external measures: for example, when kindergarten arranges work or organizes business learning, it can give teachers certain freedom and leave room for independent choice to satisfy teachers' sense of autonomy; the difficulty of arranging work is distributed according to individual ability and specialty, so that teachers can complete the task through efforts and get a sense of competence and achievement; Sincere concern and respect for teachers, attention to the growth of teachers, so that teachers have a sense of belonging to the kindergarten, willing to plan their own future development.

3.2 Improve the humanistic quality and become a cultured teacher. the particularity of children's learning determines the wide degree of preschool teachers' knowledge and the humanities have higher requirements. Only teachers with a certain degree of education and high humanistic quality can understand and flexibly apply the principles of education and teaching, and cultivate children with humanistic feelings. Kindergartens should encourage and guide teachers to establish a belief in lifelong learning through various ways. Guide teachers to learn and understand various kinds of knowledge through training, independent reading, watching movies, exhibitions, lectures, etc., broaden their horizons, improve their cultural quality, and cultivate their humanistic feelings. Through "My pillow book recommendation", special reading sharing meeting, "My reading notes", "mobile schoolbag", "Reading good books together", building a teacher library and other ways, to constantly stimulate teachers' interest in reading, develop good reading habits, so as to enhance teachers' cultural literacy, carry forward noble ethics, and stimulate the feelings of education.

4. PAY ATTENTION TO TEACHING RESEARCH AND SCIENTIFIC RESEARCH, CONSOLIDATE THE QUALITY OF EDUCATION.

4.1 Combine teaching and research, promote teaching by scientific research.

Strong scientific research ability can make preschool teachers pay more attention to education and teaching activities, take the initiative to explore the law of education and teaching, so as to improve the quality of education. Encourage front-line preschool teachers to actively declare topics and establish scientific research files for each teacher. To promote teaching by scientific research, teaching with scientific research, practice and research at the same time, with subject research to promote teachers' independent growth, promote the kindergarten curriculum reform, consolidate the quality of education and teaching, and achieve the connotation of the development of the kindergarten.

4.2 School-city integration, co-construction and sharing

Higher education institutions are the bases for training preschool teachers for preschool education.

Kindergarten and college pre-school professional teachers build a teaching and research team, through the integration of school and city, project declaration, cooperative teaching and research, college teachers with post, college lectures, etc., go out, invite in, communicate with each other and learn from each other, give play to the theoretical leading role of colleges and universities and the practical advantages of kindergartens, and carry out topic research in combination with the characteristics of kindergarten-based courses and kindergartens. To promote the improvement of the scientific research level of kindergartens in the city.

5. STRENGTHEN THE LEADERSHIP OF THE PRINCIPAL AND BE A WARM MANAGER.

5.1 Refined and standardized management to comprehensively improve the quality of kindergarten management.

To promote the fine management of kindergartens is an objective requirement to improve the management efficiency, an important guarantee to improve the quality of education, and an effective measure to promote the development of education. Some strategies can be adopted to improve the implementation of fine management efficiency of kindergartens in the region, such as organizing and carrying out various kinds of training for principals and leadership improvement training for principals, setting up forums and salons for principals, and establishing learning sharing platforms such as experience exchange for principals, so as to improve the leadership of principals and optimize the management of kindergartens. At the same time, through regular comprehensive supervision, irregular routine guidance, grade kindergarten review and review, annual target management and other forms of urging the kindergarten director to manage fine, pay attention to details, effectively implement the requirements of fine management, and promote the standardized development of kindergartens.

5.2 See teachers, care for teachers, and do temperature management.

The education object of preschool education work is 3-6 years old children, which needs to be combined with education. the work of preschool teachers is complicated and laborious, with professionalism and particularity. In recent years, some teachers' mood swings and psychological problems are frequent, and if the principal does not find and resolve them in time, it is easy to cause great harm to children. the management of the principal should reflect humanistic care, pay attention to the spiritual growth and mental health of teachers and children, and should be managed with temperature. the principal should be good at transposition thinking, see the teachers' efforts and growth, and be the teacher's bosom friend. Let teachers first get the full attention and love of the principal, in order to have a sense of gain and happiness.

The principal should be institutionalized and humanized in the management, and pay attention to the use of soft management strategies. the principal communicates with the teachers in good faith, so that the teachers can truly feel the care from the management team, and stimulate the teachers' sense of belonging and ownership of the kindergarten. Through "spiritual appointment", "teacher group building", "growth sharing meeting" and other ways, to understand the teachers' thoughts, solve the teachers' worries, reduce mental internal friction, so that each teaching staff can work steadily and happily. Only happy teachers can cultivate happy children. the management of temperature cultivates the education of temperature, and stimulates the true love of teachers for their profession. Let love flow in the kindergarten, everyone feels love, everyone passes love. Only in this way can we fundamentally eliminate the phenomenon of lack of teachers' ethics and abuse and injury to children.

In short, the development of preschool education is related to the future of the country, contributing to the present and benefiting the future. Through the improvement of culture, teachers, teaching and research, management and other aspects, gathering consensus and integrating forces, we will achieve more solid and higher quality leap development.

REFERENCES

- [1] Tian Jingzheng, Kang Nan. Historical review and prospect of the development plan of preschool education in New China [J]. *Preschool Education Research*, 2021(06):54-57.
- [2] Yuan Jinxia. Current Situation exploration and suggestions for improvement of kindergarten curriculum quality in China [J]. *Preschool Education Research*, 2021(01):43-56.
- [3] Yang Xiaoping, Li Min. Focus and turn: A review of research on the quality of preschool education in China [J]. *Educational Research*, 2016(04):74-80+104.

Analysis of the Development Dilemma of Third-Party Evaluation of Higher Education from the Perspective of Public Governance

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Abstract: According to the actual development of China's higher education, it is necessary to shift from government management to public governance, which puts forward new requirements for higher education evaluation, and the voice of independent third-party evaluation is rising. In order to promote the better development of third-party evaluation of higher education, this paper analyzes the development status of Wusulian University Ranking, and finds that the evaluation institution is faced with development difficulties such as lack of credibility in ranking results, lack of scientific index system, and lack of standard qualification of ranking institutions.

Keywords: Higher education governance; Third party evaluation; Development dilemma

1. INTRODUCTION

According to the actual development of China's higher education, it is necessary to shift from government management to public governance. Higher education governance advocates the democratization of governance process, the diversification of governance methods and the diversification of governance subjects, and its goal is to form a modern higher education governance system with macro-control by the government, independent running of colleges and universities and active participation of the society. Government management is used to integrating "managers", "scholars" and "evaluators", while public governance advocates the participation of government, schools and society, that is, the separation of "management, management and evaluation" of modern higher education governance system. Actively promoting the separation of education management, administration and evaluation is the inevitable choice of modern education management system and the institutional guarantee of building a modern education power.

2. THIRD PARTY EVALUATION OF HIGHER EDUCATION FROM THE PERSPECTIVE OF PUBLIC GOVERNANCE

Education is a subsystem of society. With the development of the Times, higher education has changed from government management to public governance, which puts forward new requirements for higher education evaluation. the third party evaluation

of higher education from the perspective of public governance should have the following elements: First, the diversity of participants. Including government, colleges and universities, teachers, students, employers, and the public, the rationality and effectiveness of higher education evaluation depends on the joint participation of many subjects. the second is solidarity and collaboration. the diversity of participants determines that unity and cooperation can form an efficient evaluation mechanism. the third is the sense of service. Educational evaluation is to provide evaluation services for the government's macro-control and the development of schools, and to provide services for the needs of employers, students and society for higher education information.

To define the connotation of third party evaluation in higher education, the most important prerequisite is to clarify the concept of "third party". In this paper, the "third party" refers to the neutral higher education evaluation intermediary. It is a specialized evaluation organization between the government, universities and society. It is an independent legal entity that adheres to multiple value orientations or extensive participation of valuable subjects. By accepting business entrusting from the government, universities or other social organizations, it provides education evaluation as the main service form, and can make value judgments on the school-running ability and education quality of colleges and universities. And through the evaluation results to the client and the unit to be evaluated to provide decision-making basis.

In this paper, the third party evaluation of higher education is understood as a legal entity with independent status between the government, society and the school. By accepting business entrustment, it makes value judgment on the school-running strength and education quality of the university, and influences the decision of the client and the assessed through the evaluation results.

3. WUSURIAN UNIVERSITY RANKING

This paper takes Wusulian University ranking as a case to introduce the third party evaluation of higher education in China. Established in 1997 and led by Professor Wu Shulian, Wu Shulian Ranking is the first expert in China to systematically organize and introduce the history and status quo of Chinese

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university rankings to the public. the ranking has two first-level indicators: talent training and scientific research. As a degree education, the undergraduate university is mainly engaged in undergraduate education and graduate education. Therefore, under the first-level index of talent training, there are two second-level indexes: undergraduate training and graduate training. the two secondary indicators are followed by a number of tertiary indicators. the scientific research of human society is usually divided into two areas: natural science and humanities and social science. Therefore, there are two secondary indexes of natural science research and social science research under the first-level index of scientific research. the two secondary indicators are followed by a number of tertiary indicators.

Compared with other rankings at home and abroad, the Wushulian Ranking is characterized by the following four aspects: First, it realizes the direct comparison between different disciplines in theory and practice with the method of "normalization", and then realizes the direct comparison between different types of universities, which makes the university evaluation from experience to science; Secondly, all open data are used, the guiding ideology, data sources, evaluation models, etc. are open and transparent, and any individual and organization can use the same method to repeat the test at any time; Thirdly, it completely abandoned all kinds of questionnaire surveys that can manipulate the results and cannot be repeated by peers. Including social reputation survey, academic reputation survey, network influence survey, etc. Finally, none of the members of the research group has a part-time job in the university, and they do not accept part-time jobs in the research group. There is a clear line between referees and athletes, and there will never be a conflict of interest between referees and athletes.

4. DEVELOPMENT DIFFICULTIES

First, the results lack credibility. the credibility in the university ranking refers to the public's recognition of the credibility and authority of the ranking. It is now common for the public to question the results of university rankings. Because university rankings only represent the words of one person, ranking each university according to the index system of the ranking and the values of the rankers will result in different positions of the same university in different university rankings. To a certain extent, this difference in rank can be understood and accepted. From a theoretical point of view, if the university rankings are too different, it will lead to public doubts about the credibility of the university rankings.

Second, the index system is not scientific. the lack of scientific evaluation index system of university ranking means that different types of universities are measured by one value standard. Because there are great differences in the levels, attributes and types of different types of colleges and universities, the standards used to measure the quality of education in

different types of colleges and universities are also very complex and vague. First, the complexity and vagueness of the measurement criteria reflected in the university ranking will contradict the digital ranking of the university ranking. As a result, some evaluation indicators may reflect a certain aspect of a certain type of university, but cannot effectively measure another type of university. Second, any evaluation index system will have defects and deficiencies, the evaluation index system itself is not scientific, but also affect the effectiveness of university evaluation; Thirdly, there is deviation in the evaluation operation process, which will lead to low efficiency of evaluation work and more problems such as simply measuring the quality and level of education by evaluation indicators while ignoring the spiritual nature of universities.

Third, the qualifications of the ranking agencies are not standardized enough. Qualification refers to the social reputation and qualifications of ranking institutions, the quality of assessment personnel, management level, technical level, etc. the evaluation and ranking of institutions of higher learning is a highly professional and technical work, so only when the professional ability and technical level of the ranking institutions are high, can the objectivity and fairness of the ranking results be effectively guaranteed. Therefore, having certain qualifications is the prerequisite and basis for institutions to carry out higher education rankings, and it is necessary to carry out unified regulations and requirements on the qualifications of ranking institutions. First, at present, there is no requirement for the qualification of university ranking institutions in China, let alone institutionalized norms and constraints; Second, since university ranking institutions are spontaneously formed under the drive of commercial interests, economic interests have been infinitely amplified in the absence of institutional norms, and irrational behaviors of the market have also begun to appear.

REFERENCE

- [1] Li Xiangyu. Research on the Development Path of Third Party Evaluation in China's Higher Education [J]. Journal of Liuzhou Polytechnic, 2021.
- [2] Zhao Yangyintao, Analysis on the Problems of Third-party Evaluation Institutions in China's Higher Education [J]. Journal of Changzhou College of Information Technology, 2019.
- [3] Ren Wen. the Dilemma of Third-party Evaluation Mechanism in China's Higher Education and its Countermeasures [J]. Heilongjiang Higher Education Research, 2021.
- [4] Wu Daguang, Li Guoqiang. the Basic Judgment on the five-year Progress of the Implementation of the Outline of Education Planning and the future Direction of Higher Education-Preface to the Third Party Evaluation Report of Higher Education [J]. China Higher Education Research, 2016.

[5] Fan Xiaoting. Research on the construction of comprehensive evaluation content system of Normal universities in China [D]. Shandong Normal University, 2013.

[6] Qi Lingling. Research on Third-party Evaluation Model of Higher Education Quality in China [D]. Wuhan University, 2011.

How To Build the Team of Student Cadres in College Classes

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Abstract: The class is the smallest and most basic unit and organization in the daily management of colleges and universities, and the team of student cadres plays an important role in grasping the class management. This paper mainly focuses on how to select, train and manage student cadres in the classroom, and explores how to build a high-quality class management student cadre team.

Keywords: Class; Student leaders; Management

1. INTRODUCTION

As the manager and builder of the class, the class student cadres play a non-negligible role in improving the cohesion of the class, promoting good class style and learning style, and achieving the goals of education management. Therefore, the education and management of students in colleges and universities should attach importance to the construction of the team of student cadres in the class, pay attention to the selection, appointment, training and assessment of student cadres, strengthen education and guidance, and continuously improve the ideological level and work ability of student cadres, so that they will become the main force of school and class construction.

A century's plan is like cultivating people. Good student cadres will not come naturally, not only rely on the efforts of student cadres themselves, but also rely on the training of teachers. We must train student cadres, use student cadres, and manage student cadres with the spirit of planting trees.

2. SEIZE THE STAGE OF ADMISSION AND SELECT VIRTUOUS PEOPLE

The selection of class student cadres focuses on careful "selection of seedlings". High-quality saplings often have the characteristics of developed root system, main branch advantage, uniform side branches, many leaf buds and full, the preferred "seedlings" is the key link of tree planting, but also the key link of class student cadre training and selection. The "good seedlings" in student cadres must be based on the principle of having both ability and political integrity and putting morality first, and must also have the characteristics of firm ideals and beliefs, outstanding professional ability, excellent comprehensive quality and high-spirited and enterprising style. It is necessary to strictly implement the selection criteria for class student cadres, follow the law of the growth of class student cadres, persist in observing class student cadres from multiple angles

and in an all-round way, and earnestly select and use class student cadres who actively build classes, manage classes, serve classes, dare to take responsibility, and have a solid work style. We should pay attention to the combination of morality and ability, go deep into the front line of class management and service to understand and select class student cadres, and earnestly select "good seedlings" who stand up and stand up at critical moments for all for classmates and for classmates.

3. GRASP THE CONSTRUCTION OF CADRES AND CULTIVATE HIGH-QUALITY STUDENT CADRE

Class student cadres should pay attention to diligent "fertilization". "Ten years of trees, a hundred years of people." Class student cadres should not only be well selected, but also cultivated well, so that their professional quality and work ability can keep up with the rhythm of the times, avoid ignorance and confusion, and strive to become experts in class management, which are inseparable from the careful training of the teachers of the Youth League Committee and class teachers. The teachers of the Youth League Committee should diligently "fertilize" the cadres, promote the growth and progress of the class student cadres, adopt methods such as "invite in" training, "go out" learning, and "practice" experience to educate the student cadres from the aspects of ideals and beliefs, professional knowledge, and general ability, so that the class student cadres can endure storms, see the world, strengthen their bones, grow their skills and abilities, and finally apply what they have learned to practical work. At the same time, we should also understand the ideological trends of class student cadres, care about their lives, solve their practical difficulties and worries, and let them devote themselves to their work.

4. GRASP THE MANAGEMENT OF STUDENT CADRES AND IMPROVE THEIR MANAGEMENT ABILITY

Class student cadres should be carefully "manage and protect". "Jade cannot be made into a vessel without carving, and trees cannot be cut into timber." After the tree is planted, if you do not do a good job of weeding and loosening the soil, controlling diseases and pests, fertilizing, pruning, etc., it will bend and become unhealthy diseased trees, and some will even be eliminated and become "firewood". It must be carefully cared for at a later stage to grow into useful

wood. the same is true for the growth of class student leaders, who must go through strict management to grow healthily. It is necessary to persist in grasping daily life and strictly on a regular basis, so that class student cadres can always perform their duties and use their powers under strict supervision and grow healthily. It is necessary to persist in grasping the small as early as possible, preventing the small from evolving, promptly criticizing and educating when emerging and tendentious problems are discovered, and often ringing ideological alarm bells, so that biting ears and pulling sleeves, sweating with red faces, and admonishing and talking become the norm. At the same time, establish and improve the assessment and evaluation mechanism for class student cadres, implement recall management for those class students whose work style is not strict and untruthful, do not fulfill their duties, and are not suitable for their current positions, effectively let the class student cadres who do not take responsibility and do not act give way, and strive to create a good atmosphere in which the capable are promoted, the mediocre are lowered, and the inferior are eliminated.

5. GRASP THE STUDENT CADRES AND PROMOTE THE EXCELLENT STYLE OF STUDY IN THE CLASS

Class student cadres are the backbone of student work. On the one hand, they are the main bridge of communication between teachers and students, and they play the backbone in students' self-management, self-education and self-development. On the other hand, they play a leading role in study, work and life. Students' cadres' personal accomplishment, manners and efforts have a direct impact on other students in the class. Therefore, it is very important to do a good job of class student cadres and give full play to their positive role in guiding the majority of students to correct their learning attitude, create a strong atmosphere and build a good class spirit and study style.

6. CONCLUSION

As the saying goes: ten years of trees, a hundred years of tree people. the construction of a good class student

cadre management team is not an overnight thing, it requires counselors and class teachers to carefully select and patiently cultivate, continue to experience in work practice, cultivate a sense of responsibility, enhance responsibility, and grow into a good assistant to teachers and a good example for students.

Student cadres are the best among young college students, who shoulder the future and hope of the country, they are the most precious human resources of the country, and student cadres are the objects that need to be trained. "Youth makes the country prosperous, and youth makes the country strong. " As young college students, they should not only closely combine their personal dreams with the Chinese dream, but also integrate the realization of their personal dreams into the realization process of the Chinese nation's great rejuvenation of the Chinese dream, strengthen their ideals and beliefs, make establish ambition and do great things; We should always maintain high morale, work hard, be proactive, be brave in innovation and study hard; We should combine knowledge with practice, be the first, and lead the new trend of socialism; Young college students should seize the opportunity of the times, bravely stand at the forefront of the times, live up to the mission entrusted by the times, ring the strongest voice of young college students in the new era, and make unremitting efforts to realize the Chinese dream of the great rejuvenation of the Chinese nation.

REFERENCES

- [1] Wang Jianting, Hao Xiujuan, Liu Jian. Analysis on the Construction of Student Cadres in Colleges Class [J]. Higher Education Exploration, 2016. S:166-167. (in Chinese).
- [2] Li Xiaohong, Analysis of the Standardization Countermeasures of Class Management and Class Style Construction of College Counselors [J]. Standardization of Educational Administration Teaching, 2022.3:175-177. (in Chinese).

Research On Optimizing Student Management In Higher Vocational Colleges Based On Vocational Responsibility Education

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Abstract: In the new era, the continuous penetration and implementation of quality education has aroused the high attention of higher vocational colleges, and strengthened the attention to the cultivation of students' professional quality and sense of responsibility. When carrying out various management work for higher vocational college students, innovation consciousness is particularly important. Considering the needs of talents in various sectors of society, we should strengthen and improve talent management strategies and add innovative ideas according to new requirements. Higher vocational colleges and other stages of the school is different, it bears the great responsibility of talent training, and constantly input a large number of outstanding talents to the society. However, in the actual education, it is found that some students' sense of professional responsibility is increasingly missing, which emphasizes that teachers should conduct professional responsibility education for students from different angles, provide help to optimize the management of higher vocational students, and hope to create conditions for the improvement of students' comprehensive professional quality.

Keywords: Vocational responsibility education; Higher vocational education; Student management

1. INTRODUCTION

The continuous advancement of the "14th Five-Year Plan" plan has made China in a period of efficient transformation and innovation, bringing new opportunities for the sustainable development of various industries. In the implementation of the development strategy of "Made in China 2025", the demand for outstanding technical talents in different industries continues to increase. According to the implementation effect of the current reform of the education system of higher vocational colleges, higher vocational colleges continue to transport outstanding talents to the society, especially skilled talents, and the quality of talents is directly related to the development of various industries, so how to correctly train talents is crucial. As a strong support for social and economic construction, students in vocational colleges take the overall situation as the priority after entering the society, which requires vocational colleges to

strengthen the awareness of the overall situation and professional responsibility of students, plan future development goals and directions according to their own, greatly improve their professional quality, and pave the way for entering the society in the future.

2. IMPROVE THE MECHANISM AND INTEGRATE VOCATIONAL RESPONSIBILITY EDUCATION INTO STUDENT MANAGEMENT

The student management of higher vocational colleges needs to be supported by a sound mechanism, and the education of professional responsibility should be integrated into the daily management of students, so as to imperceptibly influence students' ideas and create conditions for their future development and employment [1]. First of all, in combination with the education of professional responsibility, a sound education management mechanism should be established, emphasizing that teachers attach importance to the education of professional responsibility. At the same time, when explaining professional courses, professional responsibility education should be skillfully infiltrated to gradually form corresponding education modules, so that students can virtually understand and master the essential connotation and significance of professional responsibility. When teachers explain the content related to professional responsibility, they consider the actual amount of quoting cases and use positive and negative comparison to strengthen students' new understanding of the importance of professional responsibility. The details are taken as the starting point to gradually enhance students' professional responsibility. Secondly, cultivating students' sense of life responsibility is an important part of expanding professional responsibility education, and it is also the basic guarantee for enhancing students' sense of responsibility. Vocational colleges combine vocational responsibility education with students' life management, guide students to form a sense of responsibility slowly from real life, and gradually extend the sense of responsibility to the career field. For example, every student should have a sense of responsibility for the construction of a safe campus in a timely manner, and put an end to the use of illegal electrical appliances in the dormitory. Once a safety accident occurs, it will not only harm the life safety of

students, but also make the school bear joint and several liability. Therefore, the integration of professional responsibility education into life management can effectively improve the current majority of students' occupational cognition and further enhance their awareness of safety responsibility.

3. BROADEN THE SCOPE OF VISION, BASED ON THE SOCIAL ENVIRONMENT TO PENETRATE VOCATIONAL RESPONSIBILITY EDUCATION

In order to understand the needs of students in life and study, it is very important for teachers to expand their vision when implementing student management in higher vocational colleges. With the rapid development and progress of the Times, the whole society is also advancing by leaps and bounds. According to the changes and conditions of the current social environment, reasonable penetration of professional responsibility education is of great significance to the healthy development of teachers and students. Strengthen the management of class discipline, give students enough free space, let students have more contact with and discover society in their spare time, and create conditions for students to expand their vision of life [2]. In the social environment, the increasingly fierce market competition leads to competition among various industries. Although the employment rate of students shows a significant growth trend, it cannot really guarantee that all employment students can enter their favorite enterprise units. Faced with this problem, higher vocational colleges should focus on cultivating students with both virtue and ability and excellent character and learning from a practical perspective, which is favored by the majority of enterprises. Get their attention. It is thus known that in the process of training and management learning, vocational colleges adopt reasonable means to correctly guide students to broaden their horizons, on the one hand, grasp the needs of the society for various professional talents, on the other hand, compare with each other across the country, use the vision of development technology to identify their own loopholes, and greatly improve students' vocational skills and professional literacy. When students broaden their horizons, they will carry out corresponding education by example, share the stories of outstanding role models in the same industry with each student in the class, communicate and discuss together in group form, and play the role of mutual supervision and help. In addition, in this educational environment, talk about students' personal perception, entice students to extend their career development vision to the social level, so as to learn to grow and progress independently in the social environment, laying the foundation for future healthy development.

4. INTEGRATE PRACTICE AND ENHANCE STUDENTS' PROFESSIONAL RESPONSIBILITY IN PRACTICE MANAGEMENT

The global economy is gradually sweeping in, leading to rapid changes in the international situation, and bringing both opportunities and challenges to China's long-term development. Vocational colleges as an important part of higher education, and vocational students of the motherland to achieve sustainable development of the pillars, is to support the new vitality of the national industrial industry, with the sense of responsibility and the spirit of responsibility, so as to serve in the new era and society to assign new tasks. In the practice and training, students often encounter various setbacks and difficulties in work due to the lack of rich social experience. At this time, teachers play a guiding role, telling them that these problems are inevitable and there is no possibility of always appearing. When students hear the encouragement and comfort of teachers, they can rely on their own perseverance, courage to explore and indomitable spirit. Confront with setbacks and difficulties and truly overcome them. Based on this, when guiding students to practice and practice training, we should strengthen the education of professional responsibility, and realize the importance of establishing professional responsibility in practical operation. When explaining the details, students should always be reminded that once they are passive and careless in their work, serious consequences will be caused, even threatening their own life and property safety, and students should be more aware of the significance of promoting professional responsibility education [3].

5. CONCLUSION

In a word, innovation in higher vocational colleges not only creates conditions for students' vocational skills training, but also focuses on cultivating students' vocational skills and innovation and creativity. However, in practical education, vocational colleges only pay attention to theory and discipline practice teaching, and do not really realize the importance of cultivating professional responsibility for students' future employment, which hinders the healthy development of students to a certain extent and reduces their comprehensive vocational literacy. Based on this, from the perspective of long-term development, higher vocational colleges should face the problems existing in education reform and student management, formulate a sound training mechanism for professional responsibility, constantly expand the scope of education, penetrate advanced ideas and practical education, and implement the assessment system, which is of great significance for students to form a good sense of professional responsibility.

REFERENCES

- [1] He Wei, Liu Zixuan. Research on Optimization of Higher Vocational Student Management based on Vocational Responsibility Education [J]. *Economist*, 2022(11):187-188.

- [2] Peng Xiao, Liu Huiying, Li Jiang. Path exploration of student management in Higher vocational colleges based on the background of the new era [J]. China Journal of Multimedia and Network Teaching (Mid-Day), 2022(10):229-232.
- [3] Wang Yalan, Wang Ya. Investigation on the status quo of Vocational Responsibility cognition of higher vocational teachers and Research on Training strategies [J]. Journal of Chengdu Aeronautical Vocational and Technical College, 2019, 35(04):4-7. (in Chinese)

Exploring Enhancing Learning Efficiency and Effectiveness in AI-Assisted College English Teaching

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Abstract: With the advancement of technology, AI has become an increasingly powerful tool for enhancing language learning. This paper examines how AI can improve the efficiency and effectiveness of English teaching in higher education, focusing on features such as intelligent tutoring systems, automated assessment, adaptive learning, and natural language processing. The findings reveal that AI-based tools can provide personalized learning experiences, immediate feedback, and targeted instructional materials, thereby facilitating students' language proficiency development. Additionally, the paper discusses the challenges and ethical considerations of implementing AI in the classroom and suggests strategies to overcome these obstacles. The research concludes that AI, when appropriately integrated into university English teaching, has the potential to revolutionize the way students learn the language, leading to improved academic outcomes and increased student engagement.

Keywords: AI-assisted teaching; College English teaching; Strategies for effective integration of AI

1. INTRODUCTION

In recent years, there has been a growing interest in leveraging AI technology in various educational contexts to enhance teaching and learning experiences. In the field of English language education, AI holds the promise of transforming traditional teaching methods by providing personalized and interactive learning environments. Research in AI-assisted college English teaching is focused on harnessing the power of AI to provide personalized, interactive, and effective learning experiences. Continued research and development in this field will contribute to the advancement of English language education and help address the evolving needs of learners in the digital age. This paper aims to explore the potential of AI-assisted teaching in university English classrooms, highlighting the benefits it offers over conventional teaching methods.

2. THE ROLE OF AI IN COLLEGE ENGLISH TEACHING

2.1 Intelligent Tutoring Systems (ITS): This examines how AI-powered ITS can provide tailored instruction and feedback to individual learners, taking into account their unique strengths and weaknesses. It discusses the

advantages of personalized learning experiences and the potential of ITS in improving students' language proficiency.

2.2 Automated Assessment: It refers to the process of using artificial intelligence and machine learning algorithms to evaluate and grade student work or performance without human intervention. It involves the use of computer-based systems to automatically analyze and assess students' assignments, exams, or other tasks, which can provide objective and immediate feedback on students' performance.

2.3 Adaptive Learning: Adaptive learning refers to an educational approach that leverages technology, data, and algorithms to personalize the learning experience for individual students. It involves the use of adaptive learning systems or platforms that dynamically adjust the content, pace, and delivery of instruction based on each student's unique needs, progress, and learning preferences. By leveraging technology and personalization, adaptive learning holds the potential to enhance student engagement, motivation, and achievement. It enables learners to take an active role in their education, while also empowering educators with tools to support and guide individualized learning journeys.

2.4 Natural Language Processing (NLP): Natural Language Processing (NLP) is a field of artificial intelligence (AI) that focuses on the interaction between computers and human language. It involves the development and application of computational algorithms and models to understand, interpret, and generate human language in a way that is meaningful and useful. NLP aims to bridge the gap between human language and computer language to enable machines to understand, analyze, and respond to natural language inputs.

3. BENEFITS AND CHALLENGES OF AI-ASSISTED TEACHING

3.1 Benefits: AI-assisted college English teaching can bring several benefits to both educators and students. Here are some of the potential advantages:

3.1.1 Personalized Learning: AI can provide personalized learning experiences by tailoring content, exercises, and assessments to individual student needs and abilities. This helps address the diverse learning styles, levels, and pace of students, allowing them to

learn at their own speed and focus on areas that require improvement.

3.1.2 Enhanced Language Skills: AI tools can provide instant feedback on grammar, vocabulary, pronunciation, and writing style. This immediate feedback helps students identify and correct errors, improve their language skills, and build confidence in their abilities.

3.1.3 Accessibility and Flexibility: AI-assisted teaching platforms can be accessed anytime and anywhere, providing students with flexibility in their learning schedule. This allows students to engage with English language learning materials and practice exercises at their convenience, making it easier to fit learning into their busy lives.

3.1.4 Rich Learning Resources: AI systems can offer a wide range of multimedia resources, such as interactive lessons, videos, audio recordings, and authentic texts. These resources can expose students to different accents, genres, and contexts, fostering a deeper understanding and appreciation of the English language.

3.1.5 Intelligent Tutoring: AI-based tutors can provide intelligent and adaptive tutoring. They can track students' progress, identify specific areas that need improvement, and suggest targeted learning materials or strategies. This personalized guidance can help students overcome challenges and make faster progress in their English language learning journey.

3.1.6 Efficient Assessment: AI can automate the assessment process, saving time for both students and educators. It can efficiently evaluate grammar, vocabulary, writing, and speaking skills, providing objective and consistent evaluations. This allows educators to focus more on providing individualized feedback and guidance.

3.1.7 Teacher Support: AI tools can assist educators in managing and organizing teaching materials, grading assignments, and tracking student progress. This can free up time for teachers to provide personalized guidance, address individual student needs, and foster a supportive learning environment.

It's important to note that AI-assisted teaching should not replace human instructors entirely. The role of the teacher remains crucial in providing guidance, motivation, and a deeper understanding of the English language. AI should be seen as a complementary tool that enhances the teaching and learning experience, leveraging technology to support and empower both educators and students.

3.2 Challenges and Ethical Considerations: While AI-assisted college English teaching offers numerous benefits, there are also several challenges that need to be considered. Such as data privacy, algorithm bias, and the role of teachers in an AI-driven classroom. To address these challenges, it is important to strike a balance between AI and human interaction, leverage AI as a tool to support, not replace, human instructors, and continuously adapt AI systems based on feedback

and ongoing research. Additionally, regular evaluation, feedback, and collaboration with students and instructors can help overcome these challenges and ensure the effective integration of AI in college English teaching.

4. STRATEGIES FOR EFFECTIVE INTEGRATION OF AI IN COLLEGE ENGLISH TEACHING

4.1 To ensure the effective integration of AI in college English teaching, educators can consider implementing the following strategies:

4.1.1 Pedagogical Alignment: Align AI tools and platforms with the existing curriculum and learning objectives. Identify specific areas where AI can enhance language learning and target those areas for integration. Ensure that AI is used as a tool to support and complement, rather than replace, human instruction.

4.1.2 Teacher Training: Provide comprehensive training and professional development for instructors on how to effectively utilize AI tools in the classroom. Teachers should be familiar with AI platforms, understand their capabilities, and be able to integrate them seamlessly into their teaching strategies. Ongoing training and support help teachers adapt to the changing educational landscape and make the most of AI technologies.

4.1.3 Personalized Learning: Leverage AI to provide personalized learning experiences for students. AI can analyze student data, assess individual strengths and weaknesses, and tailor instructional materials and activities accordingly. This approach allows students to progress at their own pace and receive targeted feedback to address their specific needs.

4.1.4 Collaboration and Communication: Encourage collaborative learning and communication among students through AI-supported platforms. AI can facilitate virtual discussions, peer feedback, and group projects, fostering an interactive and engaging learning environment. This approach also develops students' digital literacy and communication skills.

5. CONCLUSION

This article highlights the potential of AI-assisted teaching in university English classrooms, showcasing the benefits it offers in terms of enhanced learning efficiency and effectiveness. It acknowledges the challenges and ethical considerations associated with AI implementation but suggests strategies for responsible integration. By embracing AI technology and leveraging its capabilities, educators can create innovative and engaging learning environments that cater to the diverse needs of students, ultimately leading to improved language learning outcomes.

REFERENCES

- [1] Liu, M. (2020). AI-assisted Language Learning in Context: How is It Learned? Where is It Going? [J]. *CALICO Journal*, 37(2), 193-206.

- [2] Hsu, P. S., Chiu, P. S., & Lai, C. Y. (2021). Integrating AI technology for EFL vocabulary learning: A case study of Quizlet. [J]. *Journal of Educational Computing Research*, 59(3), 785-809.
- [3] He, Z., Cheng, L., & Liang, X. (2019). Exploring the impacts of AI on English as a Foreign Language (EFL) learning in China: A mixed-method inquiry. [J]. *International Journal of Computer-Assisted Language Learning and Teaching*, 9(3), 27-46.

Research On Music Education In Higher Vocational Colleges From the Perspective Of Quality Education

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Abstract: In the vision of quality education, the role of music education has been paid more and more attention. However, in the actual education process, it is not difficult to find that under the influence of various factors, there are still some problems that affect the educational effect of this subject. Therefore, this paper simply analyzes the problems of music education in higher vocational colleges from the perspective of quality education, and puts forward a series of countermeasures.

Keywords: Quality education vision; Higher vocational colleges; Music education problem

1. INTRODUCTION

With the continuous advancement of quality education, the level of higher vocational music education has been continuously improved, which provides an important guarantee for the comprehensive development of students. But it is undeniable that there are still some problems that need to be improved in the actual course of subject education. In this regard, in the actual music education, it is necessary to clarify the existing problems, adopt targeted and feasible improvement strategies, and provide favorable external conditions for the improvement of students' music cultural literacy.

2. MUSIC EDUCATION IN HIGHER VOCATIONAL COLLEGES FROM THE PERSPECTIVE OF QUALITY EDUCATION

2.1 There is deviation in teaching orientation

Under the background of quality education, it is necessary to give full play to the educational value of this subject through the reasonable design of the curriculum when carrying out music education. However, in the actual education process, it is not difficult to find that the understanding of this subject is not in place is a common problem, and this subject is not put in the same important position as other disciplines, and it is considered that the educational significance of this subject is not much and it is dispensable. Therefore, some institutions believe that in daily education work, it is only necessary to complete educational work related to professional courses, which is conducive to improving the employment rate. Under the influence of this concept, there is insufficient investment in the actual discipline education, no matter in the field or equipment, and the

role of this course is weakened, resulting in the failure to achieve the purpose of music education [1].

2.2 There is a lack of teachers

In music education, whether the teacher has professional music accomplishment directly affects the educational effect. On the one hand, in most colleges and universities, music teachers are not the primary profession, and their own ability is very limited, which affects the educational effect to a certain extent. On the other hand, due to the characteristics of this subject, in order to ensure the educational effect, there needs to be teaching facilities as a guarantee. However, due to the limitations of objective conditions and insufficient teaching resources, some educational activities cannot be carried out smoothly. After a long time, this discipline is in a marginal position and it is difficult to give full play to the educational value of the discipline in a real sense.

2.3 Students do not pay enough attention to music education

Through the understanding of higher vocational colleges, it is found that due to the characteristics of these colleges and universities, different from ordinary colleges, in the actual education process, they mainly focus on cultivating application-oriented talents and attach more importance to major-related courses. For students, in order to better promote their own development, they usually put their daily focus on major-related courses. He thinks that the role of music is not big, and needs to invest a certain amount of time, can not play a direct role in promoting his own development, and even give up the study of this subject directly. There are also some students who like this subject, but in the current social background, under the comprehensive influence of various factors, there is a deviation in the understanding of this subject. For example, blindly pursuing some network songs, or advocating fast rhythm hot songs, although these music is relatively popular at the present stage, it is not difficult to find that there is no profound connotation in them, and the poor music quality contained in them will not help their development, and even bring certain negative effects. Due to the deviation of students in aesthetic appreciation, it is not easy to find out that they have no profound connotation. And that directly affects their focus of learning.

3. MUSIC EDUCATION STRATEGIES IN HIGHER VOCATIONAL COLLEGES FROM THE PERSPECTIVE OF QUALITY EDUCATION

3.1 Reforming educational methods

From the perspective of quality education, it is necessary to comprehensively consider all aspects of factors, on the basis of understanding students, choose teaching methods that are in line with their development. To be specific, we can start from the following aspects. First, in daily teaching, we should avoid blindly focusing on "learning to sing", but should focus on the state of students, through their inquiries or feedback, to understand whether their attitude towards this subject has changed. Taking music selection as an example, it is necessary to cover various types of songs as far as possible, so that students can master more content related to the subject through understanding, and realize the differences and similarities between different tracks; Second, it can be combined with the teaching situation and introduce corresponding Musical Instruments according to the teaching needs. At the same time, information technology can also be used to introduce the story behind the track, the emotion contained in the form of pictures or videos; Third, for different students, their preferences are different, and there are obvious differences in cognitive ability. In view of this situation, music clubs can be set up to encourage them to participate. In the clubs, they can find classmates with the same preferences and help each other, thus forming an atmosphere of common progress and promotion in this discipline [2].

3.2 Expand the content of music education

When setting up music courses, we should take into account the characteristics of this subject, and emphasize the educational characteristics of higher vocational colleges. Specifically, in addition to the content of the basic part, the course also needs to combine the development characteristics of students at the current stage to add some content that they can easily accept. However, it should be noted that in any case, it should be career-oriented and not deviate from the original intention of education of this subject. For example, you can appropriately incorporate some drama-related content, pop music, or Western music, etc., to combine different content. At the same time, the classroom form can be further refined. It is necessary to carry out not only theoretical courses, but also practical and performance courses. It is necessary to provide students with opportunities to show their

advantages in diversified courses through various forms of classes, so that they can have a new understanding of this subject and learn to apply knowledge into practice. Continuously improve their disciplinary literacy.

3.3 Attach importance to music education

First, from the level of colleges and universities, they need to pay attention to the educational role of music, and when selecting teachers of this subject, they should understand their abilities and equip professional teachers. At the same time, teachers can be organized regularly so that they can carry out professional learning, and if all conditions permit, excellent experts can be hired to teach more teaching methods of this subject. Second, for teachers, they need to enhance their own awareness, contact with students more, and constantly adjust and optimize their own teaching mode through understanding them, so as to meet the teaching needs and seek the best teaching mode. Third, it is necessary to combine the teaching needs, increase the investment in facilities, purchase appropriate Musical Instruments, and further improve the teaching effectiveness [3].

4. CONCLUSION

To sum up, it is very important to solve the problem of music education in higher vocational colleges from the perspective of quality education. In this regard, in the music education of higher vocational colleges, it is necessary to conduct a comprehensive analysis of the problems in this subject education, comprehensively consider all aspects of factors, start from a number of different aspects, and adopt corresponding solutions to further promote the development of students while improving the level of music education.

REFERENCES

- [1] ZHAI Dongqian. the Promoting role of Music Education in Quality Education of Higher vocational Colleges and the Countermeasures of teaching reform [J]. Music of the North, 2020(05):209-210.
- [2] Dong Ce. Research on the existing problems and Countermeasures of Music Education in Higher Vocational Colleges under the background of Quality Education [J]. Huaxia Teachers, 2018(27):95.
- [3] Huang Jinzi. the promoting role of Music Education in quality Education of Higher vocational colleges and the Countermeasures of teaching reform [J]. Vocational and Technical Education, 2018, 39(11):50-53.

Thinking On the Path of Leading the Growth of Young Teachers in Primary and Secondary Schools with the Construction of Teacher Ethics

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Abstract: As a teacher, good moral quality is of great significance to the future healthy growth. the construction of teachers' ethics is the core and driving force of the construction of teachers, and the foundation of establishing teachers. In the new era, young teachers in primary and secondary schools are the strong supporting force of teachers, with new forces, representing the future hope of modern teacher team construction. Based on this, this paper takes young teachers in primary and secondary schools as the research object, guides education correctly through the construction of teacher ethics, focuses on cultivating young teachers' moral accomplishment and establishing a good work style; Highlight the typical teacher ethics and mobilize the growth power of young teachers; Implement the teacher ethics management mechanism, build a platform for young teachers' growth and education, etc., to lay the foundation for the construction of young teachers.

Keywords: Teacher ethics construction; Primary and secondary school young teachers; Growth; Path

1. INTRODUCTION

Good professional ethics is an important symbol of the majority of primary and secondary school teachers, and it is also a key topic of modern education. As the pillars of the country, young people are related to the future development of the motherland. As the leader on the growth path of young people, teachers' occupation is to achieve the career goal of "educating, educating and becoming adults". Therefore, noble ethics is the passport of teacher qualification, once the lack of this condition, teachers will lose the qualification of education, which also fully proves the importance and value of teacher ethics construction.

2. STRENGTHEN THE GUIDANCE OF TEACHER ETHICS EDUCATION, AND IMPROVE THE PROFESSIONAL CULTIVATION AND TEACHER ETHICS OF YOUNG TEACHERS

Young teachers are always the mainstream pillar of the construction of primary and secondary school teachers and have strong vitality for development, so it is

particularly urgent to strengthen the moral quality of young teachers in primary and secondary schools. First, always pay close attention to the education of key groups. For newly hired young teachers, vocational training is arranged in advance, teacher ethics education is taken as the first professional training course, and the training concept of "educating people for the Party and talents for the country" is followed to effectively enhance teachers' sense of responsibility and professional ethics [1]. Take the development of outstanding young teachers and party members as the focus of work, deploy and implement together with teaching, promote outstanding young teachers to actively apply for Party membership, and constantly improve the political consciousness and teacher ethics of young teachers to become the Communist Party of China as an honor. To educate the young teachers who lack teacher ethics, fully do the education reminder work, strict discipline and management, and identify the work of young teachers to cultivate morality and cultivate people. Secondly, focus on the key content of education. In addition, pay close attention to classroom position education. When primary and secondary schools carry out ideological and moral education and ideological and political education, teachers of other disciplines should also follow, take the initiative to participate in relevant educational activities, correctly establish self-consciousness, extract ideological elements in disciplines that produce educational value and significance for students, and help teachers and students to shape good values. Lofty professional ideal is the content of each young teacher's learning curriculum thought contact, but also the main driving force to form efficient teaching concept. It not only enhances the sense of responsibility and mission of teachers, but also promotes the self-improvement and all-round development of teachers. When teachers dig the ideological and political elements of the curriculum, it is also the process of ideological education for themselves. Finally, grasp the teacher ethics education platform. Enrich the forms of teacher ethics education, increase the practical experience of teacher ethics, rely on the platform of teacher ethics construction base,

teacher ethics public welfare lecture hall, and further highlight the effectiveness of education. For example, some primary and secondary schools in our country have set up teachers' ethics museums, which contain teaching AIDS with a sense of time and textbooks with a lot of historical value, which give a distinctive material subject for teachers' ethics education and play a role in promoting teachers' ethics in the training of primary and secondary school teachers and principals.

3. HIGHLIGHT THE CLASSIC DRIVING ROLE OF TEACHERS' ETHICS, STRENGTHEN THE ABILITY TO TEACH

The key to the growth of young teachers in primary and secondary schools lies in the cultivation of professional ability and the promotion of teachers' teaching ability through special training. In practice, teachers' teaching ability not only needs the promotion of various training and other factors, but also needs the promotion of internal factors, which can show the ability of teaching and educating people in the real teaching. As a young teacher, I am well aware of the importance of excellent teacher ethics to future growth and work, and effectively play a role in guiding, demonstrating and radiating in practice, which has a strong appeal and forms a huge force to greatly improve teachers' learning level and compete for excellent places. When young teachers learn the typical ethics, through the influence of advanced deeds, they can fully set off their own problems and "think twice before acting", which helps teachers internalize excellent quality, externalize it to improve teachers' education ability, enhance their self-consciousness, mobilize teachers' growth motivation, learn the typical ethics and concentrate on teaching and educating people, and conduct in-depth research on professional knowledge. Improve their own education and teaching ability [2].

First, make clear the growth route of young teachers. For the current primary and secondary school teachers in our country, the promotion route of ordinary teachers is "beginning teachers - qualified teachers - backbone teachers - discipline leaders - famous teachers". Young teachers, as excellent learning models, develop their own personal growth routes based on their own comprehensive abilities and conditions, learn from senior teachers, adjust their development routes according to their growth goals, and maximize their professional abilities. Secondly, to promote the growth of young teachers. Young teachers in primary and secondary schools are regularly organized to learn the most beautiful teachers, excellent teachers, model teachers and other advanced deeds of outstanding teacher ethics, not only to learn the typical noble sentiment of teacher ethics, but also to observe the superb professional ability of typical teacher ethics, from passive to active, and strengthen their own professional literacy. In addition, the development of young teachers guidance system.

Typical teacher ethics should be integrated into the growth strategy of young teachers, focusing on types. For example, excellent young teachers are already deputy senior titles and do not belong to the scope of the project, and mentoring should be matched to prevent the implementation of the strategy from being formalized, which is conducive to the implementation of talent training objectives. Finally, dig around excellent examples. According to relevant rules and regulations and relevant reports, as of 2020, there are 17, 929, 700 full-time teachers. With the development and progress of the Times, the educational cause is also thriving, always keeping up with the pace of social development, so that the scale of young teachers in primary and secondary schools is constantly expanding, but the national and provincial honorary teachers occupy a very small number. It is necessary to dig deep into the excellent models around young teachers, so that young teachers can have the opportunity to become excellent models, act as a learning example for young teachers, mobilize their self-consciousness and innovative consciousness, greatly improve their professional quality, and achieve positive interaction [3].

4. CONCLUSION

For primary and secondary schools, the construction of young teachers' ethics is not only a harsh requirement for teachers' professional quality, but also involves various aspects. For schools, good teacher ethics can determine the quality of classroom teaching, have a positive impact on the construction of campus culture, is a prerequisite for the construction of teacher ethics; the harmonious feelings between teachers and students and the recognition of teachers' professional value are the basis to guarantee the construction of teachers' ethics. Teachers' efficient pursuit of noble moral realm and career is the supporting force to promote the construction of teachers' moral. Through the above content, it can help young teachers establish correct values from different aspects, which is of great significance to the construction of teacher ethics.

REFERENCES

- [1] Tian Mingjie. On the effective method of the construction of Rural primary and secondary School Young teachers' Ethics [J]. Chinese Loose-leaf Literature (Teachers Edition), 2022(05):117-119.
- [2] Lin Xiaoping. Thinking on the path of Leading the growth of young teachers in primary and secondary schools with Teacher Ethics Construction [J]. Journal of Fujian University of Education, 2019, 22(12):4-7.
- [3] Zhou Kinshi. Research on the status quo, Problems and Countermeasures of Primary and secondary School teachers' professional Ethics in the New era [D]. Shaanxi Normal University, 2020.

Study On the Management of Higher Vocational Students Based on the Model of Work-Study Combination

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Abstract: Vocational education is a vital part of the education system in our country, which can provide a steady stream of skilled talents for the social and economic development. However, it is worth noting that in the past work, there are some deficiencies in the management of students in higher vocational colleges. the education management mode is relatively backward, overemphasis on students' learning of professional skills and knowledge cannot effectively train students' practical ability, and the rigidity of the education management mode is serious, which is not conducive to the future development of higher vocational students. This paper deeply studies and analyzes the problems existing in the management of higher vocational students in the past, and probes into the management of higher vocational students based on the model of work-study combination, hoping to provide some references for the optimization and adjustment of subsequent student management in higher vocational colleges.

Keywords: Higher vocational colleges; Student management; A question; Work-study combination model

1. INTRODUCTION

There are significant differences between the model of work-study combination and the traditional education management model. It emphasizes the combination of teaching and higher vocational education, which can help students master theoretical knowledge and improve their practical operation ability, which is of great help to students' future employment and development, and can better meet the needs of society for talents. At present, more and more higher vocational colleges have realized the advantages and functions of the work-study combination model, and have made some attempts and achieved some achievements. In this paper, the author explores the problems of student management in higher vocational colleges based on the model of work-study combination, with the aim of further improving the level of student management.

2. THE CHARACTERISTICS OF THE MODEL OF COMBINING WORK WITH STUDY

2.1 Combining theory with practice

The model of combining work with study emphasizes the combination of theoretical knowledge and practical operation, which is more in line with the current social demand for talents, and can promote the all-round development of students as well as the development of social economy. In the mode of combining work with study, higher vocational colleges should provide practical ways for students on the basis of explaining theoretical knowledge, and help students verify the theoretical knowledge they have learned, so as to strengthen students' memory and understanding of theoretical knowledge and ensure that students' practical ability can be effectively improved.

2.2 Strong coordination between the school and the employer

Under the mode of combining work with study, higher vocational colleges and employers can maintain close communication and show strong coordination. In the mode of combining work with study, higher vocational colleges pay more attention to the needs of employers, and can choose jobs for students according to their majors and knowledge levels. In this case, students can quickly adapt to their own concerns, and their rights and interests can be better protected.

2.3 Teaching flexibility is strong

Strong teaching flexibility is also a typical feature of work-study combination model. In the mode of combining work with study, students in higher vocational colleges are no longer confined to their own majors, but can give full play to their own subjective initiative in the process of practice, and students have greater flexibility in study and work. Moreover, higher vocational colleges and employers can ensure students' independent study and work through communication and coordination, which is also helpful for students' future development.

3. THE PROBLEMS EXISTING IN THE MANAGEMENT OF HIGHER VOCATIONAL STUDENTS IN THE PAST

3.1 The management concept needs to be reformed

At present, there is a general situation that the management idea needs to be reformed in the student management work of higher vocational colleges in

China, which has a certain impact on the development of the student management work. Some higher vocational colleges lack the consciousness of innovation, and the rigidity of the education management system is more serious. They overemphasize the teaching of theoretical knowledge in practical work, and cannot provide students with practical opportunities. It is difficult for students to combine theoretical knowledge with practical operation, which is not conducive to the overall development of students and difficult to train professional high-quality talents.

3.2 The management system and mechanism should be improved

Due to the outdated management theory, some higher vocational colleges have not established a sound management system and mechanism, and it is difficult to strengthen the management of students. Due to the imperfect management system and mechanism, higher vocational colleges have many loopholes in student management and cannot provide necessary help and sufficient support for students. In this case, the level of student management is relatively low, which also brings some negative impacts on the development of education and teaching [1].

3.3 Communication and cooperation between vocational colleges and employing enterprises need to be in-depth

At present, there is still a low level of communication and cooperation between colleges and employers in the management of students in higher vocational colleges, and the development of teaching management is not ideal. In today's society, the requirements of employing enterprises for talents are constantly increasing. In this case, vocational colleges are under great pressure in actual work. However, due to the lack of efficient communication, there are still some differences between employing enterprises and vocational colleges in personnel training. It has caused some impact on students' study and work.

4. INNOVATIVE STRATEGIES OF HIGHER VOCATIONAL STUDENTS' MANAGEMENT UNDER THE MODEL OF WORK-STUDY COMBINATION

4.1 Reform the concept of education management

In order to innovate the student management under the mode of combining work with work, higher vocational colleges should pay attention to the innovation of education management ideas and do a good job for students. In order to improve the level of student management, higher vocational colleges should clearly understand the needs of the society for talents, fully realize the shortcomings of the previous education management mode, and establish a strong service concept. Vocational colleges should pay attention to the establishment of assessment and reward and punishment mechanisms, strengthen the management of students according to the actual situation of colleges and universities, encourage and guide students to

practice, help students deepen their understanding of theoretical knowledge in practice, ensure that students can establish strong self-confidence, and lay a good foundation for their future development. In addition, in actual work, higher vocational colleges should adhere to the people-oriented concept, analyze the needs of students, and carry out work with students as the core to ensure that education management can be recognized and cooperated by students [2].

4.2 Establish and improve the teaching management system

Higher vocational colleges should pay attention to the establishment of a sound teaching management system when innovating student management to ensure that students' learning and working rights and interests can be better protected. In daily work, higher vocational colleges should pay attention to understand the learning needs of students, employment objectives and the needs of employing enterprises, and constantly improve the teaching management system to ensure the scientific and targeted teaching management system. In addition, higher vocational colleges should increase the investment in student management and ensure the stable supply of teaching resources, so as to strengthen the protection of students' rights and interests.

4.3 Strengthen the communication and cooperation between employers and higher vocational colleges

In the actual work, higher vocational colleges should pay attention to maintain close communication and cooperation with the employing enterprises, through this way to better complete the personnel training work, ensure the smooth employment of students, and promote the further development of social economy. In actual work, employers should carry out in-depth and detailed communication with higher vocational colleges, comprehensively analyze students' majors and abilities, and divide students into different positions for practice to ensure that students can be effectively trained in the post. The good communication and cooperation between vocational colleges and employing enterprises can ensure that students can maintain strong flexibility in study and work, which is of great help to the overall development of students and can really play a positive role in the model of combining work with study.

5. CONCLUSION

In summary, the model of combining work with study plays a vital role in student management in higher vocational colleges, which can effectively improve students' practical ability and professional accomplishment, and can provide great help for students' future development. Under the new situation, higher vocational colleges should clarify the positive role of the model of combining work with study, face up to the problems existing in the past student management, improve student management by innovating the concept of education management, establishing and improving the teaching management system, and strengthening the communication and

cooperation between employers and higher vocational colleges, so as to ensure that the model of combining work with study can really play its positive role. Thus, the management level of higher vocational college students can be greatly improved.

REFERENCES

[1] Qi Xuan. Problems and Countermeasures of student management in Higher vocational Colleges under the

model of combining work with study [D]. Jiangxi Science and Technology Normal University, 2019.

[2] ZHANG Xiaoyu. Vocational College Student Management Innovation Strategies under the model of Work-study combination [J]. College Entrance Examination, 2018(15):293.

Analysis of Risk Factors of Outdoor Sports Training for Leisure Sports Majors in Higher Vocational Colleges

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Abstract: The outdoor sports training course for leisure sports majors in higher vocational colleges is an important course to comprehensively test students' comprehensive ability to master outdoor sports. This paper uses the methods of literature and interview to identify and analyze many risk factors in the outdoor sports training course of leisure sports specialty in higher vocational colleges, so as to ensure the safety of teachers and students, improve the risk prevention system, improve the ability and measures to deal with accidents, and ensure the smooth implementation of the training course. At the same time, it also enriches the content of outdoor safety education courses, and provides support for the smooth implementation of talent training programs.

Key words: Leisure sports; Outdoor sports training; Risk factors; Distinguish

With the continuous development of China's social economy, the rich material life is no longer the only standard to evaluate the quality of life. Focusing on health, emphasizing experience and enjoying life, leisure sports activities have become an indispensable part of people's life. The sports industry is gradually becoming the mainstay of China's economic development. In recent years, many higher vocational colleges in China have set up sports majors, especially "leisure sports" majors, which closely adapt to the market demand and cultivate high-quality technical and skilled talents engaged in the guidance of leisure sports, the organization and management of activities and events, and the planning and promotion of leisure sports tourism, such as outdoor tour guides, camp instructors, experiential trainers, etc. Compared with undergraduate colleges, higher vocational colleges have a shorter academic system, and the students of sports majors have lower special skills and cultural level. Only by strengthening the training of students' practical ability can they comprehensively improve their social adaptability. Therefore, practice teaching occupies an important proportion and position in the teaching system of higher vocational education, because practice teaching is the only way to achieve the goal of professional teaching and training, and practice and training are the important guarantee of

matching professional talent training with market demand.

Outdoor sports training for leisure sports majors is an important course to comprehensively test students' comprehensive ability to master outdoor sports. However, outdoor sports are often carried out in complex and natural environments with various potential hazards. Injury accidents may occur at any time, such as lost way, loss of temperature, slipping, allergy, animal bites, etc., which may endanger life. The safety of outdoor sports is not trivial, and the risks of outdoor sports are uncertain. In order to ensure the safety of participants, ensure the smooth implementation of training activities, and achieve the course objectives, it is very important to strengthen risk management. In the outdoor accident model, there are three main reasons for the accident: unsafe state, unsafe behavior, and judgment problems. There are many risk factors that affect outdoor safety. Through consulting relevant data, it is found that the risk factors of outdoor and adventure projects in European and American countries are basically classified according to "project staff and participants, environmental conditions, equipment, and traffic classification". Li Shuping of China Mountaineering Association Ma Xinxiang believes that "the risk factors of outdoor sports mainly come from the environment, people and activity equipment". Scholars basically analyze the causes of risks around the three elements "people, equipment and environment", but there are still some imperfections. With the rapid development of outdoor sports, more factors will appear that affect the safety of outdoor sports. This paper uses the knowledge of risk management to analyze and study the risk factors of the outdoor sports training course of leisure sports specialty in higher vocational colleges, in order to ensure the life safety of the activity participants, and also to improve the content of the outdoor safety education course, and provide support for the healthy and orderly development of the outdoor sports training course of leisure sports specialty in higher vocational colleges.

1. RESEARCH OBJECT AND METHOD

This paper analyzes, classifies and summarizes the obtained data based on the comprehensive literature

and interview results. It is found that the risk factors of outdoor sports training for leisure sports majors in higher vocational colleges mainly include eight factors (as shown in Figure 1): school factor, teacher factor, curriculum content factor, student factor, audience factor, environmental factor, venue equipment factor, and other factors.



Figure 1 Risk factors of outdoor sports training for leisure sports majors in higher vocational colleges

1.1 RESEARCH OBJECT

This paper takes the teachers and students who have leisure sports majors in higher vocational colleges as the research object.

1.2 RESEARCH METHODS

Literature method. According to the needs of the research content and purpose, through the HowNet and other relevant documents and materials at home and abroad, learn about the knowledge related to this topic, collect and sort out the relevant research results and research methods, and provide a reliable basis for the in-depth study.

Interview method. Interview the teachers and students, outdoor sports clubs and participants of leisure sports major in higher vocational colleges to obtain the risk factors that affect leisure sports major to carry out outdoor sports training.

2. RISK FACTORS OF OUTDOOR SPORTS TRAINING FOR LEISURE SPORTS MAJORS IN HIGHER VOCATIONAL COLLEGES

2.1 SCHOOL FACTORS

It is mainly manifested in the aspects of funds, system and leadership risk awareness. Funding is an important guarantee for the outdoor training of leisure sports majors in higher vocational colleges. the training funds for students majoring in leisure sports in higher vocational colleges mainly include the training transportation expenses, the travel expenses of the training instructors, the training instructors' class hours, the teachers' and students' insurance expenses, the equipment purchase expenses, the site use expenses, the training expenses of the training instructors, etc. Leisure sports majors carry out the training of relevant projects in the off-campus training ground, which accounts for a large proportion of the whole training course. Therefore, the transportation costs for teachers and students to and from the school and the off-campus ground are slightly higher than those of other majors. Secondly, due to the danger of outdoor sports, compared with other majors, the insurance costs for teachers and students are high. the special equipment for outdoor sports involves safety issues, needs to meet the industry certification, and the price is not cheap; Third, project-based teaching and outdoor sports training are carried out in groups. the number of training instructors is much higher than that of other

professional students. Some projects require instructors with relevant qualifications. Therefore, necessary training and learning is very important, which also requires financial protection. In this way, the overall funding is higher than other majors.

The budget of students' internship and training in higher vocational colleges is basically calculated according to the number of students. Leisure sports major is a newly established major in recent years. the number of majors in each college is small, and the overall budget is small. Another objective situation is that the departments of leisure sports majors in higher vocational colleges (sports colleges or sports teaching departments, sports departments, basic teaching departments, etc.) should also undertake the teaching of college sports courses in the whole school, and the only operating expenses should also include the maintenance of sports venues and the purchase of sports equipment in the whole school. There is a problem of other items occupied by the internship and training expenses of leisure sports majors, However, the proportion actually used for professional training is small. the serious shortage of funds restricts the development of practical training for students majoring in leisure sports in higher vocational colleges.

The second is the system of practical training. On the one hand, it involves the training management system such as the training report, the selection of instructors, the reimbursement of funds, and the archiving of training materials. On the other hand, it involves the procurement, use, maintenance, and scrapping system of outdoor sports technical equipment. There is also a safety inspection system. If the system is not perfect, there will be risks.

The third is the risk awareness of leaders. Whether the response speed and handling measures of emergencies are appropriate depends on the rationality of the drill and plan in advance. If leaders pay attention to it, the school level will actively respond to it, ensure the safety of teachers and students, and reduce the risk to the minimum.

2.2 TEACHER FACTORS

The teaching experience and level of the teachers and whether they have professional skills qualification certification are important factors to ensure the implementation of practical training for students majoring in leisure sports. For example, rock climbing, swimming, skiing and diving are high-risk sports, which need to participate in the national vocational qualification certification and obtain vocational qualification certificates. the actual situation is that leisure sports are mostly emerging sports, which are different from the original sports teachers' special projects in colleges and universities. In view of this situation, various higher vocational colleges solve the problem of teachers and ensure the development of the curriculum by selecting teachers from their own schools to participate in training and obtain qualification certification, recruiting graduates of the

special projects in sports colleges, and employing external industry practitioners to carry out project teaching. Although this method has solved the problem of curriculum, the problems of teachers' level and teaching experience still exist. Many teachers lack high-level sports experience in emerging projects, while new teachers lack teaching experience. External teachers in the industry do not understand the requirements of school education, some outdoor skills are beyond the scope of students' ability to master, and there are unreasonable problems in the setting of practical training content for leisure sports majors in vocational colleges, There are risks.

Secondly, some teachers with relevant certification have poor skills, lack of experience, and can not perceive the potential outdoor risks. the reasons are various, such as: heavy teaching work, more family affairs, resulting in less time for skill practice, making the operation irregular, and there are potential safety hazards. In addition, with the increase of enrollment, the number of instructors required for outdoor sports training is insufficient, and other teachers can only serve concurrently, which is risky.

Third, outdoor activities involve many disciplines, requiring teachers to master a variety of knowledge and skills, such as first aid, equipment use, communication, rope technology, direction recognition, mountain rescue, outdoor skills, etc. Teachers should have the ability to respond quickly to emergencies. In outdoor sports training courses, teachers should have a clear understanding of each accident-prone link, and at the same time, they should handle it quickly, This requires a scientific and reasonable response plan. Therefore, to guide teachers to master and apply multidisciplinary knowledge and skills, and the level of planning plays an important role in risk prevention.

Fourth, in terms of the professional ethics of the instructors, a sense of responsibility, love, professionalism and other positive teaching attitudes are the most basic qualities that a college outdoor sports teacher should have. We all know that there are obvious differences between the two teaching attitudes: positive and serious, and negative and lazy. And how familiar the instructor is with the students. In outdoor sports training, the instructor's lazy and perfunctory teaching attitude not only affects the teaching quality, but also may directly cause risk accidents if he neglects or ignores potential risks.

Fifth, the safety education provided by the instructor to the students is insufficient, and the operation process is not sorted, standardized and strengthened in the three stages before, during and after the training. Sixth, overall planning and coordination. the outdoor sports training for students majoring in leisure sports covers a lot of contents, and the project-based small class system requires a lot of instructors. Each team is faced with different situations in the actual environment, the ability level of instructors is uneven, and the issued handling opinions may be different, and there are still

communications between teams, such as unified command and exchange of projects. Therefore, if the instructor team contact is not scientific and reasonable, and the overall coordination is not good, There are security risks.

2.3 COURSE CONTENT FACTORS

Based on the reasons of teachers, venues, equipment, funds, etc., the contents of the outdoor sports training courses of leisure sports include: hiking, camping, rock climbing, downhill, first aid, orientation, river tracing, canoeing (paddle board), site expansion, etc. the time schedule is 1-7 days, and the form is single-day and multi-day activity organization. Different projects involve different safety issues.

Secondly, talent training needs to be supported by various courses, and the sequence of each course setting needs to have a good logical connection. Therefore, it directly affects the arrangement and opening time of outdoor sports training courses. If the training course setting is unreasonable, students will lack corresponding knowledge and skills, which will pose risks.

2.4 STUDENT FACTORS

First of all, the mastery of skills. During the study of the early courses, if the students do not master the relevant knowledge and skills well, do not understand the responsibilities of the outdoor leader well, and are familiar with the work process of the post, there will be risks in the outdoor training, such as lack of spare clothes in the cold, there will be a risk of temperature loss; If technical equipment is lost or damaged equipment is used during climbing and downhill, life will be endangered. Secondly, physical reasons, such as poor physical fitness of some students, inadequate warm-up preparation before class, and risk of joint sprain. the physical cycle of female students, as well as some students' poor health, some students' weak physique, or the sudden recurrence of old injuries and diseases during the course, as well as deliberately concealing their own diseases, will affect the development of outdoor sports training. Third, psychological reasons. the students are blindly optimistic, not prepared for the psychological situation, and have a sense of withdrawal in the face of emergencies and difficulties. In contrast, some students prefer to take risks and pursue stimulation, are overconfident in their own personal abilities and lack communication with teammates, do not follow the guidance of teachers and suggestions of teammates, lack trust in teamwork, emotional, selfish, and do not understand mutual help, and have a fluke mentality when looking at risk problems. Other students have weak awareness of self-protection and lack of concentration; There are even some students who do not abide by the team discipline and make some unusual behaviors that hurt others' bodies or even violate laws and regulations.

Also, with the increase of the number of students enrolled, the number of students increased. Without the

increase of class hours, the overall operating time of students decreased. In addition, some colleges and universities saved teaching costs. Some courses were taught in large classes. the overall level of students was low and the awareness of risk prevention was poor.

2.5 AUDIENCE FACTORS

Leisure sports majors may face interference from others when carrying out outdoor sports training in natural places, which is called audience factor in this paper. If the site is in the scenic area, tourists and scenic area administrators will appear; Encounter local residents, tourists, military police, unknown armed elements, etc. on natural sites; As well as other teams in the same venue, these languages, behaviors, lights, etc. from third parties may interfere with students and affect some operations. These audience factors may not be directly related to outdoor sports training, but under some special circumstances, they may also directly or indirectly cause outdoor sports risk accidents.

2.6 ENVIRONMENTAL FACTORS

It is mainly manifested in weather, route, landform and territorial management. the natural climate is changeable, outdoor activities cannot be avoided, abnormal weather, unexpected accidents, due to inadequate preparation of early plans, lack of materials, difficulties in coping, and high environmental risks. the development of new lines or the reuse of lines that have not been crossed for a long time, the careful field investigation of dangerous points, topography, etc., and the fragile ecological environment in some areas, many mountains, rocks and soil exposed to the surface, are prone to landslides, debris flows or mountain torrents under the rain, and there are risks. If the crossing is carried out on foot, the terrain, vegetation cover and landmarks of the predicted route are not marked properly, which may lead to accidents such as getting lost and falling. Or the problems of animals, plants and water resources make the physical functions of participating teachers and students unable to adapt and cause risk accidents. Some areas have high latitude, low moisture and dust content in the air, or snow mountain climbing. In such areas, the ultraviolet radiation is strong. If sunscreen measures are taken, sunburn will easily occur; In some areas, if the temperature is too high in summer, we should pay attention to prevent heatstroke; All these will bring risks to outdoor sports training courses.

Access to the activity area. First, whether the area is closed and inaccessible, and whether the security conditions are good; As the activity area belongs to ethnic minority areas, local folk customs should be considered to avoid the risk of cultural differences; Another is that the area of activity belongs to military control, which will involve confidentiality issues; Such sensitive issues as regional wars and conflicts cannot be ignored.

2.7 SITE EQUIPMENT FACTORS

Leisure sports majors carry out outdoor sports practice and training in artificial and natural fields. Whether

there are design defects in the construction of the artificial site, whether the acceptance is qualified, whether there are unsafe problems, whether the site has reserved safe passages, and if the management and maintenance are not timely, there will be risks. Due to the natural conditions of the natural site, the risk factors are high.

In terms of equipment, there is a lack of management system, unreasonable use, untimely maintenance, and unscientific procurement. If there is no timely evaluation in advance, there will be risks.

In addition, if the AED and other relevant medical emergency supplies are not properly allocated, the injured will miss the best rescue opportunity and have adverse reactions to the later treatment. If the medical rescue is not fully considered, the rescue will not arrive in time or lack of rescue conditions, all of which will lead to safety hazards.

2.8 OTHER FACTORS

Here, the catering, traffic safety, public health events, contract safety, insurance claims, etc. of teachers and students in the venue are classified as other factors. the catering problem is the lack of road meals carried by teachers and students, and the public food safety problem of unified meals; Traffic safety refers to the problems such as the failure of vehicles and horses and whether they have legal qualifications; Public health events are acute infectious diseases and other problems; Contract security refers to the existence of loopholes and unequal clauses in the contract formulation, and the failure to perform the contract; On the one hand, the insurance claims for teachers and students participating in outdoor training do not fully cover the activity items, and cannot be settled after distress. On the other hand, the insurance premiums are low, and the compensation costs are low. On the other hand, after the teachers and students are in distress, the claim settlement is not successful due to the untimely reporting of the case or the incomplete procedures of the relevant materials, resulting in economic losses to the teachers and students.

3. CONCLUSIONS AND SUGGESTIONS

The risk factors affecting the development of outdoor sports training courses for leisure sports majors in higher vocational colleges include eight factors, including school factors, teacher factors, course content factors, student factors, audience factors, environmental factors, venue equipment factors, and other factors, which cover a lot of contents. Only by comprehensively finding out the risk factors can we make countermeasures to reduce the occurrence of risks and ensure the safety of teachers and students.

In view of the risk factors that affect the development of outdoor sports training courses for leisure sports majors in higher vocational colleges, we should actively identify, actively respond, scientifically prevent, make plans, and drill in advance at the three stages before, during and after the training, and resolutely avoid the occurrence of risks in case of great

harm and high probability of occurrence; For situations with small hazards and high probability of occurrence, actively take countermeasures to reduce the impact of risks; For the situation with large hazard and small probability of occurrence, the risk shall be transferred; For small hazards and small probability of occurrence, it is necessary to monitor and bear risks, avoid high-risk and low-income situations, ensure the safety of teachers and students, and provide support for the implementation of outdoor sports training courses for leisure sports majors in higher vocational colleges.

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REFERENCE

[1] Wang Liqun, Zhang Yu, Meng Lingbin. Research on risk management of outdoor sports classes in

colleges and universities and countermeasures [J]. Journal of Harbin Institute of Physical Education, 2014, 32(06):67-70.

[2] Vocational Skills Appraisal and Guidance Center of the General Administration of Sport of the People's Republic of China. Outdoor Sports [M]. Beijing: Higher Education Press, 2012.

[3] Zhang Hua. Analysis of Practical Teaching of Leisure Sports Major in Higher Vocational Colleges [J]. Sports Excellence, 2020, 39(09):19-20.

[4] Liu Huarong. Research on risk management of outdoor sports in China's universities [D]. Beijing: Beijing Sport University, 2017.

[5] Liu Huarong, He Qiling. Construction and operation of university outdoor sports risk prevention and control system from the perspective of system safety management [J]. Journal of Zhaotong University, 2022, 44(02):91-100.

[6] Xing Ran. Risk analysis and countermeasures in mountain outdoor training courses [D]. Beijing: Capital Institute of Physical Education, 2020.

Current Situation and Front-Burners Analysis of Educational Accountability Research in China

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Abstract: This study applies the commonly used knowledge map literature econometric analysis method and content analysis method in academia, and uses keyword co-occurrence technology and cluster analysis to explore the research hotspots and research frontiers in the field of educational accountability in China. The analysis shows that the research on educational accountability in China has also made great progress, and the number of documents issued has been on the rise, and the research institutions are mainly concentrated in the central and western regions, forming hot research topics such as higher education accountability, educational accountability theory and comparative research, educational governance, educational quality, teacher education, basic education and educational evaluation. However, compared with foreign research on educational accountability, there are some problems in the research of educational accountability in China, such as immature research field, scattered research team, insufficient research depth and breadth, narrow research perspective and so on.

Keywords: Educational Accountability; Temporal and Spatial Analysis; Research Hotspot; Knowledge Map

1. INTRODUCTION

One accountability is worth ten supervision. In 2017, the General Office of the State Council issued The Measures for the Evaluation of the Performance of Educational Responsibilities by Provincial People's governments, which proposed for the first time to evaluate the performance of educational responsibilities by Provincial People's governments. In June 2018, the State Council held teleconference to highlight China's effort to pursue deeper reform featuring streamlining administration, delegating power, improving regulation, and upgrading services to transform government functions. and to stress the urgency to build a new system of power and responsibility for universities. In 2021, with the introduction of the Measures for Accountability of

Educational Supervision, accountability in education has been growing in scope and in intensity. Chinese educational accountability is gradually moving towards standardization and institutionalization. The exploration of educational accountability continues to be academic interest[1]. However, the research status, research focus and development progress of educational accountability research are not yet clear, and it is difficult to accurately understand and grasp the research dynamics of the existing literature in subsequent studies. In view of this, this paper takes the CNKI paper as the sample, adopts the bibliometric analysis technique and ArcGIS spatial analysis method to depict the knowledge landscape of educational accountability research in China from two levels: spatial and temporal analysis of the knowledge landscape, research hotspots and development trends, in order to provide reference for subsequent research.

2. RESEARCH DESIGN

2.1 Data Download and Cleaning

According to Bradford's law of literature dispersion, the core journals in a field gather most of the key literature in the field[2]. In this study, papers from CNKI core journals and CSSCI source journals were used for the research object, and an advanced retrieval was adopted to construct a "subject" retrieval formula: "subject = educational accountability", and the retrieval time was April 2, 2022, and a total of 353 papers were obtained. After sorting out the data, 10 non research documents such as news reports, conference reviews, solicitation notices and introductory book reviews were selected, and a total of 343 documents were obtained. Two document formats were exported as Refworks and NoteFirst for analysis. In order to ensure the scientific accuracy of bibliometrics, the keywords are cleaned up and keywords with overly broad and ambiguous meanings, such as "construct", "think", "explore", etc., were excluded.

2.2 Research Methods and Research Design

This study adopts the knowledge mapping bibliometric analysis method and content analysis method, which are commonly used in academia, and uses keyword co-occurrence technology and cluster analysis to explore the research hotspots and research frontiers. The innovative use of the natural breakpoint method shows the current situation of the spatial layout of document issuing institutions in each province. The specific ideas of research design are as follows: first, import the literature data into bicomb2.0 software to make statistics on authors, institutions and keywords, identify high-frequency keywords, generate common word matrix of high-frequency keywords, count the occurrence frequency of document issuing institutions, and use CiteSpace to analysis the basic characteristics of research subject cooperation; Second, sort out the statistical data of issuing agencies according to provinces, classify the occurrence frequency of issuing agencies by using the natural breakpoint method, and present the spatial distribution of issuing agencies in provinces; Thirdly, CiteSpace is used for keyword co-occurrence analysis to realize the analysis of research hotspots and research frontiers.

3. CURRENT SITUATION ANALYSIS BASED ON TEMPORAL AND SPATIAL DISTRIBUTION

Firstly, this study combs the development process and distribution characteristics of educational accountability research in China from two dimensions: time and space. Among them, the temporal dimension includes the number of documents in a single year, and the spatial dimension is based on the frequency of documents issued by core authors and issuing institutions.

3.1 Analysis of Literature in the Temporal Dimension

In terms of the number of literature published, 340 articles were published from 1998 to the end of 2021, with an average annual volume of 17 articles. According to Price D's model of scientific growth[3], the overall number of documents from 1998 to 2021 is small and the growth pattern is unstable (see Figure 1), which shows the characteristics of the first stage of scientific literature growth, that is, the research on educational accountability in China is just starting and is at the early stage.

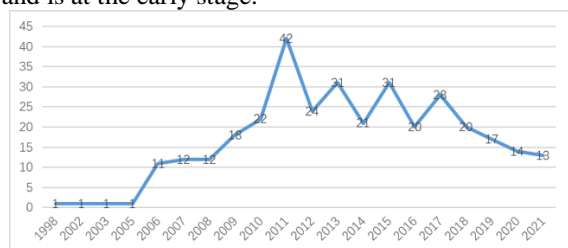


Figure 1. Change Trend of Document Volume.

3.2 Analysis of Literature in the Spatial Dimension

3.2.1 Distribution of core authors

There are 343 paper issued by 400 authors, and Liu Liang, a teacher from Wuhan University of Technology publishes the most papers. According to Price's Law, the value of the number of core authors is 2.37. Therefore, the authors publishing 3 or more articles are identified as the core authors. There are a total of 28 authors accounting for 7% of the total number of authors. In terms of the characteristics of core authors, the core authors in this research field are widely distributed, mainly from normal universities, and most of them have senior professional titles. Beijing, Shanghai and Hebei are home to the largest number of core authors (see Table 1 for details).

In terms of author collaboration, a strong powerful collaborative network has not been formed on the whole. Shen Wei, Lu Naigui, Wang Lijia, Li Wanhong and Song Jia have formed the largest collaborative network team at this stage. with weak collaborative ties scattered around, and very few horizontal ties between collaborative teams.

Table 1. Core Author Information

Number	Author	Frequency of occurrence	Percentage (%)	Cumulative percentage (%)	Author unit	Title	Region
1	Liang Liu	10	2.8986	2.8986	Wuhan University of Technology	lecturer	Hubei
2	Hongyu Zheng	7	2.029	4.9275	Yanshan University	Associate Researcher	Hebei
3	Bin Zhang	6	1.7391	6.6667	Shandong Academy of Educational Sciences	research institute	Shandong
4	Wei Shen	6	1.7391	8.4058	East China Normal University	associate professor	Shanghai
5	Yaoli Gao	5	1.4493	9.8551	Shanghai University of Finance and Economics	Deputy director of Higher Education Institute	Shanghai
6	Linbo Si	5	1.4493	11.3043	Northwestern University	Professor	Shaanxi
7	Xiaoming Duan	4	1.1594	12.4638	Henan University	professor	Henan
8	Shu Hua Liu	4	1.1594	13.6232	Zhejiang University	professor	Zhejiang
9	Xiaoyu Xie	4	1.1594	14.7826	North-east Normal University	associate professor	Jilin
10	Yu Wang	4	1.1594	15.942	Nanning Normal University	professor	Guangxi
11	Ji'e Jia	4	1.1594	17.1014	Beijing Normal University	Associate Research Librarian	Beijing
12	Chunfang Zhu	4	1.1594	18.2609	Zhejiang Normal University	lecturer	Zhejiang
13	Shujuan Wang	4	1.1594	19.4203	Beijing Institute of Education	associate professor	Beijing
14	Lijia Wang	4	1.1594	20.5797	East China Normal University	associate professor	Shanghai
15	Hongqi Chu	4	1.1594	21.7391	Beijing Normal University	professor	Beijing
16	Shiwen Hao	3	0.8696	22.6087	North-east Normal University	lecturer	Jilin
17	Mei Xie	3	0.8696	23.4783	China University of mining and technology	lecturer	Jiangsu
18	Naigui Lu	3	0.8696	24.3478	Beijing Normal University	researcher	Beijing
19	Jia Song	3	0.8696	25.2174	Shanghai Normal University	Associate Researcher	Shanghai
20	Baojun	3	0.8696	26.087	Hebei	professor	Hebei

3.2.2 Distribution of issuing institutions

From the point of view of the authors' workplace, the data were adjusted by using Bicom2.0 to count the publishing institutions. The names of the unified organization are unified as the current first-class name, such as the Institute of International and

Comparative Education of Beijing Normal University, the Institute of Developmental Psychology of Beijing Normal University, Beijing Normal University, the Institute of Higher Education of Beijing Normal University and the Center for Comparative Education Research of Beijing Normal University. The results show that there are 176 independent research institutions, with an average of 2.5 articles issued by the institutions, among which the top 10 institutions in terms of the number of articles issued are East China Normal University, Beijing Normal University, Yan Shan University, Zhejiang University, Northeast Normal University, Chinese University of Hong Kong, Nanjing Normal University, Shanxi Normal University, Wuhan University of Technology, and Zhejiang Normal University, whose total number of articles issued accounts for about 37% of the total number of articles issued.

The frequency of articles issued by authors' workplace was further organized and analyzed by province, and the top ten provinces were Beijing, Shanghai, Jiangsu, Zhejiang, Hebei, Jilin, Wuhan, Henan, Shanxi and Hubei. The natural breakpoint method was used to classify the research institutions in provincial cities of mainland China and in Hong Kong and Taiwan into five categories according to the size of the frequency of publication N (see Table 2 for details). As can be seen from the table, the main research institutions are concentrated in the economically developed middle-eastern China. It is noteworthy that Chinese scholars continue to pay attention to China's research in the field of educational accountability in research institutions in the United States ($n = 11$), Canada ($n = 1$), Vietnam ($n = 2$) and other places through academic exchanges, visits.

Table 2. Classification of Documents Issued by Research Institutions

type	N	Region	Frequency
High volume research institutions	$41 \leq N \leq 97$	Beijing	97
		Shanghai	97
		Jiangsu	41
		Zhejiang	32
Research institutions with high publication volume	$16 \leq N < 41$	Hebei	29
		Hubei	29
		Jilin	16
		Henan	14
General volume research institution	$10 \leq N < 16$	Shaanxi	14
		Liaoning	13
		Hong Kong	11
		Hunan	10
		Shandong	10
		Guangdong	9
Low volume research institutions	$7 \leq N < 10$	Guangxi	9
		Tianjin	7
		Shanxi	5
		Chongqing	5
		Fujian	3
Low volume research institutions	$1 \leq N < 7$	Sichuan	3
		Anhui	2
		Gansu	2
		Heilongjiang	2

4. ANALYSIS OF HOT SPOTS BASED ON HIGH FREQUENCY KEYWORDS

Key words or subject words represent the core content of an article. The recurrence frequency of keywords in a research field can reflect the research hotspots in this field, and keyword network analysis can make out the maturity and structural changes of a research topic or field[4]. According to Price's formula, the threshold value of high-frequency keywords $M=4.56$ was determined. Combined with the specific word frequency distribution of literature research, it is comprehensively determined that high-frequency keywords with frequency greater than 4 are high-frequency keywords. The ranking results are shown in the table below. The top-ranking keywords are higher education, accountability, the United States, education quality, accountability system, performance accountability, basic education, educational governance, the United Kingdom, teacher education, Australia, etc. As can be seen from table 3, the hot topics of the research are rich, covering institutional mechanisms (accountability system and accountability mechanism), accountability subjects (such as government accountability and social accountability), accountability levels (basic education and higher education), accountability contents (education quality, teacher education, education equity, education policy, professional accountability and performance accountability), the way of accountability (internal accountability) and the extension of the connotation and extension of accountability (value-added evaluation, educational supervision, performance).

In order to further clarify the knowledge structure of various research hotspots and avoid the bias caused by artificial subjective clustering, the clustering analysis of keywords is carried out by using the automatic clustering and selection filtering function of Cite Space, LLR algorithm and keyword naming method. The average contour "s" value of clustering map test value is 0.9326 ($0.95 > 0.5$), and the clustering module value $Q = 0.7759$ ($0.75 > 0.3$), which has good mapping effect. The maximum clustering groups were selected and a total of 9 clustering groups were obtained.

Through the secondary interpretation of the literature, the clusters can be divided into seven domains, which are higher education, educational accountability, educational governance, quality of education, teacher education, elementary education and educational evaluation. See Table 4 for details

Table 3. High Frequency Core Keyword Information

Number	Frequency	Centrality	Year	key word
1	46	0.21	2007	Higher Education
2	38	0.25	2005	Accountability
3	35	0.21	2006	Accountability
4	31	0.16	2006	U.S.A
5	29	0.24	2006	Educational accountability
6	15	0.15	2002	Quality of Education
7	14	0.15	2006	accountability system
8	12	0.06	2013	Performance accountability
9	10	0.04	2011	elementary education
10	8	0.1	2015	Educational Governance
11	7	0.06	2005	Britain
12	7	0.05	2007	Teacher education
13	6	0.05	2009	Australia
14	6	0.02	2007	Accountability mechanism
15	5	0.03	2006	Compulsory education
16	5	0.03	2011	Enlightenment
17	5	0.03	2010	Government accountability
18	5	0.03	2006	responsibility
19	5	0.02	2010	Internal accountability
20	5	0.01	2006	education policy
21	5	0	2011	achievements

Table4. Keyword Clustering Information Table

Cluster number	S value: clustering average contour value	LLR (characteristic word)
Higher Education	0.914	Higher education (24, 1.0e-4); Accountability mechanism (11.69, 0.001); University Autonomy (8.15, 0.005); Appropriation system (8.15, 0.005); Distribution mechanism (8.15, 0.005)
Educational accountability	0.992	Educational accountability (26.04, 1.0e-4); Equal rights and responsibilities (9.88, 0.005); Implementation mode (4.91, 0.05); Process accountability (4.91, 0.05); Educational autonomy (4.91, 0.05)
Educational Governance	0.935	Educational governance (11.55, 0.001); System (10.55, 0.005); University Governance (10.55, 0.005); Team school (5.24, 0.05); Educational development goals (5.24, 0.05)
Quality of Education	0.994	Education quality (27.96, 1.0e-4); University ranking (10.93, 0.001); Elimination and diversion (5.43, 0.05); Value added evaluator (5.43, 0.05); Make up examination (5.43, 0.05)
Teacher education	0.907	Teacher education (23.13, 1.0e-4); United States (19.01, 1.0e-4); Education (9.13, 0.005); Fear culture (4.55, 0.05); Project budget performance management (4.55, 0.05)
elementary education	0.954	Basic education (16.69, 1.0e-4); Charter schools (11.06, 0.001); UK (11.06, 0.001); Institutional innovation (11.06, 0.001); Ministry of Education (5.5, 0.05)
Educational evaluation	0.942	Education assessment (11.5, 0.001); Academic standards (11.5, 0.001); Performance accountability (6.18, 0.05); Class size (5.71, 0.05); Improve the quality of Education (5.71, 0.05)

4.1 Theoretical and Comparative Study of Educational Accountability

Chinese scholars' exploration of the meaning of educational accountability mainly focuses on clarifying the concept and connotation of educational accountability, identifying the characteristics of educational accountability, and introducing and comparing the theoretical and practical exploration of educational accountability in various countries.

4.2 Higher Education Accountability

Since the new century, accountability in higher education has become the focus of higher education

reform in various countries. Scholars have studied the accountability in higher education from two aspects. On the one hand, some scholars pay attention to the accountability system of higher education in the United States, India, France, Australia, Britain and other countries, and elaborate the relevant theories and practice paths from the dimensions of performance accountability, financial accountability and quality accountability.

4.3 Educational Quality and Educational Accountability

Since the initiation of reform and opening up, with the increasing popularization of education, China has come along way in providing education access. It has achieved great progress in offering access to nine year compulsory education. Now, it is working hard to expand the access to higher and decent education. At present, the quality of education has become a hot topic. As an important guarantee mechanism of education quality, educational accountability has gradually attracted the attention of scholars. By expounding the educational accountability policies of the United States, Britain, South Africa and other places, some scholars have provided strategies that can be implemented and used for reference to ensure the quality of preschool education, basic education, and higher education in China. Other scholars began to focus on how to ensure the quality of Chinese education through the establishment of accountability system[5].

4.4 Educational Governance

The Modernization of education governance is an important direction of China's current education policy. Some scholars believe that to solve the problems of inaction in reform and development, inefficient governance, slow action, and insufficient motivation, it is necessary to adhere to goal orientation, establish accountability systems, and stimulate the vitality of local education.

4.5 Educational Accountability in Basic Education

Scholars introduced educational accountability to basic education, focusing on the development history, model analysis, system construction, and policy shift of educational accountability in basic education in the United Kingdom and the United States and learn from their successful experience based on detailed analysis to provide reference for China's basic education reform and quality monitoring, and also to play a certain role in the reform of China's educational accountability.

4.6 Educational Evaluation

There is an interaction between educational evaluation and educational accountability, and the linkage between them is the key to the establishment of educational quality assurance system. Chinese scholars have noted that educational evaluation has been widely used abroad as an alternative form of traditional educational accountability.

5. SUMMARY

Through the analysis of the knowledge map in the field of educational accountability research, it can be seen that since 2003, with research boom of educational accountability, educational accountability research has also made great progress and formed a number of hot research topics. However, compared with foreign research on educational accountability, there are some noteworthy problems in China's educational accountability research, which are mainly reflected in four aspects: first, the research field is still immature and still in the embryonic stage, and the stock and volume of literature need to be further improved. Second, the research team is scattered, which means a mature core research team has not been formed, and there is a lack of cross-institutional cooperation, insufficient integration of academic resources, and a low threshold for research. Third, the depth and breadth of research are insufficient. From the perspective of research depth, at present, domestic scholars mainly focus on the introduction and elaboration of relevant cases, experiences and practices of foreign educational accountability and fragmented research, with very few systematic, in-depth and local research; Fourth, the research perspective is narrow, mainly concentrated in the fields of pedagogy, history and policy, with a lack of research perspectives from philosophy, economics, statistics and other related disciplines, and a lack of academic rationality construction and top-level design.

Therefore, Chinese scholars should place more importance on the cultivation of research teams, strengthen cross-institutional and interdisciplinary exchanges and cooperation, introduce

multidisciplinary theoretical methods and analytical tools, and spread the research focus from simple experience introduction and scattered theoretical exploration to the construction of systematic theoretical research system and localized practice system, so as to better play the function of theory guiding practice.

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REFERENCES

- [1]Chen Zhiwei, Zhou Fei, Yu Huijuan, Shi Jiuming, Dong Xiaoting, Tan Xi, sun Mengjie, sun Qian. Analysis of China's basic education policy in 2021 [J] People's education, 2022 (z1): 7-32
- [2]Kong Lingshuai, Fan Yongsheng. A review of the current situation and hot spots of comparative education research in China in recent ten years [J] Journal of comparative education, 2021 (05): 13-25
- [3]An yuan, Zhang Ling. A summary of the application research progress of bibliometrics in the field of Library and information in China [J] Library, 2014 (05): 63-68
- [4]Qin Changjiang, Hou Hanqing. Knowledge atlas -- a new field of information management and knowledge management [J] Journal of university library, 2009,27 (01): 30-37 + 96
- [5]Shen Wei, Lu Naigui. Education quality in the context of accountability: what is and why [J] Global education outlook, 2011,40 (02): 56-61

A Review on Compound Word Processing

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Abstract: This paper reviews domestic and international research on the processing of compound words, first reviewing several theoretical models of compound word processing and pointing out the advantages of the two-channel model, then introducing several classical experimental paradigms and summarizing their respective advantages. In addition, this paper reviews the main influencing factors of compound word processing. Finally, this paper summarizes the current situation and problems of compound word processing and points out the future research direction.

Keywords: Compound Word Processing; Decomposition Model; Two-channel Model; Semantic Transparency

1. INTRODUCTION

Compound word is a common phenomenon among human beings, and the combination of morphemes is a common paradigm for forming new words in English by utilizing morphological rules. There are two types of morphemes: sticky morphemes and free morphemes. Sticky morphemes need to be combined with other morphemes to form a new word that conforms to the rules of syntax and semantics. Free morphemes, on the other hand, have independent meanings, and can be used alone or combined to form a new word called a compound word. The mental representation and processing mechanism of compound words has been a widely concerned issue in psycholinguistic research. Studying the processing of compound words in different languages can not only provide evidence for cross-linguistic research, but also explore the universality and specificity of lexical processing mechanisms, which is significant especially in second language acquisition and output. Morphemic information is one-language processing, and the frequency, morphology (orthography), and semantic features (e.g., semantic transparency, morpheme meaning, etc.) of morphemes are important influences on the processing of compound words. Among them, whether semantic transparency affects the early processing of compound words is a research question that has been the focus of academic attention. Looking at the results of previous studies, we find that there are three main processing modes for compound words: the first is simple form decomposition processing, and semantic transparency does not affect the early processing of compound words. The second is dual-route processing, i.e., transparent words are processed by decomposition processing, while obscure words are processed by

whole word processing; and the third is decomposition processing, and semantic transparency has a moderating effect on the early processing of compound words. Although the morphological structure of words has been found to be an important factor influencing lexical processing, most of these studies have focused on the processing of first language derivatives and inflected words (Taft & Forster 1975; Schreuder & Bayen 1997; Longtin & Meunier 2005)[37] [31] [19]. Research in the field has also shown a preference for derivatives and inflections (Silva & Clahsen 2008; Diependaele et al. 2011)[33] [7]. Since the development of bilinguals' mental vocabulary is mainly influenced by first-language background (Silva & Clahsen 2008) [33] and second-language proficiency (Elston Guttler et al. 2005)[9], how do Chinese-English bilinguals process English complex words, and what are the similarities and differences in English complex word processing among Chinese-English bilinguals at different levels? Compared to the processing of other complex word classes, less attention has been paid to compound words. However, compound words are the most common method of constructing complex words in the world's languages, and compound words are a common phenomenon in many languages (Dressler 2006)[8]. Compound words consist of two or more units of meaning (morphemes), but the meaning of the whole word of a compound is often not equivalent to a simple superposition or combination of the semantics of its constituent morphemes (e.g., butterfly has no relation to the original meanings of butter and fly), whether compounds have new modes of representation that are independent of their constituent morphemes, whether or in what way they are linked in the mental lexicon, whether their processing mechanisms are the same or different, and whether their processing mechanisms are the same or different. Whether they are processed by the same or different mechanisms are questions that remain to be answered in the field of mental lexicon and lexical processing. As a prolific word formation, compounding and its product, compound words, occupy a relatively important position in the major languages of the world. Therefore, understanding the representation and processing patterns of compound words is of practical significance for vocabulary acquisition, memorization and teaching methods in second languages. In view of the above background, this paper intends to review the overview of the research on compound word processing at home and abroad, sort out the relevant theoretical models

established in the existing research, categorize, analyze and evaluate the existing researches from the perspective of research methodology, and point out the direction and trend of the future researches on the basis of the basic status quo, characteristics and dynamics of the research on compound word processing.

2. A THEORETICAL MODEL FOR THE STUDY OF COMPOUND WORD PROCESSING

At present, the academic controversy over the processing model of compound words mainly focuses on the “decomposition model” or “non-decomposition model”, i.e., whether the processing of compound words is to take the whole word processing as in simple vocabulary or to decompose into the processing of lexemes constituting the compound words, due to the different research objects, research methods and research focuses, researchers have reached different conclusions. Whether the processing of compound words takes the form of whole word processing like simple vocabulary or the processing of morphemes that constitute compound words, there are differences in the conclusions reached by researchers due to the differences in the objects of research, research methods and research centers. Early findings support the “decomposition model” of processing compound words (Taft & Forster 1976; Zwitserlood 1994; Libben 1998)[34] [43] [18]. Researchers have argued that there is a lexical decomposition process in the processing of compound words, and that the morphological structure of compound words affects their processing. However, some researchers hold the opposite view, for example, Butterworth (1983)[5] believes that the “morphological structure” of compound words is merely a combination of semantic and spelling information, and that compound words are still processed as a whole. The “non-decompositional model” has been divided into the “whole word list model” and the “connectivist model”, both of which have in common the denial of the influence of morphological structure on the processing of compounds. They share the common ground of denying the influence of morphological structure on compound word processing, but they give different explanations for the role of influencing factors in the processing process (as will be explained in more detail below). In addition to the “decomposition model” and the “non-decomposition model”, the “dual-route model”, which combines the two, has also been supported by a number of empirical studies (Caramazza et al. 1988; Schreuder & Bayen 1995)[6] [30]. The “dual-route model” suggests that there are two channels for processing compound words: whole-word processing and decomposition processing at the same time. The two most influential dual-channel models are the “serial dual-channel model” and the “parallel dual-channel model”, which will be further described

and compared below.

2.1 Decomposition Model

The Decomposition Model considers lexemes as the basic unit of lexical representation and processing, which means that the representation of compound words in the mental lexicon is realized through lexemes. The processing of compound words is realized by processing lexemes on the basis of morphological decomposition, which is an automated process prior to lexical access. For example, when processing the compound word blackboard, only black and board can be extracted in the mental lexicon separately, and then the compound word blackboard can be processed because the word blackboard does not exist in the mental lexicon, only black and board exist. Some experimental results also support this processing model. For example, Taft and Forster’s (1976) experimental results showed that nonwords that are prefixed word stems (e.g., juvenate) take longer to classify than nonwords that are not stems (e.g., pertoire), suggesting that nonword stems are directly represented in the mental lexicon, and that prefixed words are analyzed for their constituent morphemes before they enter the lexicon[34]. This finding also suggests that compound words are processed through morphological decomposition, which proceeds from left to right, with the first morpheme of a compound word being used as the access code. However, in their further study, Taft’s (1994) experiment changed important items from the original experiment and found the presence of whole-word representations, but still argued that decomposition processes precede whole-word extraction[35]. Wu & Zhang (2021) used a masked-initiation experimental paradigm to compare the effects of semantic transparency on compound word processing in native and bilingual Chinese, and the results of the experiments demonstrated that compound word processing uses decomposition[39]. The core of the decomposition model is to emphasize the role of morphological structure in lexical processing, arguing that the decomposed representation and processing model can save the brain’s storage space because it is not necessary for learners to build another separate compound word lexicon in their mental lexicon, thus enhancing the organizational efficiency and normativity of the mental lexicon. However, the decomposition model also has problems. While it has the advantage of improving storage efficiency, it sacrifices processing efficiency. If compound words are stored in the mental lexicon in the form of morphemes, learners can only process compound words by extracting morphemes and semantic combinations each time they process them, which inadvertently increases the processing load of learners and may reduce processing efficiency. Therefore, based on this problem, some researchers have proposed Non-decomposition Models.

2.2 Non-decomposition Models

Non-decomposition Models can be categorized into Full-listing Model and Connectionist Model. Full-listing Model assumes that the meaning of a compound word cannot be simply reduced to a combination of lexical meanings, and therefore, like simple words, compound words have independent representations and existence in the brain (Butterworth 1983)[5]. The model assumes that both simple and complex words are explicitly listed in the mental lexicon and can therefore be processed by means of whole-word extraction. Butterworth compared the judgment reaction times of simple and compound words and found no significant differences. And his further study also found that subjects' reaction times to idioms were also faster than random phrases of the same length, suggesting that even idioms are stored independently in the brain. Chen et al. (2021) investigated the processing mechanisms of English bilingual suffix derivatives in Chinese learners of English by using the masked-initiation experimental paradigm of the lexical base-whole-word, and the processing mechanisms of English bilingual suffixes of Chinese learners of English. The processing mechanism of Chinese learners' L2 suffix-derived words is whole-word extraction. Non-decomposition Models denied the role of morphological structure in lexical processing, but since more and more experimental results proved that there is indeed a decomposition process in the processing of compound words, the supporters of Non-decomposition Models have gradually diminished. The role of morphological structure is also rejected by the Connectionist Model, which argues for a decade of cumulative effects of lexical spelling, phonological and semantic information without specialized morphological representations (Plaut & Gonnerman 2000; Seidenberg & Gonnerman 2000)[26] [32]. For example, in lexical priming experiments, priming effects differed across semantically transparent compound words: priming effects were greater in the case of fully semantically transparent and similarly spelled than in the case of low semantic transparency or semantically obscure semantically opaque.

2.3 Dual-route Models

In recent years, more and more researches have shown that neither decomposition model nor non-decomposition model can explain the processing of compound words and other complex words well, so some scholars have proposed Dual-route Models (Caramazza et al. 1988; Schreuder & Baayen 1995; Pollatsek, 2000)[6] [30] [27]. Dual-route Models suggest that complex words are processed in the mental lexicon in both whole-word and morpheme ways, which corresponds to the existence of two different processing channels: whole-word processing and disjunctive processing. For certain types of complex words (e.g., regular forms of the past tense

of verbs), decomposition can be used for storage and processing, while for other words (irregular forms of words), whole-word storage and processing are chosen. The Dual-route Models seem to have stronger explanatory power, but there are again different explanations for how the two channels are chosen, how they work, the sequence of their effects, and their relationship with the influences on the complex word. Different explanations. Currently, there are two influential two-channel models, the Morphological Race Model (or Race Model, or MRM) (Schreuder & Baayen 1995)[30] and the Augmented Addressed Morphology Model (or AAM) (Caramazza et al. 1988)[6]. The MRM posits that the decomposition channel and the whole word channel operate in parallel and compete with each other. When the brain receives an input signal for a complex word, both channels are activated at the same time and compete with each other under influences such as word frequency and semantic transparency, and the brain takes the winning channel. Another two-channel model, AAM, also assumes that the decomposition channel and the whole-word channel coexist. Unlike MRN, while both whole-word and morpheme representations can be extracted, whole-word extraction is the default approach, and the brain automatically adopts morpheme extraction once whole-word extraction is unsuccessful. Although slightly different, both agree that whole-word processing is mostly used for high-frequency or high-familiarity complex words while disambiguation processing is mostly used for low-frequency or low-familiarity complex words. Currently, the dual-channel model is a widely recognized and accepted model of complex word processing, and a large number of empirical studies have provided evidence for dual-channel (Sandra 1990; Baayen et al. 1997; MacGregor & Shtyrov 2013; Yu & Tian 2019)[29] []. And the research controversy centers around how factors such as word frequency and semantic transparency play a role in the choice of the two channels (Frisson et al. 2008; Libben et al. 2003; Mareli & Luzati 2012).

3. AN EXPERIMENTAL PARADIGM FOR COMPOUND WORD PROCESSING

Currently, the main research method for compound word processing is lexical recognition, of which the more common experimental methods are lexicon decision and priming experiments, followed by eye-tracking experiments. These experimental paradigms are described in detail in this section.

3.1 Lexical judgment experiment

Lexical judgment experiments are the most commonly used research paradigm in compound word processing research. In lexical judgment tasks, the target words are usually true compounds and pseudo-compounds (pseudo-compounds) or compound nonwords [3]. The target words are presented in a certain way and the subject is asked to

determine whether they are true or false by some action (e.g., pressing a key, etc.). The computer software records both response time and correctness, which is used as a basis for analyzing the processing mechanism of the subject's compound words. Taft and Forster (1976) are the pioneering study that used lexical judgment experiments to study the representation and processing of English compound words (see 2.1). And nowadays, the lexical judgment experiment paradigm is still the primary choice of researchers in the study of compound word processing mechanisms.

3.2 Launching an experiment

The initiation experiment is actually a lexical judgment task, except that two stimulus words are presented during the experiment, the former as the initiator and the latter as the target word, and the subjects are only required to make judgments about the target word. The purpose of the initiation experiment is to test whether the initiating word has an initiating effect on the target word, i.e., whether the initiating word helps the subject to make a quicker and more accurate judgment on the target word. In compound word processing research, priming experiments usually take partial repetition priming (partial repetition priming, where the primer is a compound word morpheme and the target word is a compound word, or vice versa) or semantic priming (semantic priming, where the primer and the target word are semantically linked). Compared with the lexical judgment experimental paradigm, the priming experiment introduces the priming word, and the researcher can manipulate the relationship between the priming word and the target word according to his or her own research needs, so as to directly judge the interactions between the lexeme and the composite whole word, and thus the priming experimental paradigm is a more suitable experimental paradigm for the research of compound word processing.

3.3 Eye movement experiment

In recent years, with the wide application of eye-tracking experimental techniques in the fields of psychology and linguistics, they have also been applied in empirical studies of compound word processing. In eye movement studies, various forms of compound words are used as target words, and the parameters measured are first fixation and gaze duration. In such experimental paradigms, eye-trackers usually record and analyze the trajectories of the subject's eye movements. Compared with the previous two experimental paradigms, the advantage of eye movement experiments is that subjects can be observed continuously in a natural reading environment, which not only helps to reveal the experimental process of vocabulary processing, but also makes the experimental data more objective. In the future, eye-tracking experiments are bound to assume an increasingly important role in compound word processing research.

4. INFLUENCES ON THE PROCESSING OF COMPOUND WORDS

A variety of factors influence compound word processing, and three main ones are presented here: semantic transparency, lexical position, and bilingual proficiency.

4.1 Semantic transparency

Semantic transparency refers to the extent to which the whole word meaning of a compound word can be inferred from the semantics of its constituent morphemes (Wang & Peng 1999). If the semantic meaning of a compound word can be easily inferred from the meanings of the morphemes that constitute it, it means that its semantic transparency is high. On the contrary, if there is not much correlation between the morphemes constituting the compound word and the semantics of the compound word, it means that its semantic transparency is low. Words with high semantic transparency are called transparent words, and those with low semantic transparency are called opaque words. Libben et al. classify the semantic transparency of compound words into four categories according to the degree of correlation between the meaning of the morpheme in the compound word and the meaning of the morpheme as an independent root: TT (transparent-transparent); OT (opaque-transparent); TO (transparent-opaque) and OO (opaque-opaque), and this division facilitates the discovery of the effect of semantic transparency of morphemes on the processing of compound words [21] [17].

Whether semantic transparency is activated in the processing of monolingual compound words is an important research question in compound word processing. Researchers have conducted activation experiments in different languages, but have not been able to form a unified conclusion. Sandra studied the effect of semantic transparency on Dutch compound word processing through semantic activation experiments, and found that only transparent words have semantic activation effect, and the processing of obscure words is not affected, therefore, transparent and obscure words are processed differently: transparent words are processed by decomposition, and obscure words are processed as a whole [28]; however, Libben et al. found that both transparent words and obscure words have activation effect, and the processing of transparent words is not affected. processing [28]; however, Libben et al. found that there was an initiation effect for both transparent and obscure words, with no significant effect of semantic transparency [18]. Jarema et al. examined the effect of semantic transparency on the processing of French and Bulgarian compounds and found that an initiation effect was observed for both transparent and obscure words in French, but no initiation effect was observed for obscure words in Bulgarian. effect. In contrast, semantic transparency plays an important role in the processing of juxtaposed compound words in Chinese.

However, Smolka and Libben found that semantic transparency of German compound morphemes does not affect compound word processing [30]. In the research on the effect of semantic transparency on bilingual compound words, the main focus has been on examining the processing of English bilingual compound words, however, no uniform conclusions have been drawn either. Chen et al. examined the representation of English bilingual compound words in the mental lexicon through a lexical naming experiment, and found that semantic transparency had little effect on the storage of compound words for high level subjects. Wang et al. examined the processing mechanism of English compound words in Chinese learners of English by a no-initiation lexical judgment task to examine the processing mechanism of English compound words in Chinese English learners, and no semantic transparency effect was found. Wu & Zhang (2021) explored and contrasted the effects of semantic transparency on the processing of compound words in native and bilingual Chinese speakers, and found that the early processing of compounds was disambiguated in both native and bilingual speakers, but for native Chinese speakers for native Chinese speakers, semantic transparency may affect the processing of compound words; while for bilingual Chinese speakers, semantic transparency has no effect [38]. However, some researchers have come to opposite conclusions. Gan & Zhang examined the representation and access of compound words for Chinese-English bilinguals using a lexical judgment task with a repeated initiation paradigm, and found that English compound words are mixed stores and semantic transparency is an important factor affecting their processing [21]. Zhang et al.'s SOA initiation experiment examined the time course of bilingual compound word processing for Chinese ELLs, and found that compound words are processed in the early stages of decomposition. processing time course, and found that the semantic transparency effect of compound words gradually weakened with the advancement of processing time course.

Overall, the experimental evidence for the effect of semantic transparency on the processing of bilingual compound words is still insufficient, with the following main problems: (1) most experiments examine the processing of English compound words, and future research can provide better experimental evidence for the processing of bilingual compounds by incorporating other bilingual language varieties; (2) the types of compounds tend to be mostly transparent and obscure, and there is a lack of partially transparent words in the research; (3) future research should be directed at designing experimental paradigms for comparing the recognition processes of native speakers and second language speakers to better compare the similarities and differences in their processing.

4.2 Morpheme position

A central topic in experiments to validate the processing patterns of compound words has been the study of lexical morphemes' representational access. Given that the constituents of compound words are all free morphemes, a number of studies have examined the processing differences between left and right morphemes, with mixed findings. Some studies have found higher activation of left morphemes, suggesting that left morphemes are prioritized by left-to-right recognition habits (Kuperman et al 2009)[15]. Lexeme position also showed different time course effects. Yu (2017) found that the priming effect of left morphemes was stronger when the SOA was 66 ms, whereas the priming effect of right morphemes was only found for familiar compound words. When the SOA was 300 ms, the priming effect of left morphemes was still significant, whereas the priming effect of right morphemes was only found in semantically transparent and more familiar compound words[39]. In contrast, other studies have found that right morphemes are activated to a greater extent because they are usually in the central semantic position of the compound word (Marelli & Luzzatti 2012) [21]. Other studies have not found a positional effect of morphemes, i.e., both activate the whole word equally or the positional effect of morphemes varies with the degree of semantic transparency: left-placed morphemes are more likely to activate semantically obscure compounds, whereas right-placed morphemes are more likely to activate semantically transparent compounds. Zhang et al. (2021) examined lexeme position and semantic transparency in the processing time course of compound words by Chinese ELLs using a series of three initiation experiments with 200 ms, 400 ms, and 600 ms SOAs. The results revealed that there was a stable lexical activation access phenomenon in the processing of compound words by English learners[40]. This lexical information access is significantly correlated with lexical position, and shows the positional effect of "left position is strong and right position is weak". The authors believe that the reason for this result is that learners rely too much on the left lexical information and ignore the right lexical information in the acquisition of bilingual compound words. However, the reasons for the different positional effects need to be verified by more research and deeper explanation.

4.3 Second language proficiency

There are fewer studies on the mechanisms of compound word processing and the role of second language level has not been considered. Since the development of bilinguals' mental vocabulary is mainly influenced by their monolingual background (Silva & Clahsen, 2008) and bilingualism (Elston-Guttler et al., 2005), how do Chinese-English bilinguals process compound words in English, and what are the similarities and differences in the

processing of compound words by Chinese-English bilinguals at different levels of proficiency[32] [9] ? What are the differences and similarities in English compound words processing among Chinese- English bilinguals with different levels of proficiency? There are limited studies on how bilingual proficiency affects the processing of compound words, Zhao (2014) inferred that high and low level learners have the same processing process based on the same speed of judging the whole word. However, the conclusion of this study is debatable because the consistent speed of whole- word judgments does not indicate that the processing of the first and last morphemes and their interaction with the whole word are the same. Yu & Tian (2019) examined the similarities and differences in English compound word processing between high- and low-level learners in China using a repeat-start online vocabulary judgment task. The results found that: both groups of learners used a multi-channel model; the difference was that the low-level group's whole-word semantic activation was late, occurring after the activation of the first lexeme and before the activation of the last lexeme, and the processing of the last lexeme was incomplete, with the first lexeme producing a familiarity effect and the last lexeme producing a transparency effect; the high-level group's processing of the whole-word semantic cues began at the early stage of compound-word processing, and was enhanced after the activation of the whole-word form, and the processing of the last lexeme was more thorough, with the first and last lexeme both produce transparency effect and familiarity effect, but the transparency effect is weaker than the familiarity effect. The results show that the processing of compound words is different from that of complex words, and that the second language level does not affect the processing pattern, but does affect the activation time and processing intensity of compound words and their morphemes. However, the study examined second language learners and did not compare the similarities and differences in the processing of complex words between native speakers and second language learners, especially the similarities and differences in the processing between high level second language learners and native speakers. This shows that there are still some areas of bilingual compound word processing that have not been touched, and many questions remain to be answered. Researchers need to adopt more scientific methods and conduct more detailed investigation and research on bilinguals of various identities and language levels.

5. CONCLUSION

In summary, although the research on compound word processing has made initial progress, there are still different aspects of controversy. First, the two-channel model has more explanatory power for compound word processing, but the “parallel

two-channel” and “serial two-channel” may coexist, and different research materials and research objects support different theories. Future research should focus on how the parameters that select a particular channel act on the processing. Second, more research should be conducted on the factors affecting compound word processing, especially on the comparison of subjects from different linguistic and cultural backgrounds. In addition, in terms of research methodology, although the experimental paradigm of lexical judgment and the initiation paradigm are already mature and the application of eye movement experiments is becoming more and more widespread, more experimental paradigms, such as ERP and fMRI, should be explored in the future. Finally, in terms of subject selection for bilingual compound word processing, foreign researchers usually choose balanced bilinguals, i.e., acquiring both one and two languages at the same time, and the linguistic distance between one and two languages is relatively close (e.g., belonging to the same Indo-European family). But there is still a lack of empirical evidence on whether these results can be applied to unbalanced bilinguals in China. Therefore, future research could focus more on the processing or acquisition of compound words by Chinese EFLs, while comparing existing studies to better identify differences and fill gaps in the field.

REFERENCES

- [1] Alen, M.& W. Badecker. 2002. Inflectional regularity: Probing the nature of lexical representation in a cross-modal priming task [J] . *Journal of Memory and Language*, (4):705-722.
- [2] Baayen, R., D.Davidson & D.Bates.2008.Mixed effects modeling with crossed random effects for sub-jects and items[J]. *Journal of Memory and Language*, (4):390-412.
- [3] Baayen, R.& R. Schreuder. 1999. War and peace: Morphemes and full forms in a non-interactive activation parallel dual-route model[J] .*Brain and Language*, (68):27-32.
- [4] Bayen, R. H., T. Dijkstra & R. Schreuder. 1997. Singulars and plurals in Dutch: Evidence for a parallel dual-route model[J]. *Journal of Memory and Language* (37):94-117.
- [5] Buterworth, B.1983.Lexical representation [A] . In B. Buterworth(ed.). *Language Production (Vol.II: Development, Writing, and Other Language Process)* [C] . London: Academic Pres. 257-94.
- [6] Caramaza, A., A. Laudanna & C. Romani. 1988. Lexical access and inflectional morphology [J] . *Cognition* (28): 297-332.
- [7] Diependaele, K., J. A. Duabeitia, J. Moris & E. Keulers. 2011.Fast morphological effects in first and second language word recognition [J] . *Journal of Memory and Language* 64:344-58.
- [8] Dressler, W .U .2006.Compound types [A] .In G .

- Libben & G. Jarema(eds.). The Representation and Processing of Compound Words [C] .Oxford/New York: Oxford University Pres.23-44.
- [9] Elston-Gutler , K. , S. Paulmann &S.Kotz.2005.Who's in control? Proficiency and L1 influence on L2 Processing[J] .Journal of Cognitive Neuroscience, (10):1593-1610.
- [10] Fiorentino, R.&E. Fund-Reznicek. 2009. Masked morphological priming of compound constituents[J] . Mental Lexicon, (2):159-193.
- [11] Forodi-Nejad , F.&J. Paradis. 2009. Crosslinguistic transfer in the acquisition of compound words in Persian-English bilinguals [J] . Bilingualism: Language and Cognition (12):411-27.
- [12] Frison, S., R. Niswander-Klement & A. Polatsek. 2008. The role of semantic transparency in the processing of English compound words [J] . British Journal of Psychology (99):87-107.
- [13] Giraudo , H. & J. Grainger. 2001. Priming complex words: Evidence for supra lexical representation of morphology [J] . Psychonomic Bulletin & Review, (8):127 – 131.
- [14] Ji, H., C. Gagné & T. Spalding. 2011.Benefits and costs of lexical decomposition and semantic integration during the processing of transparent and opaque English compounds[J] .Journal of Memory and Language, (4):406-430.
- [15] Kirkici, B .& H . Clahsen. 2013. Inflection and derivation in native and non-native language processing :Masked priming experiments on Turkish[J] .Bilingualism :Language and Cognition, (4):776-791.
- [16] Kuperman, V., R.Schreuder, R.Bertram & R.Baayen.2009.Reading Polymorphemic Dutch Learning and Verbal Behavior, (14):638-647.
- [17] Li, M., N. Jiang & K.Gor.2015.L1 and L2 processing of compound words: Evidence from masked priming experiments in English[J] .Bilingualism: Language and Cognition, (2):384-402.
- [18] Libben, G.1998. Semantic transparency in the processing of compounds: Consequences for representation, processing and impairment[J] .Bilingualism and Language (61):30-44.
- [19] Longtin , C-M.& F. Meunier.2005.Morphological decomposition in early visual word processing [J] .Journal of Memory and Language (53):26-41.
- [20] Macgregor, L.& Y.Shtyrov.2013.Multiple routes for compound word processing in the brain: Evidence from EEG[J] .Brain and Language, (2):217-229.
- [21] Mareli, M.& C. Luzati.2012. Frequency effects in the processing of Italian nominal compounds: Modulation of headedness and semantic transparency [J] .Journal of Memory and Language (66):644-64.
- [22] Mayila, Y. 2010. English Compound Word Processing: Evidence from Mandarin Chinese-English Bilinguals [D] . Lawrence: University of Kansas.
- [23] Nicoladis, E.2002.What's the difference between "toilet paper" and "paper toilet"? French-English bilingual children ' s crosslinguistic transfer in compound nouns [J] . Journal of Child Language (29):843-63.
- [24] N.& K.Forster.I.2001.Cros-language priming asymmetries in lexical decision and episodic recognition [J] . Journal of Memory and Language (44):32-51.
- [25] Plaut, D.C.& L.M. Gonnerman. 2000. Are non-semantic morphological effects incompatible with a distributed connectionist approach to lexical processing [J] . Language and Cognitive Process (15):445-85.
- [26] Polatsek, A., J. Hyona & R. Bertram.2000.The role of constituents in reading Finnish compound words [J] . Journal of Experimental Psychology: Human Perception and Performance (26):820-33.
- [27] Raveh, M.2002.The contribution of frequency and semantic similarity to morphological processing [J] .Brain Language, (81):312-325.
- [28] Sandra , D.1990.On the representation and processing of compound words: Automatic access to constituent morphemes does not occur [J] .The Quarterly Journal of Experimental Psychology A: Human Experimental Psychology (42):529-67.
- [29] Schreuder, R.& R.H. Bayen.1995. Modeling morphological processing [A] .In L.B. Feldman (ed.).Morphological Aspects of Language Processing [C] . Hillsdale, NJ: Erlbaum.131-56.
- [30] Schreuder, R.& R.H. Bayen.1997. How complex simplex words can be [J] . Journal of Memory and Language (37):118-39.
- [31] Seidenberg , M.S.& L.M.Gonnerman.2000. Explaining derivational morphology as the convergence of codes [J] .Trends in cognitive Sciences (4):353-61.
- [32] Silva, R.& H. Clahsen. 2008. Morphologically complex words in L1and L2 processing: Evidence from masked priming experiments in English [J] .Bilingualism: Language and Cognition (11):245-60.
- [33] Taft, M. & K. Forster.1976. Lexical storage and retrieval of polymorphemic and polysyllabic words [J] . Journal of Verbal Learning and Verbal Behavior (15):607-20.
- [34] Taft, M. 1994. Interactive-activation as a framework for understanding morphological processing [J] . Language and Cognitive Process (9):271-94.
- [35] Taft, M.& K. Forster. 1975. Lexical storage and retrieval of prefixed words [J] . Journal of Verbal Learning and Verbal Behavior (14):638-47.
- [36] Taft, M.& X. Zhu.1995. The representation of

bound morphemes in the lexicon: A Chinese study [A] .In L. Feldman (ed.).*Morphological Aspects of Language Processing* [C] . Hillsdale: Lawrence Erlbaum Associates. 293-316.

[37] Ulman, M.2001.The neural basis of lexicon and grammar in first and second language: The declarative/procedural model[J] .*Bilingualism :Language and Cognition*, (4):105-122.

[38] Wu Jing & Zhang Beizhen. 2021. Effects of Semantic Transparency on L1 and L2 Processing of Chinese Compound Words [J] , *Journal of Jiangxi Normal University (Philosophy and Social Sciences Edition)*, 54(3):137-144.

[39] Yu Qingping & Tian Xiaorun. 2021. Processing English Compounds Between Chinese-English

Learners with Different Proficiencies [J] , *Foreign Languages and Their Teaching*, (1): 86-95.

[40] Zhang Ping, Lu Yuqing & Zhang Beizhen. 2021. Effects of Constituent Position and Semantic Transparency on the Time Course of L2 English Compound Processing[J] , *Journal of PLA University of Foreign Languages*, 44(6):1-8.

[41] Zhang, B. & D. Peng. 1992. Decomposed storage in the Chinese lexicon [A] . In H. Chen & O. Zheng (eds.). *Language Processing in Chinese* [C] . Amsterdam: North-Holland .131-49.

[42] Zwitserlood, P.1994.The role of semantic transparency in the processing and representation of Dutch compounds [J] . *Language and Cognitive Process* (9):341-68