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Research on the Evaluation of Undergraduate Financial Management Classroom Teaching Quality Based on Multidimensional Rasch Model

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Abstract: in order to meet the needs of the growing financial management curriculum reform, promoting the professional development of financial management teachers has always been a common concern of financial management education researchers at home and abroad. The evaluation of classroom teaching quality of financial management teachers is the core issue in the research field of financial management teachers' professional development. This paper focuses on the theoretical construction and empirical test of classroom teaching quality evaluation system and measurement tools of financial management teachers in private universities. The overall design of the research follows the design concept of international empirical research on science education. Based on the review of researches on Teachers' classroom teaching quality, this paper defines its concept and constructs a theoretical model; In view of the teaching quality of teachers in the "financial management" classroom, this paper develops a measurement tool with good quality and specific subject content, establishes the evaluation standard on this basis, and uses the measurement tool and evaluation standard to evaluate the specific teaching quality of financial management teachers in private universities.

1. Introduction

Based on the measurement and evaluation of the teaching quality of financial management teachers in private universities, this paper develops and tests the reliability and validity of the teaching quality measurement and evaluation tools, explores the main influencing factors among different levels, and constructs a multi-dimensional and multi-level teaching performance model system, It makes the evaluation of teachers; teaching more targeted and explanatory, and establishes qualitative and quantitative standards for the evaluation of teachers; teaching performance. It is more objective and direct to present and explain the real teaching quality level of teachers, so as to provide reference for teachers at all levels in their specific classroom teaching process to improve

the teaching quality and their own ability.

2. Research Status of Classroom Teaching Quality of Undergraduate College Teachers at Home and Abroad Literature Review on Teachers; Classroom Teaching Performance at Home and Abroad Mainly Focuses on the Research of Teaching Ability, Classroom Teaching and Teachers' Standards.

2.1. Research on the Evaluation of Teachers' Teaching Ability

2.1.1. General Teaching Ability Evaluation

The literature about the teaching ability evaluation of subject teachers is further elaborated, which mainly analyzes the research object, research methods and tools, quality inspection and research content.

Through the analysis of the research objects of these documents, it is found that the main body of the evaluation of teachers' teaching ability in China is still for all teachers, while the research on the evaluation of a specific special group is still relatively small.

Through the analysis of the research methods and tool quality test of these literatures, it is found that domestic scholars can basically adopt scientific and standardized research methods in the empirical research of teachers' teaching ability evaluation, most of which are quantitative research methods under the classical measurement theory, and a small number of which are qualitative research methods.

Based on the analysis of the specific research contents of these documents, it is found that the representative researches are: Zhu Delan investigated the abilities of the beginning teachers in the preparation stage, implementation stage and reflection stage of teaching, and found that most of the teachers lack the understanding of the teaching material system in the teaching design, can not grasp the teaching h standard and the key and difficult points, and can not well present the teaching content; However, in the process of teaching implementation, the lack of teaching experience leads to the inability to choose appropriate teaching methods, which are relatively simple, unable to regulate the classroom well, and unable to organize teaching in a way that students can easily understand; In the reflection stage, beginning teachers are not good at reflection, and can not effectively learn from other teachers' teaching experience. These findings reflect the characteristics of teachers' classroom teaching ability in China to a certain extent, and provide a rich and broad empirical basis for this study to define the level and index of science teachers' classroom teaching performance.

2.1.2. Evaluation of Subject Teaching Ability

Su Zhenxing investigated and analyzed the experimental teaching ability of pre service teachers, and found that the experimental teaching ability of middle school teachers and normal students is quite different from the new curriculum concept on the whole.

2.2. Research on Teachers' Classroom Teaching

2.2.1. Characteristics of Effective Classroom Teaching

Foreign literature on the characteristics of effective classroom teaching mainly reviews the previous empirical research, so as to summarize the key characteristics of effective classroom teaching.

On the basis of demonstration, Alton Lee. A. clearly defines and describes the characteristics of high-quality classroom teaching; Teaching practice can promote caring, inclusive and cohesive

learning community; Be able to effectively connect the school and the local cultural background of the school; It can promote the learning process of students; Learning opportunities are effective and abundant; A variety of tasks and situations to support each learning link; Match with the course objectives; Teaching methods can support the feedback of students' task participation; Teaching methods can promote learning objectives, students' self-discipline, metacognitive strategies and thoughtful students' communication; And teachers and students can participate in the w goal oriented evaluation.

Gurney. P. made a literature review on "what is good teaching". Based on his 27 years of teaching experience, he reviewed the existing empirical research and put forward five main factors affecting effective classroom: Teachers' knowledge, passion and responsibility for students' learning; Classroom activities can encourage learning; Evaluation activities can encourage learning through experience; effective feedback can consolidate the learning process in the classroom; effective interaction between teachers and students can create a classroom environment that respects, encourages and stimulates students' learning.

On the basis of constructivism, Cymer. A. summarized seven different teaching modes and put forward six main principles of effective science teaching;① To deal with students' existing concepts and concepts, teachers need to help students construct their own understanding and knowledge system of concepts;Teachers can promote students' understanding through teaching methods and activities, such as questioning skills, group discussion, group cooperation and multimedia application;② Encourage students to apply new concepts and skills in different situations: in order to achieve this goal, teachers need to use practical activities, simulation, writing and role play;③ Encourage students to participate in classroom activities: mainly reflected in scientific inquiry activities, cooperative learning groups, questioning, discussion, role playing and other activities: 4;⑤ Encourage students to cooperate in learning.

Good. T. L. and his collaborators (2009) believe that effective teaching should promote students' achievement. Based on the analysis and summary of a large number of qualitative and quantitative researches on the characteristics of effective teaching, they believe that the general characteristics of effective teaching are mainly in nine aspects: teachers can form accurate and appropriate learning expectations (appropriate expectations); teachers can form appropriate learning expectations (appropriate expectations);Students have clear academic and social goals, and pay attention to the students' community to learn in the best state (practical and supportive classroom);Classroom learning is the best (learning opportunity) when all the teaching time is in the academic activities that students are highly involved in; The teaching content is consistent with the existing curriculum objectives, and teachers can distinguish important content from unimportant content (consistent with the curriculum);The organization and explanation of teaching content can make students learn meaningfully (content consistency) to a certain extent; The designed questions enable students to participate in continuous discussion and exploration of core concepts (meaningful dialogue);Teachers can actively support students' learning activities and try to help students better understand concepts (supporting students' concept and task participation);Students need abundant opportunities to apply and practice the new learning knowledge (practice / application);Examination, quiz and thesis evaluation methods must pay attention to the important curriculum objectives (goal oriented evaluation methods).

The above views are based on the conclusion of the existing empirical research, focusing on promoting students' academic achievement, advocating that teachers can promote students' knowledge and concept understanding through different teaching methods and means, and paying attention to students' active participation in classroom teaching, as well as the practice and application of what they have learned.

The research on "effective classroom teaching characteristics" in China is mainly based on the

theoretical promotion of front-line teaching practice or the deduction of effective teaching characteristics directly from educational theory.

The theoretical promotion of front-line teaching practice is mainly to describe and summarize the main characteristics of a "good lesson". For example, according to the two aspects of classroom teaching structure elements and classroom teaching process, the scholar Yu vincen expounds effective classroom teaching in four aspects: the creation of classroom situation and problems, independent reading and thinking, teacher-student interaction and teacher guidance, classroom practice and timely feedback, which are the core and key elements to ensure the effectiveness of classroom teaching. Scholar Yang Manman thinks that effective classroom teaching should meet six main characteristics; Teachers' classroom teaching design can achieve teaching objectives; Be able to adopt appropriate teaching strategies; Students can put themselves into learning in the best condition; There are good communication channels between teachers and students; Classroom management and operation is good, and can create a good teaching environment. On the summary of the existing research work, scholar Yao Limin thinks that the most important and basic characteristics of effective teaching are: correct teaching objectives, sufficient teaching preparation, scientific organization of classroom teaching, clear teaching, teaching enthusiasm, promoting students' learning, harmonious relationship between teachers and students to be able to make efficient use of time and to motivate students to learn. Scholar Huang Zhongjing thinks that the evaluation of a good lesson should be made from five aspects: the achievement of teaching objectives, the clarity of teaching links, the openness of teaching process, the participation of students in learning and the generation of teaching materials. Through the review of these studies, it can be found that although the description of effective classroom teaching characteristics in the theoretical promotion research based on the front-line practice lacks system aticness and integrity, these characteristics have very high reference value for the characterization and evaluation of classroom teaching, which provides an important basis for the evaluation index of classroom teaching performance in this study.

2.2.2. Evaluation of Classroom Teaching Quality

① Observation tool of classroom teaching coding system

Based on the classroom teaching coding system of observation tools related research, found that mainly concentrated in the international large-scale comparative research projects of classroom teaching, these studies are mainly on the main activities of classroom teaching coding, forming a coding system, so as to explore the operation mode of classroom teaching in various countries. This paper focuses on the international mainstream Flanders interactive analysis coding system, TIMSS classroom teaching activity coding system, LPS classroom teaching activity coding system and IPN classroom teaching coding system.

② The observation tool of classroom teaching performance index system

Based on the relevant research on the observation tools of classroom teaching performance index system, it is found that these tools mainly focus on the development of the index system and the quality standards of each important part of the classroom teaching structure, and use statements to describe the degree that teachers should achieve about the corresponding parts in the classroom, And these tools have been tested by empirical quantitative methods, and have good reliability and validity. This paper mainly summarizes the observation tools in international science and mathematics.

2.3. Research on the Standards of Teachers

2.3.1. Based on the Professional Standards of all Subject Teachers

Among the 12 professional standards based on all subject teachers, 7 standards are formulated by the relevant education departments of the United States, the United Kingdom and France. These standards are national board for professional teaching standards (NBPTS), international training standards (International Training Standards), National Board for professional teaching standards (NBPTS)The international board of standards for training, performance, and instruction (IBSTPI), the standards for qualified teachers, the professional standards for teaching and research leaders of primary and secondary schools and the professional standards for teachers in the UK, Common European principles for teacher competences and qualifications (abbreviated as EU standard) and cahier des charges de la formation des Ma tres en Institute Universitaire de formation des Ma tres (abbreviated as EU standard) of France, Abbreviated as French Standard). The specific contents of these standards are as follows;

The NBPTS standard was formulated by the Professional Teaching Committee of the United States in, aiming at the current educational reform in which teachers' professional quality is not high and the evaluation method is not perfect, the NBPTS standard has developed the professional standard system of American teachers in three stages: pre service, in-service and in-service. According to the needs of students' development, this paper puts forward five standards of teachers' professional ability: teachers should be responsible for students and their learning; Teachers have the subject knowledge and know how to teach students; Teachers should be responsible for the management and supervision of students' learning; Teachers should systematically reflect on their own practice and learn from experience; Teachers are members of learning groups. Following the NBPTS standard, the American Association for educational communication technology and the national organization for performance and education jointly established a teacher certification body in 1994, and formed IBSTPI standard by building professional standards for teachers' performance and teaching. The standard is based on the assumption of the nature of teaching and the function of teachers, and its main content includes 18 abilities of five ability dimensions and 98 specific performance indicators. Specifically, 1. Effective communication: choose the appropriate language according to the students, situation and cultural background; Using appropriate linguistic and nonverbal symbols; Looking for and adopting different views on it; Active and effective listening strategies should be adopted according to different situations; Using appropriate technology for communication;② Update and improve their professional ability: skillfully display the relevant learning theory and teaching strategy knowledge; Update technical knowledge and ability in time; Establish and maintain professional contacts; Participate in professional development activities; Establish personal work files;③ Abide by the existing moral norms and legal provisions: understand the potential moral and legal problems in teaching practice; Comply with the organization and professional ethics; Fair treatment of all learners: confidential and anonymous requests; Avoid conflict; Respect intellectual property rights;④ Establish and maintain professional reputation: demonstrate professional ethics; Respect the values and views of others; Professional knowledge of the subject; They are open to the outside world; Linking Teaching with organizational background and goals.

2.3.2. Professional Standards Based on Science Teachers

Among the 16 standards selected, there are four professional standards for science teachers. These standards come from the United States, Australia, the Philippines and other countries. China has not carried out the research and development of professional standards for teachers in special disciplines. These professional standards are standards for science teacher preparation and model standards in science for beginning teacher licensing and development: a resource for stqate dialogue, National professional standards for teachers of science highly integrated in Australia and science

teacher professional standards in Philippines. The specific contents of these professional standards for science teachers are as follows:

The National Science Teacher Association and the Association for the education of teachers in science jointly issued the first professional standard for science teachers in 1998. The standard was further revised in 2003 to form the training standard for science teachers, Based on the framework and objectives of the national science education standards of the United States, this paper makes detailed requirements on the knowledge, skills and professional orientation of each standard. This standard is currently a guiding document for the training of science teachers in American colleges of education, and also a standard for the evaluation and certification of the previous training of science teachers. The standard mainly includes 10 standards, which are content, nature of science, inquiry, topic, general skills of teaching, curriculum, science evaluation in community, safety and health, professional growth, etc.

The Australian Science Teacher Association (ASTA) put forward the "professional standard for national excellent science teachers" in 2002, which aims to define the professional ability of national excellent science teachers and provide high-quality science teacher resources for its educational reform goal of "high quality and inclusive education". The standard mainly constructs 11 standards from three aspects: in terms of professional knowledge, excellent science teachers are required to have solid scientific subject knowledge and skillful engineering knowledge, scientific teaching knowledge and scientific teaching evaluation knowledge, as well as students' knowledge and students' knowledge of science; In terms of professional practice, excellent teachers are required to learn with students and achieve high-quality learning achievements, which requires teachers to be able to design consistent teaching projects, create and manage teaching environment, promote students to engage in scientific inquiry, expand students' understanding of the main concepts of science, and promote students' participation in scientific researchIt can cultivate students' ability to make decisions by using science and evaluate and test students' learning ability.

3. The Theoretical Basis of Classroom Teaching Quality of Teachers in Universities

The classroom teaching performance of financial management teachers is the objective embodiment of the real teaching and learning process in the classroom. There are some similarities and differences in the classroom teaching performance of different teachers, which can be directly obtained through classroom observation. The similarities and differences of financial management teachers' classroom teaching reflect that different financial management teachers have different classroom teaching ideas. The formation of teachers' classroom teaching concept is a long-term development process. Many important factors affect the formation and development of their classroom teaching concept, and the most important aspect is teachers' understanding and practice of the current financial management education concept and students' learning concept.

3.1. Philosophy of Science Education

3.1.1. The Concept of "Knowledge Based" Science Education

After the Renaissance, the western countries ushered in a prosperous era of scientific revolution and industrial revolution in the mid-19th century, which also brought about the great development of capitalist economy. However, under the influence of traditional classical education, science and technology education, which promotes the process of human civilization and the development of the times, is generally ignored by western countries. The current situation of education in the west is seriously out of touch with social development, and most students are still ignorant of the basic knowledge of science education. Under this background, Spencer. H., the British philosopher and

educator, took the lead in the systematic study of financial management education, and theoretically demonstrated the status and role of financial management education in modern education. What is the most valuable knowledge in his book on education? This article is also regarded as the foundation work of science education. Since then, science, as a discipline, entered the school classroom for the first time and became a necessary part of the curriculum content in school education. Spencer believes that in a growing industrialized society, the younger generation should learn the important knowledge in the process of Wang Ye's production rather than the flashy contents of classical education, and that science is the most valuable knowledge. According to the order of knowledge value, he divides the curriculum system of ordinary schools into five parts, one of which is the science closely related to human production, life and society, including language, literature, arithmetic, logic, geometry, mechanics, physics, financial management, astronomy, geology, biology and sociology.

Far reaching significance, ①the development of scientific knowledge liberates people's understanding from religious theology. However, this idea of "knowledge-based education" also fell into "Scientism", which brought serious crisis to the development of society and science education at that time;②"Knowledge" is regarded as the pronoun of "science", and pure academic courses are regarded as science courses;③Science teaching pays more attention to imparting knowledge, but students do not pay attention to scientific methods and practice, scientific concepts and attitudes.

In a word, the goal of early science education was completely on the teaching of "scientific knowledge". Under the influence of classical school education, the teaching methods still remained in the traditional ways such as recitation and memory of scientific knowledge, which led to the stagnation of early science education for a long time. In the early 20th century, it was affected by all walks of life and the educational circles at that time, and eventually promoted the emergence and development of progressive education movement.

3.1.2. "Method Oriented" Concept of Science Education

First, we should break away from the method orientation of scientific knowledge.

Science has made great achievements in the 20th century, which made people gradually realize the important role of "scientific method" in the development of science. It also prompted a group of educators and scientists to think about how to connect science with society and life more closely, and how to bring "scientific method" into the reform of science education. Under the historical background of the development of science at that time, the reform of science education in western countries entered the era of progressive themes, especially the "progressive education movement" in the United States, which marked the beginning of modern science education and became the main stream of science education in the world. This period's financial management education reform is mainly a part of the whole education reform. It focuses on the application of education in society, tries to change the previous education system which only focuses on the traditional knowledge content, and transforms it into the knowledge content related to the practical problems in social life and production, and emphasizes the cultivation of students' ability to solve problems. During this period, the educational concept of "children in the middle" and "learning by doing" were mainly established, aiming at paying attention to students' personality and experience, and the practical significance of scientific knowledge and scientific methods to students. In the early stage of progressivism, science education still focused on imparting scientific knowledge and did not pay attention to the education of scientific methods. With the continuous advancement of the education movement, scientific methods were gradually incorporated into the concept of science education at that time.

Influenced by the philosophy of scientism and pragmatism, in Hua Wei's view, the essence of

science is a tool to understand the natural world, a tool to transform technology into a tool to produce materials in the field of material life and a tool to produce ideas as a method of laboratory program exploration. He believes that all scientific knowledge is the practice of scientists through scientific methods. Therefore, scientific methods are more important than scientific knowledge. Scientific methods are the fundamental way to solve all practical problems. They can be applied not only in the field of scientific research, but also in any other field. He advocated the training of scientific methods in daily life situations and phenomena, so as to train scientific methods and apply the learned scientific methods to daily life. He put forward five steps of reflective thinking: suggestion, question, hypothesis, reasoning and test. When applied to school science teaching, teachers need to create a real problem situation, students need to form a hypothesis in the process of activities, and carry out planning and hands-on experiments, so as to draw conclusions according to experimental phenomena. Dewey believes that the standard to measure the effectiveness of financial management education should be whether people accept and adopt the guidance of scientific methods when dealing with all things, and further points out that the wide spread of scientific thinking habits is conducive to the progress of human civilization, so we should also pay attention to the cultivation of students' scientific thinking in science education.

Second, the method orientation under the scientific discipline structure based on the previous scientific education ideas, the importance of "scientific method" in the goal of scientific education is emphasized, whether it is the scientific education reform in the period of "progressive education movement" led by Dewey or the scientific education reform in the period of "financial management modernization education movement" led by Bruner and Schwab, It is also because of the reform of science education in these two periods that "scientific method" as one of the goals of science education appears in today's science education curriculum.

Third, the concept of "scientific literacy" in science education

As a slogan, the term "scientific literacy" was first put forward by American scholar Conant in his 1952 book "general education in science". In 1996, the first national science education standard (former standard) in American history introduced "scientific literacy" as the goal of financial management education into the standard for the first time, It also marks that the cultivation of students' scientific literacy has changed from "slogan" to "goal". In the former standard, "scientific literacy" is defined as "the knowledge and understanding of scientific concepts and processes that individuals need in the process of decision-making, participation in civil and cultural affairs, and economic production. In a period of time, the reform of science education in the United States leads the direction of the reform of science education in the whole world. After a series of measures and documents in the United States were issued, countries around the world also carried out their own science education reform according to their own national conditions, taking scientific literacy as the general goal of their science education standards. Although different countries have different views on the goal of scientific literacy, generally speaking, it should include the following four core elements: (1) the understanding of science and technology, including the understanding of the nature, concept, principle and process of science and technology; (2) the nature, attitude and values of science and technology; (3) the understanding of science and technology.

Compared with the previous scientific education ideas, the current financial management education based on scientific literacy has two main characteristics: first, the financial management education under scientific literacy has changed the previous educational goal of focusing on the subject ontology into the educational goal of focusing on personal and social development; second, the financial management education under scientific literacy has changed the educational goal of focusing on the subject ontology into the educational goal of focusing on personal and social development, The course of financial management under scientific literacy is from the training of a single subject to the understanding of multi-disciplinary integration.

3.2. Fundamentals of Educational Psychology

3.2.1. The View of Teaching under Behaviorism Learning Theory

Influenced by empiricism and connectionism, the mainstream learning theories from the early 20th century to the 1950s were mainly behaviorist learning theories headed by Watson, Skinner, and bandua. Behaviorist learning theory holds that learning is to establish the connection between stimulus and response through reinforcement.

As a representative of early behaviorism, the idealist Watson put forward the behaviorism learning theory mainly based on the theory of jeplov's conditioned reflex. He thought that learning was a process in which one stimulus replaced another stimulus conditioned reflex. His point of view is that students are conditioned by the stimulation of the external environment in the process of learning and react to it, and learning depends entirely on the influence of the external environment stimulation. The students are regarded as "whiteboard". They have no prior knowledge in their mind. They are all obtained through learning. Learning itself is a process of receiving the stimulation of the external environment. The external environment can come from teachers or textbooks. Skinner puts forward the theory of operational learning, and thinks that the essence of learning is operational conditioning. Different from Watson, he believes that students' learning is not passively waiting for stimulation, but a process in which people instinctively explore the environment spontaneously, produce a response, have a result, and adjust their behavior according to the result. Based on the study of a large number of learning problems, he put forward the reinforcement theory, which thinks that reinforcement is a means of operational conditioning, such as giving encouragement to students' answers in the process of learning, and correcting teachers' wrong answers. Encouraging or correcting students is the specific means to strengthen students' learning behavior. Timely positive reinforcement is conducive to students' learning enthusiasm, on the contrary, learning enthusiasm subsides. Therefore, the teacher's behavior in classroom teaching is usually used as a means of reinforcement, which has a corresponding impact on the students' learning behavior. For example, if the teacher's language is vivid and infectious, the students will be attracted by the teacher's teaching and put into classroom teaching, which is a positive reinforcement effect; If the teacher's body language is monotonous and rigid in the classroom, and often frowns to show impatience, then the students will lose interest in his teaching and refuse to participate in the classroom, which is negative reinforcement. Skinner's operational conditioning and positive reinforcement theory was widely accepted by the educational circles at that time, and he carried out his teaching reform plan of teaching machine and program teaching.

Bandura, as a representative of new behaviorism, puts forward the social learning theory, which introduces cognitive factors into behaviorism. The learning theory mainly includes observation learning, self-efficacy and behavioral adaptation and treatment, and emphasizes how people learn in the social environment and form and develop their intelligence and personality characteristics. He advocated that the essence of learning is observation learning. He believed that human beings have cognitive ability. They can observe other people's behavior, memorize them, train them again and again, and finally show them in appropriate situations. Different from Skinner, his theory of observational learning holds that learning does not necessarily need reinforcement or explicit behavior. The learning process can be divided into four processes: attention, retention, action replication and motivation. On the basis of his social learning theory, Bandura distinguishes the basic process of human learning, namely, direct experiential learning and indirect experiential learning. Direct experience learning emphasizes that learners practice in person, acquire and test knowledge in practice. This learning process is time-consuming, difficult and complex, such as scientific research, new discovery or invention and other creative activities; Indirect experience learning mainly refers to the knowledge obtained from books or others, which is one of the

important ways for human beings to acquire knowledge. Observation learning is an important way of indirect experience learning, which occupies a dominant position in traditional classroom teaching for a long time. The traditional classroom is mainly the teacher's teaching, students listen carefully, record the teacher's language, review the notes after class to review the content of the teacher's classroom teaching, so as to obtain the knowledge in the teacher's mind. Compared with Watson and Skinner's learning theory, Bandura's social learning theory emphasizes more on students' learning "self-efficacy", which is one of the important factors to determine students' learning effectiveness. It emphasizes that individuals' learning expectations in the learning process are greater, and the greater the expectations, the greater the efforts. Behaviorist learning theory emphasizes the decisive role of environment, the intervention of external environment, and the individual initiative of students' learning. Its explanation and explanation of learning problems are gradually concrete and perfect. These behaviorist learning theories hold that learners'learning is passive and a response to environmental stimuli; They pay more attention to the learning results than to the students' heart, consciousness and thinking process; It emphasizes that the existing knowledge is the direct stimulation of the external environment to the new knowledge to be learned. The classroom teaching under the control of the theory of sending learning requires that teachers should state the knowledge objectively and in detail as much as possible, and show the material object clearly and normatively, so that students can accept and master the knowledge. □

3.2.2. The Teaching View under the Cognitive Learning Theory

Cognitive learning theory mainly explores the learning law through students' cognitive process. These learning theories all pay attention to the dominant position of people in learning. They believe that learning is a process that requires learners to perceive, think and understand the environment or information. The success or failure of learning depends on the learning materials or external environment and students' existing cognitive level, and on the other hand, it depends on learners's subjective learning will. At the same time, cognitive learning theory also provides abundant theoretical basis for teaching theory, advocating more intuitive presentation of subject content structure to learners, and establishing the relationship between subject content; The learning materials provided should be based on the current cognitive level of learners, and be organized according to the principles from individual to general, from simple to complex and from concrete to abstract; It emphasizes that learning should lie in understanding, learning transfer and so on. □

3.2.3. The Teaching View under the Constructivist Learning Theory

The two basic premises of constructivist understanding of learning are: the knowledge learned by learners is not objective and unchangeable, but gradually updated with the deepening of cognition; Learners' learning of new knowledge is not from scratch, but based on the existing learning experience. Constructivist learning theory emphasizes that students do not simply accept information passively at the original cognitive starting point, but actively select, process and process external information according to their own experience background, so as to obtain their own meaning, which can not be replaced by others. The meaning acquired by learners varies from person to person, which reflects more the uniqueness and diversity of individuals. Different people have different cognitive processes, so the knowledge system constructed is not the same. And the learning level comes from the internal learning motivation of the individual, which can be controlled and mastered by the learners themselves. Therefore, the paths for different people to achieve the same learning level will be very different. In addition, the level of learning also depends on the deep understanding of knowledge. Constructivism advocates students to have a deep understanding of knowledge repeatedly in solving real problems, so as to realize the process of

knowledge construction.

On this basis, learners'learning of new knowledge needs to be based on a certain social situation, and learners need to constantly cooperate and communicate with others in the process of self construction. The "construction" emphasized in the main body of construction should be intentional construction. The meaningful construction refers to the nature and law of things and the internal relationship between things. Students' learning is more about the meaningful construction of what they have learned. The ultimate goal of the whole learning process is to have a deep understanding of new knowledge and establish a relationship between existing knowledge and new knowledge. Students' meaningful construction is not isolated, but needs to be in a certain learning situation. The quality of the situation directly determines the quality of students' meaningful construction. In the process of science learning, a good learning situation generally comes from the real problems encountered in the life around us, rather than the cases conceived for learning. In addition, the meaningful construction of students does not mean that it can only be achieved through their own out of thin air, but requires the help of certain means, the use of necessary learning materials, and the help of others. Students participate in learning activities, cooperate and talk with other students to complete the learning task, so as to realize the meaningful construction of their learning. Compared with the traditional view of learning, the constructivist view of learning aims at respecting students as cognitive subjects, advocating the center and status of students in learning, instead of being passive receivers and instilled objects in the traditional sense.

4. Basic Connotation and Model Construction of Classroom Teaching Performance of Financial Management in Universities

4.1. A Summary of Financial Management Course

4.1.1. Discipline Analysis

"Financial management" is a professional required course of Finance and accounting, and also an important professional basic course of other economy and management majors. This course focuses on the capital movement of enterprises, and takes the fund raising, investment, consumption, income and distribution as the framework to elaborate the basic concepts, management principles, management system and other theoretical issues of financial management, as well as the business methods of prediction, planning, control and analysis; As well as in the new financial environment, enterprise merger and bankruptcy, international financial management and other special financial issues.

4.1.2. Curriculum Analysis

The basic structure of teaching content, the principle and basis of course content selection.

First, the basic structure of teaching content

This course consists of nine chapters: the first chapter introduces some basic concepts, basic theories, basic values and environment of financial management; The second chapter introduces the time value and investment risk value of capital; The third chapter introduces the way of financing management; The fourth chapter introduces the composition of the cost of capital and the determination of the most capital institution; The fifth chapter introduces the concept, principle and method of project investment management; The sixth chapter introduces the concept and classification of securities investment management. Chapter 7: basic principles, basic models and methods of working capital management; The eighth chapter introduces the concept and form of profit distribution. Chapter 9 introduces the purpose, content and method of financial analysis.

Second, the principle and basis of course content selection

① In the process of teaching, the requirements for the contents of teaching materials are put forward according to the three principles and basis of "understanding, mastering and key mastering".

② Guided by value management, we can organize the formation, realization and distribution of enterprise value by means of financial forecast, financial budget, financial control and financial analysis, and deal with the economic relationship in the value movement.

③ On the basis of systematically mastering the basic theory and knowledge of financial management, mastering various business methods of financial management, having certain ability of financial analysis and solving financial management problems, serving for business decision-making and laying a good foundation for learning other courses.

④ For the existing problems of the enterprise, put forward operable professional suggestions.

Third, the basic requirements of the course

① Through the study of this course, students are required to master the basic theory, basic concepts and basic methods of modern enterprise financial management; Familiar with working capital project management, investment management, revenue and profit management; Master the ability of financial budget, financial control and financial analysis; Familiar with financial market. Establish the basic concept of modern financial management. Have the necessary financial management knowledge and working ability to engage in economic management, and basically reach the financial management professional level that accountants and economists should have.

② Learning this course should be closely linked with practice to solve relevant theoretical problems, and study various business methods under the guidance of relevant theoretical problems. The combination of virtual and real should be used to prevent the tendency of simply paying attention to specific methods. It is required to have a deeper understanding of the business theory problems, and to be proficient in the business method problems. It is also required to independently complete the case analysis and routine homework, so as to avoid the satisfaction of understanding the examples in the teaching materials.

4.1.3. Teaching Analysis

The requirements and suggestions of teaching methods and means and performance evaluation.

First, in view of the characteristics of the applied discipline of financial management, the teaching method of this course will be the combination of classroom teaching and case teaching, so as to cultivate students' independent thinking ability, innovation ability and practical ability.

Second, through systematic teaching, students can understand and master the basic theory of financial management; by asking more questions in each class, the students can digest and consolidate their knowledge in time, and actively use their brains. Through classroom practice and homework assignment and marking after class, students can fully master various special methods of financial management.

Third, the performance assessment is divided into two parts: the mastery of theoretical knowledge and the ability test of practical application.

4.2. Model Construction of Financial Management Classroom Teaching Performance

4.2.1. Principle of Rasch Model Measuring Tool

Rasch measurement model is the item response theory (IRT), which is based on the establishment of mathematical model, according to the subjects' reaction to the item to reveal the relationship between the ability and the item?. Classical measurement theory (CTT) is a theoretical framework

of w-true score. When analyzing the reliability, validity, difficulty and discrimination of measurement tools, it has the defects of measurement King dependence and sample dependence, which leads to the instability and persistence of the developed measurement tools. Aiming at the defects of classical measurement theory, Rasch measurement model based on item response theory tries to establish a "constant" measurement standard (such as the measurement of weight, length, height and other attributes) when developing measurement tools. Rasch model was first proposed by Danish mathematician George rush in the 1860s. According to the melon t theory, it constructs a probability model to reveal and predict the latent characteristics of the subjects according to their reactions to the items. Specifically, the higher the ability of the subjects, the more likely they are to answer the easier questions correctly; On the other hand, the lower the ability of the subjects, the less likely they are to answer the more difficult questions (that is, the lower the concept);The probability of correct answer is 50%.

Different categories of Rasch model and their relationship graph. According to the type of measurement data, Rasch model can be divided into credit model and rating scale model; According to the number of dimensions, it can be divided into unidimensional rash model and multi-dimensional Rasch model; According to the number of parameter estimates, it can be divided into two faces model and many faces Rasch model. Researchers need to demonstrate according to the internal structure of the measured object, select methods to collect certain types of data on this basis, and select the appropriate Rasch model to solve the development and testing of measurement tools after determining the parameters to be estimated, as Figure1.

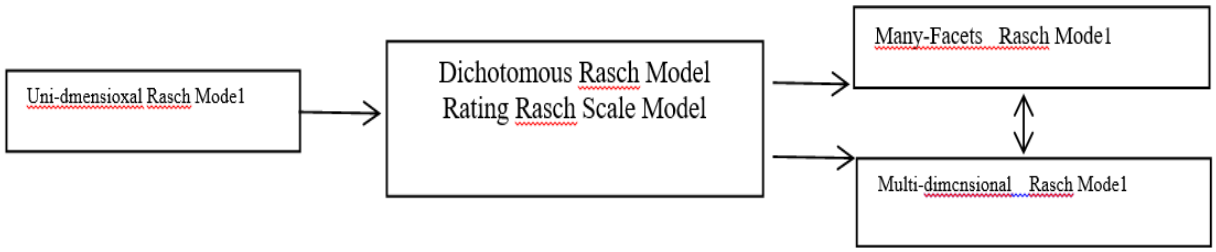

Figure 1: Rasch model categories and their relationships.

Among these models, the dichotomy model was first proposed, and other models are further extended and applied on this basis. The mathematical expression of dichotomous model is:

$$P_{ni}(X_{ni} = 1 | B_n D_i) = \frac{e^{(Bn-Di)}}{1 + e^{(Bn-Di)}} \tag{1}$$

Or

$$\ln(\frac{pni}{1-pni}) = B_n - D_i \tag{2}$$

For a specific question I, the difficulty is D, and the probability of the subjects with the ability of BN to answer the question is p;. According to the above formula, we can know the relationship between the probability (PNI) and the difference (BN DI) between the ability and difficulty of a subject, and the probability (P., The difference between BN Di is from negative infinity to positive infinity. Because BN and Di in the formula are the same unit, adding and subtracting each other, this is also the principle that Rasch model can use was an objective isometric scale. In the dichotomous model, the topic design of the measurement tool is generally yes / no, right / wrong,

and the data processing is 1 and 0.

The mathematical expression of the scale model is as follows

$$\ln(\frac{p_{ni}}{1-p_{ni}}) = B_n - D_i \tag{3}$$

$$\ln(\frac{p_{nik}}{1-p_{nik}}) = B_n - D_i - F_k \tag{4}$$

Different from the dichotomous model formula, there is an additional parameter FK (expressed as the difficulty of rating level K relative to k-1). Under the rating scale model, the topic design of Rasch measurement tool is generally the Likert rating score measured by the questionnaire, such as the Likert five rating score (1 represents very disagree, 2 represents disagree, 3 represents uncertain, 4 represents agree, 5 represents very agree). In addition, according to whether it is necessary to design 5-level grade score in the research, category structure in Rasch model will analyze the data results, and give corresponding suggestions (adding or merging categories) & Mathematical table of partial assignment model:

$$\ln(\frac{p_{nik}}{1-p_{nik}}) = B_n - D_{ik} \tag{5}$$

Different from the dichotomous model formula is Dik (expressed as the difficulty of k points on topic I). Different from the rating scale model, the partial assignment model is more widely used in item design, and is generally used to set the score of subjective items in measurement tools. According to the unified standard answers (scoring criteria), the researchers scored the answers of the subjects on the subjective questions, assigned values (the range of assigned values is generally determined according to the research content), and the general score is 0. 1. 2. 3 (each corresponding score has strict assignment instructions), etc. Similarly, the classification structure analysis in Rasch model will also judge whether the scoring criterion is reasonable or not, and give corresponding improvement suggestions. The mathematical expression of polyhedral model is as follows:

$$\ln(\frac{p_{nikj}}{1-p_{nikj}}) = B_n - D_i - F_k - C_j \tag{6}$$

Different from the dichotomous model formula, FK (expressed as the difficulty of rating level K relative to k-1) and CJ (expressed as the severity of rater J). In view of the shortcomings of subjective question scoring, such as the dependence on the comprehensive ability, emotion and fatigue of the rater, it is necessary to form a scoring group. In the research, it is necessary to train raters in advance and score the same subjects. However, the research shows that even so, it can not guarantee the authenticity and objectivity of the original score. The multifaceted Rasch model is used to eliminate the influence of various factors in subjective scoring, so as to improve the reliability of the scoring results.

In general, Rasch measurement tool makes the scale objective and equidistant by logarithmic transformation of the original score, and carries out addition and subtraction operation, which makes the ability and difficulty of subjects independent of each other, thus overcoming the dependence on measurement tools and samples in classical test theory.

The theoretical model of teachers' classroom teaching performance of "financial management" constructed in this study is composed of teaching content understanding, teaching method selection and teaching environment creation. Many raters evaluate teachers' classroom teaching performance. The research design is a multi-faceted and multi-dimensional Rasch measurement model. Therefore, conquest software is used to process the data the results were presented and analyzed. Multifaceted and multi-dimensional Rasch measurement tool was used to estimate the ability value, dimension

difficulty, project difficulty and rater severity of the subjects at the same time. In this model, we can deal with measurement tools of multiple dimensions, and put dimensions and items on two independent sides. Dimension difficulty is a function of the difficulty of items in this dimension, so as to estimate and compare the difficulty differences between items in different dimensions.

Since subjective scoring depends on the subjective impression of the rater, it is easily affected by the cognitive level, comprehensive quality, preference and fatigue of the rater in the process of scoring, so the rater has subjective instability (corresponding to the rater's own credibility), and there is inconsistency between raters (corresponding to the reliability between raters). In order to reduce the bias between raters and improve the accuracy and effectiveness of subjective evaluation, the common methods are as follows: first, the raters are trained according to the unified scoring standard, so that the raters can reach a consensus in advance; The second is to use multiple score, remove the highest score and the lowest score, and then take the average as the initial data. However, there is still a lack of quantitative indicators to measure the rater's scoring ability, such as whether the rater after training is qualified or not and how many raters get the average of the original score. In the multi-faceted Rasch measurement tool, the severity of the rater is added as one side on the basis of the ability, dimension and item difficulty of the subjects and the difficulty of the specific score level on the rating scale, so as to realize the ability value of measuring the severity of the rater, which is of great significance to improve the reliability of the measurement tool.

Rasch model's tool development and testing basis is different from measurement in natural science research. When developing and testing this type of measurement tool, we need to follow a certain theoretical framework to ensure that the developed measurement tool is objective and effective. In the field of science education, the National Research Council (NRC) of the United States has put forward the "angle" framework of science education evaluation. The framework consists of H important components: observation, interpretation and cognition. Based on the development and quality inspection of multidimensional Rasch measurement tools, the "four cornerstones" model of measurement construction proposed by Wilson. M. The "four cornerstones" model is also the framework for the development and quality inspection of the teacher's "financial management" classroom teaching performance measurement model. The model framework mainly consists of four parts: structure map, topic design, outcome space and measurement model, as Figure2:

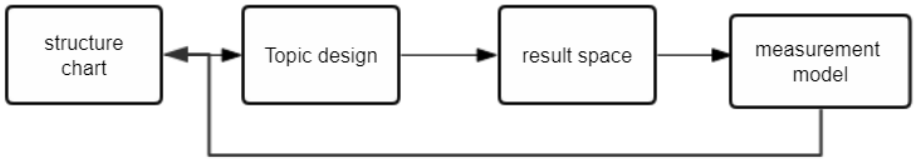

Figure 2: framework of Wilson's "four base model"

(1) Structure diagram

"Structure" refers to the things to be measured or the individual's potential rational characteristics, which can not be directly measured, such as the individual's attitude, ability, understanding, personality and so on. However, researchers usually describe and characterize the structure to be measured according to the existing research basis and some theories, and present it directly through the structure diagram. Wilson suggested that the best way to build a structure diagram is a very simple form, such as one-dimensional, continuous structure diagrams from low to high, from weak to strong, from negative to positive.

Different individual teachers have their own characteristics and individual differences, which are related to many factors such as teachers' professional quality, subject ability, professional

development stage, gender and personality. However, individual teachers' classroom teaching performance ability is a continuous, changing and developing process. In this paper, the characteristics of classroom teaching performance ability of financial management teachers are mainly composed of relatively independent and interrelated characteristics. Therefore, the structure chart constructed based on Rasch model can arrange teachers with different abilities in different dimensions and topics with different difficulties on a multi-dimensional linear chart, so as to describe the classroom teaching performance level of science teachers it provides an intuitive and clear theoretical basis for compiling measuring tools and testing the quality of measuring tools, as Figure 3.

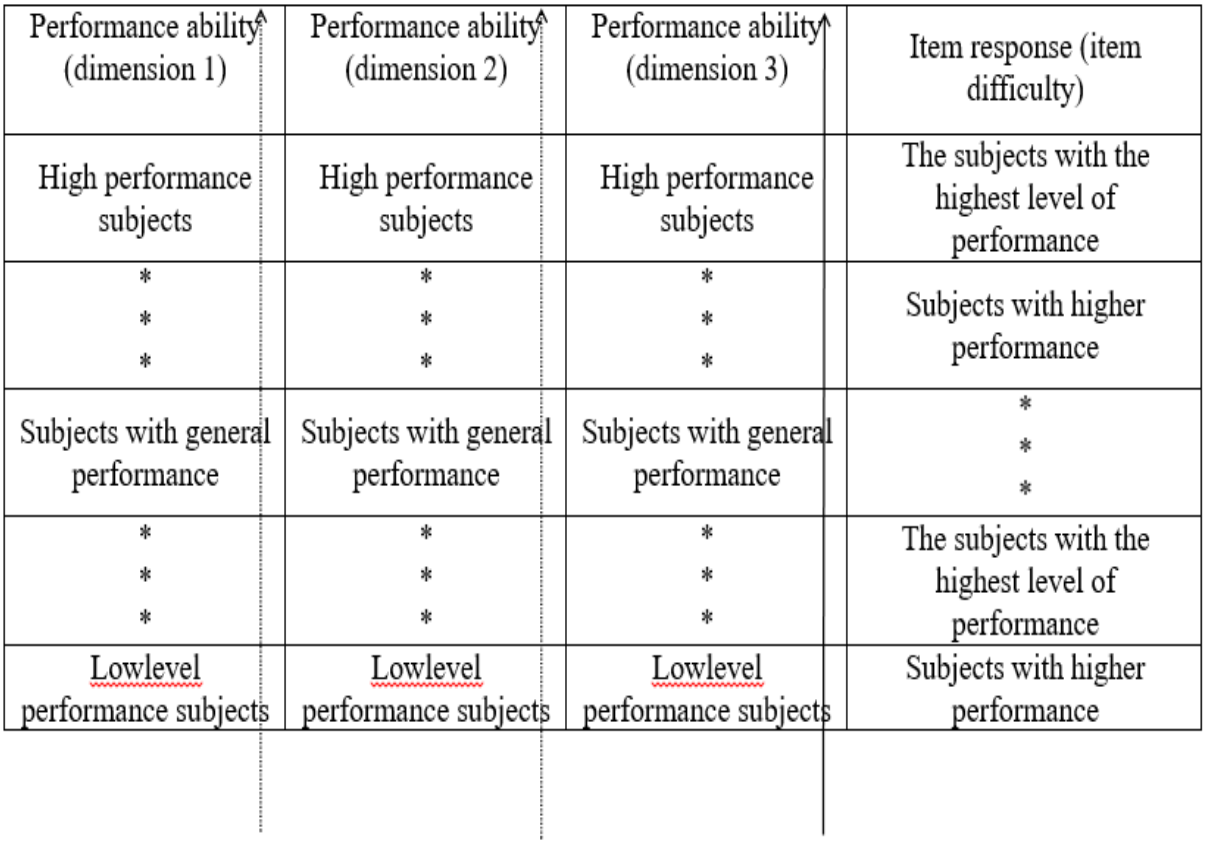

Figure 3: the "structure chart" of Lanwei model of financial management teachers' classroom teaching performance.

(2) Topic design

"Topic design" is particularly important for the development of the whole measurement tool, because the topic is an observable external behavior that reflects the potential characteristics of the individual or thing to be measured. Rasch model tries to build an objective and stable ruler, and the "title" is the "scale" in the ruler. The design of the title is directly related to the position of the "scale", thus affecting the accuracy of the whole ruler. Therefore, when researchers develop the topic, the content of the topic should explore as much as possible all the observable external performance to correspond to the internal characteristics of the individual to be measured, that is, to correspond to the constructed structure chart. On this basis, each level of the structure diagram is described and developed. Secondly, the form of the questions should be conducive to the embodiment of the measured individual's moral and rational characteristics. There are usually multiple-choice questions, open questions, sorting questions, right and wrong judgment questions

and so on. In this study, the research object is science teachers' classroom teaching video lessons. The evaluation of individual teachers' classroom teaching performance depends on direct classroom observation. Therefore, the form of this research topic is declarative sentence, which states the degree of performance that the individual should achieve in theory, and the rater evaluates the individual's actual classroom teaching performance according to the scoring rules. Finally, in the pretreatment of the topic, after the topic is compiled, the appropriateness of the content and expression of the topic should be tested. The common methods are participant observation, informal interview, voice thinking and so on. For all the topics developed in this study, the researchers mainly extracted the literature from the existing classroom observation scale, and adapted and compiled it in combination with the content characteristics of "the nature and change of matter". The content validity test of all the items in the measurement tool mainly includes two aspects: first, the researcher observes the teachers' teaching performance in the class to test and revise the content expression and scoring rules of the items; Secondly, two experts of curriculum and teaching theory and two front-line experts and teachers review and modify all the topics in the measurement tool respectively, so as to ensure that the measurement tool has good content validity from both the perspective of teaching theorists and teaching practitioners.

(3)Result space

In order to infer the individual's rational characteristics from a large number of observation data, it is necessary to classify and judge the individual's reactions, so as to provide basis and guarantee for further reliable data acquisition. ""Result space" is based on the phenomenological analysis of individual reactions, recording and judging how individuals react to various topics. The common result spaces are scoring rules, interview outline and right and wrong reactions. As the formal design of this research topic is a statement, we need to develop a detailed scoring criteria in the result space to determine the degree of individual embodiment on the topic, that is, to assign the value of individual embodiment on the topic. The scoring criteria of this study are divided into four levels. When formulating the scoring criteria, the researchers give a detailed description and explanation for the score of each topic.

(4) Measurement model

The last part of the model is "measurement model", which aims to infer the latent characteristics of the subjects from the observation results, and connect the measurement results with the internal structure. The Rasch model based on IRT theory adopted in this study is further divided into two parts: the partially assigned Rasch model and the multidimensional Rasch model. The four links are interrelated to form a unified whole, which provides methodological guidance and empirical basis for the development, design, test and correction of classroom teaching performance measurement tools of "the nature and change of matter".

5. Research on the Performance Evaluation of Financial Management Classroom Teaching

5.1. Performance Evaluation of Teaching Content Presentation

5.1.1. The original Score of Teaching Performance and Rasch Value Conversion

According to the topic design and scoring criteria in the teaching content presentation dimension, the original score of the teacher's teaching performance in this dimension ranges from 4 to 35. This design of the topic score and total score is only based on the personal experience of the author, and lacks empirical research evidence. In the RAS turbidimetric model theory, the original score is used to determine the difficulty of the test according to the empirical data, so as to obtain the corresponding Rasch score; However, the average value of the general default teacher's ability estimation is ogits, and the Rasch score of the corresponding teacher's ability is often negative and

contains a decimal part, which is not easy to understand and apply. In order to facilitate understanding and expression, Rasch measurement model can convert Ras score into 0-100 scale through linear equation, and correspond it to the original score one by one (see table * -). The specific relationship between the original score and RAS score is shown in Fig. - it can be seen that they are not a simple linear relationship, but an S-shaped curve relationship. Through nonlinear regression analysis, the regression formula is obtained

$$\theta = 0.0047X^3 - 0.2757X^2 + 7.2128X - 21.22(R^2 = 0.9967) \quad (7)$$

Thus, the conversion between the two is realized, and the measurement model corrects the teaching performance of teachers at both ends reasonably. Using the score conversion table and regression equation, in the process of evaluating teachers' performance in teaching content, researchers can get the corresponding score according to the original score of teachers, so as to realize the objective evaluation of teachers' performance, as Table 1 and Figure 4 .

Table 1: conversion table of original score and Rasch score (CR dimension)

Original score	Rasch score	Standard deviation (S. E.)	Original score	Rasch score	Standard deviation (S. E.)	Original score	Rasch score	Standard deviation (S. E.)
4	0. 00	13. 64	15	39. 93	4. 09	26	64. 07	4. 16
5	9. 43	7. 77	16	42. 18	4. 04	27	66. 45	4. 20
6	15. 42	5. 82	17	44. 38	4. 00	28	68. 88	4. 26
7	19. 38	5. 05	18	46. 54	3. 97	29	71. 40	4. 35
8	22. 55	4. 65	19	48. 67	3. 95	30	74. 05	4. 49
9	25. 34	4. 32	20	50. 79	3. 95	31	76. 93	4. 73
10	27. 94	4. 43	21	52. 92	3. 99	32	80. 21	5. 13
11	30. 44	4. 25	22	55. 06	4. 02	33	84. 30	5. 91
12	32. 87	4. 21	23	57. 25	4. 07	34	90. 45	7. 84
13	35. 27	4. 18	24	59. 47	4. 11	35	13. 69	13. 69
14	37. 63	4. 14	25	61. 75	4. 12			

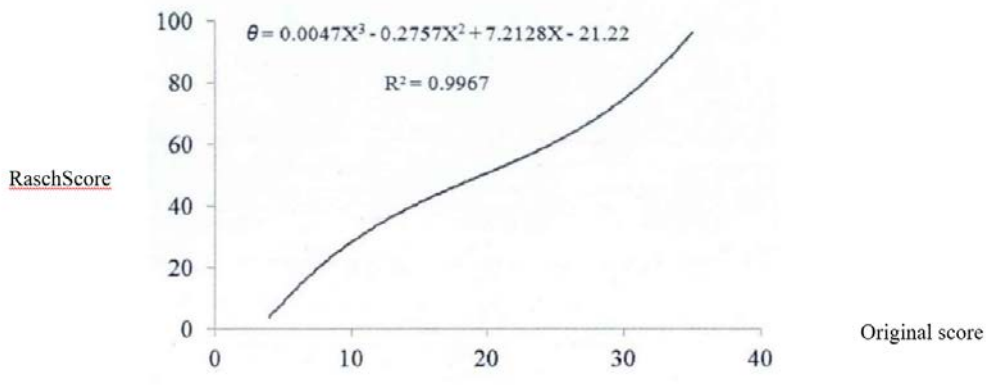

Figure 4: transformation curve between Rasch score and original score (CR dimension)

5.1.2. Characteristics of Price Standard

The performance level characteristics of teaching content are mainly the qualitative and quantitative characteristics of each level, as shown in table 3. Table 3 shows the performance characteristics of

the four stages of science teachers in the classroom teaching of "the nature and change of matter", as shown in Table 2.

Table 2: performance level characteristics of teaching content

The teaching content presents the performance level	Quantitative characteristics	Qualitative characteristics
Level 0: primary stage	4-15(0-41. 26)	① The main properties and reactions of related substances and related experimental facts are presented in isolation; ② They are trying (or not consciously) to integrate the students' existing relevant knowledge and the actual situation related to their production and life, but their performance ability needs to be further strengthened. ③ There is no scientific practice content and scientific literacy content related to the main properties and reactions of matter.
Level 1: development stage	16-20(41. 27-50. 25)	① Based on the students' existing relevant knowledge, according to the appropriate actual situation of production and life, they can present the main properties and reactions of related substances, as well as the relevant experimental facts and other important knowledge content; ② They are trying (or not consciously) to present the process and methods for students to acquire these knowledge contents, as well as specific scientific practice contents such as using the learned knowledge and skills to solve practical problems in production and life; ③ There is no scientific literacy related to the main properties and reactions of matter.
Level 2: mature stage	21-23(50. 26-57. 26)	① Based on the students' existing relevant knowledge, according to the appropriate actual situation of production and life, they can present the main properties and reactions of related substances, as well as the relevant experimental facts and other important knowledge content; ② It can well present the process and methods for students to acquire these knowledge contents, as well as specific scientific practice contents such as using the learned knowledge and skills to solve practical problems in production and life ③ It is trying (or not consciously) to present the students' deep understanding of the main properties and reactions of the relevant substances, and the scientific literacy content of forming the relevant views of scientific essence and material change.

Level 3: stage of excellence	24-35(57. 27-100)	① Based on the students' existing relevant knowledge, according to the appropriate actual situation of production and life, they can present the main properties and reactions of related substances and relevant experimental facts ② It can well present the process and methods for students to acquire these knowledge contents, as well as specific scientific practice contents such as using the learned knowledge and skills to solve practical problems in production and life ③ It can well present the students' deep understanding of the main properties and reactions of the relevant substances, and form the scientific literacy content of the relevant scientific essence view and material change view.

Notes:

① In the column of "recording characteristics", the first number represents the original score of teachers in the presentation performance of teaching content, and the last number represents Rasch score. For example, "4-15 (0. 00-41. 26)" indicates that the performance level of teachers whose original score is in the interval of 4-15 or Rasch score is in the interval of 0-41. 26 is the primary level.

② The original score range is 4-35, and Rasch score range is 0-100

Primary stage (level 0): the original score of science teachers in the presentation of classroom teaching content about "the nature and change of matter" is between 4-15, and the corresponding Rasch score is between 0-41. 26. Teachers in the presentation of teaching content does not meet the basic requirements of level 1, that is, the presentation of teaching content can not meet all the requirements of level 1. At this stage, the presentation of teaching content is relatively single, but the presentation quality needs to be strengthened.

Development stage (Level 1): the presentation of science teachers' classroom teaching content on "the nature and change of matter"

The original score is between 16 and 20, and the corresponding min Asch score is between 41. 27 and 50. 25. Teachers have reached the basic requirements of level 1 in the presentation of teaching content, and are moving towards the mature stage, but they have not reached all the requirements of level 2. At this stage, teachers begin to move towards duality in the presentation of teaching content, but the presentation quality needs to be strengthened.

Maturity stage (Level 2): the original score of science teachers in the presentation of classroom teaching content about the nature and change of material is between 21 and 23, and the corresponding rasification score is between 50. 26 and 57. 26. The presentation of teaching content has fully reached the basic requirements of level 1 and level 2, and is in the transition to the stage of excellence, but it has not reached all the requirements of level 3. At this stage, teachers begin to diversify in the presentation of teaching content, but the presentation quality needs to be strengthened.

Excellent stage (Level 3): the original score of science teachers in the presentation of classroom teaching content about "the nature and change of material" is between 24 and 35, and the corresponding Rasch score is between 50. 26 and 57. 26. Teachers have reached all the requirements of level 1, 2 and 3 in the presentation of teaching content, and are pursuing the integration and connection of specific knowledge content, practice content and literacy content. At

this stage, teachers begin to diversify in the presentation of teaching content, and can well present the diversified content.

5.2. Performance Evaluation of Teaching Strategy Selection

5.2.1. Construction of Evaluation Criteria

(1) Conversion between original score of teaching performance and Rasch score
According to the topic design and scoring criteria in the dimension of teaching strategy selection, the original score of the teacher's teaching performance in this dimension ranges from 4 to 23. In order to facilitate understanding and expression, Rasch measurement model can convert Rasch score into 0-100 scale through linear equation, and correspond it to the original score one by one (see table 4). The specific relationship between the original score and rasified score is shown in figure 4. It can be seen that they are not a simple linear relationship, but an S-shaped curve relationship

$$\theta = 0.036X^3 - 1.1995X^2 + 17.439X - 51.365(R^2 = 0.9987) \quad (8)$$

Thus, the conversion between the two is realized, which also reflects that Rasch measurement model reasonably corrects the teaching performance of teachers at both ends. Using the score conversion table and regression equation, in the process of evaluating teachers' performance in teaching strategy selection, researchers can get the corresponding Rasch according to the original score of teachers, so as to realize the objective evaluation of teachers&apos, as Table 3 and Figure 5.

Table 3: conversion table of original score and Rasch score (is dimension)

Original score	Rasch score	Standard deviation (S. E.)	Original score	Rasch score	Standard deviation (S. E.)	Original score	Rasch score	Standard deviation (S. E.)
4	0. 00	12. 93	11	36. 55	4. 34	18	58. 12	5. 16
5	10. 67	8. 20	12	39. 42	4. 31	19	62. 68	5. 28
6	18. 40	6. 20	13	42. 29	4. 32	20	68. 96	7. 04
7	23. 36	5. 26	14	45. 17	4. 34	21	78. 35	8. 41
8	27. 21	4. 79	15	48. 10	4. 40	22	89. 31	8. 61
9	30. 54	4. 54	16	51. 14	4. 51	23	100. 00	12. 73
10	33. 61	4. 40	17	54. 41	4. 73			

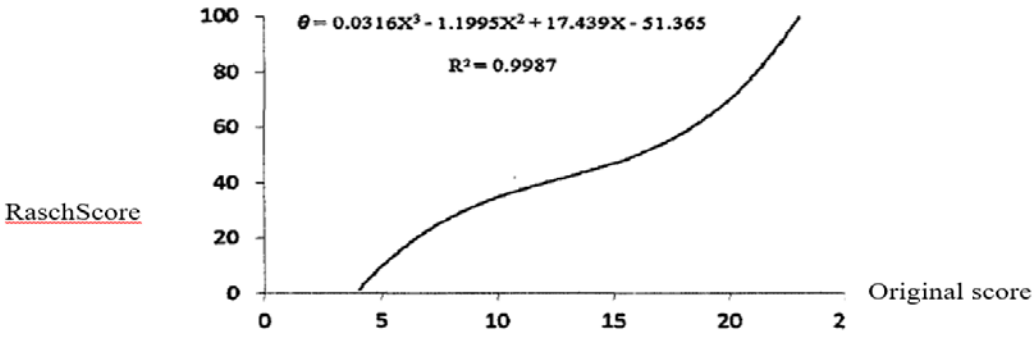

Figure 5: transformation curve between Rasch score and original score (ISdimension)

(2) Score division of teaching performance level

Through the "joint evaluation" of the difficulty estimates of all topics at each level in the dimension of teaching strategy selection, the average value of the difficulty estimates of the topics is obtained, and the corresponding benchmark values of each level are determined. See table 5 for details. According to table 5, in the dimension of teaching strategy selection, level 1 includes three topics, the difficulty range is 34. 90-38. 63, and the average value is 37. 02; Level 2 includes three questions, the difficulty range is 43. 36-49. 58, the average is 45. 64; Level 3 includes three questions, the difficulty range is 50. 75-6. 18, the average is 54. 62. According to figure 6, when the teacher's rasification score in this dimension is less than 37. 02, the teacher's teaching performance level in the teaching content presentation dimension is lower than level 1 (that is, level 0); When the teacher's measurement score in this dimension is between 37. 03 and 45. 64, the teacher's teaching performance level in this dimension can be considered as the highest

Level 1; When the teacher's score is between 45. 65 and 54. 62, the teacher's teaching performance level in this dimension can be considered as positive

Level 2; When the teaching score is higher than 54. 63, the teacher's teaching performance level in this dimension can be considered as level 3. Through table 4 and figure 6, this paper can divide the teacher's teaching performance level in this dimension according to the Rasch score of the teacher in this dimension.

Table 4: score correspondence of performance ability level (is dimension)

level	subject		Topic estimation	
		minimum value	Maximum	average value
Level 1	IS_DIS, IS_INQ and is_PRE	50. 75	60. 18	54. 62
Level 2	IS_QUE, IS_Fee and is_ASs	43. 36	49. 58	45. 64
Level 3	IS_LEC、IS_LAN and is_DEM	34. 90	38. 63	37. 02

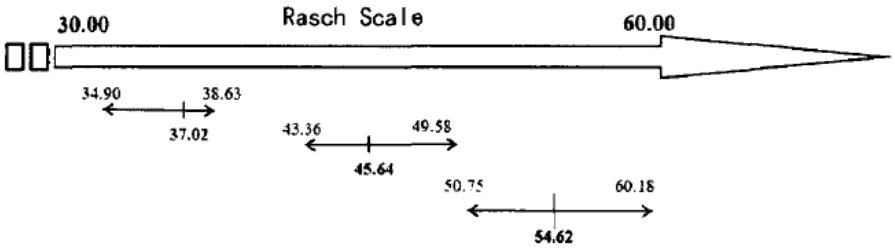

Figure 6: Rasch scale of teaching performance level (s dimension)

5.2.2. Characteristics of Evaluation Criteria

The performance level characteristics of teaching strategy selection are mainly the qualitative and quantitative characteristics of each level, as shown in table 5,Table 6 shows the characteristics of science teachers' choice of teaching strategies in the four stages of classroom teaching of "the nature and change of matter".

Table 5: performance level characteristics of teaching strategy selection

Performance level of teaching	Quantitative	Qualitative characteristics

strategy selection	characteristics*	
Level 0: primary stage	4-11(0-37. 02)	① The main properties and changes of related substances are mainly taught through teaching, explanation and display; ② When using teaching, explanation and presentation, we need to pay more attention to the clarity of logic, the standardization of scientific language, and the diversification and proficiency of presentation; ③ There are no or few heuristic teaching methods, and questions are mainly asked by themselves or by speaking and answering.
Level 1: development stage	12-14(37. 03-45. 64)	① Based on the students' existing relevant knowledge, according to the appropriate actual situation of production and life, they can present the main properties and reactions of related substances, as well as the relevant experimental facts and other important knowledge content; ② They are trying (or not consciously) to present the process and methods for students to acquire these knowledge contents, as well as specific scientific practice contents such as using the learned knowledge and skills to solve practical problems in production and life; ③ There is no scientific literacy related to the main properties and reactions of matter.
Level 2: mature stage	15-17(45. 65-54. 62)	① We can use the direct injection teaching method as an auxiliary means to teach the main properties and changes of related substances; ② Interactive teaching of the main properties and changes of related substances is mainly carried out by means of questioning, feedback and evaluation; ③ The ability to ask and answer students pertinently, to give feedback on students' answers timely and effectively, and to use various evaluation methods to evaluate students' learning gains; The teaching method of self construction has been involved. It starts to let students express their understanding of concepts through writing, and let students carry out simple experimental verification and brief discussion at the same table. However, the frequency is very low and the quality needs to be improved.
Level 3: stage of excellence	18-23(54. 63-100)	① It can well use the direct injection and heuristic teaching method as the auxiliary means of teaching the main properties and changes of related substances; ② Mainly through group discussion, group experimental exploration and a variety of expressions, the main properties and changes of related substances are taught by self construction teaching;

		③ The main part of the whole classroom teaching is to discuss and explore the core issues of the main properties and changes of the material, and to express students' understanding of the core concept in a variety of ways.

Notes:

In the column of "quantitative characteristics", the first number represents the original score of teachers in the performance of teaching strategy selection, and the last number represents Rasch score. For example, "4-11 (0. 00-37. 02)" indicates that the performance level of teachers whose original score is in the range of 4-11 or Rasch score is in the range of 0-37. 02 is the primary level.

② The range of the original score is 4-23, and the range of Rasch score is 0-100.

Primary stage (level 0): the original score of science teachers in the classroom teaching strategy selection table of "the nature and change of matter" is between 4-11, and the corresponding Ras score is between 0-37. 02. Teachers' choice of teaching strategies does not meet the basic requirements of level 1, that is, the performance of teaching strategy choice can not meet all the requirements of level 1. At this stage, teachers mainly choose w direct injection teaching strategy, but the quality of use needs to be improved. Development stage (Level 1): the original score of science teachers on the choice of classroom teaching strategies related to the nature and change of materials is between 12 and 14, and the corresponding Ras score is between 37. 03 and 45. 64. The presentation of teaching content has fully reached the basic requirements of level 1, and is in the transition to the mature stage, but has not reached all the requirements of level 2. At this stage, teachers mainly use the direct injection teaching method, and can use it well. They also start to try to use the problem latecomer teaching method, but the use quality needs to be improved.

Mature stage (Level 2);The original score of science teachers on the choice of classroom teaching strategies about the nature and change of material is between 15 and 17, and the corresponding Rasch score is between 45. 65 and 54. 62. The presentation of teaching content has fully reached the basic requirements of level 1 and level 2, and is in the transition to the stage of excellence, but has not reached all the requirements of level 3. At this stage, teachers mainly use problem-based heuristic teaching method, and can use it well. They also try to use self construction teaching method, but the use quality needs to be improved.

Stage of excellence (Level 3): Science Teachers' choice of classroom teaching strategies related to the nature and change of materials

The original score is 18-23, and the corresponding Rasch score is 54. 63-100. Teachers have fully met all the requirements of level 1, 2 and 3 in the presentation of teaching content. At this stage, teachers mainly use the self construction teaching method, and can use it well.

6. Conclusion

This chapter aims to develop and test the classroom teaching performance measurement tool of "financial management" through the multidimensional Rasch model. In terms of the development of measurement tools, based on the adaptation of 8 mature measurement tools at home and abroad, a measurement tool (trial version) with 45 topics in 3 dimensions has been formed. In the aspect of quality inspection of measuring tools, it mainly includes the research stage, which is the test stage, the repair stage and the measurement stage. The main conclusions are as follows

(1) Testing stage of measuring tool

In the test stage, this paper mainly uses three raters with different backgrounds to collect 1183 relevant lessons, and uses conquest faces and winsteps software to analyze the data. The results are all output by these s different operating software.

Through the Rasch model analysis of the test data, six conclusions are found in this paper

① There are significant differences among the three raters in the evaluation of teachers' classroom teaching performance, and the stability is not good. The rater with rich teaching experience (rater J) is the most severe, while the rater with solid theoretical foundation (rater h) is relatively stable, and the rater without both is loose and the most unstable (rater g).

② By analyzing the quality of the lesson, we find that there are 24 extreme lessons which seriously affect the effectiveness of the quality detection of measurement tools. These lessons were deleted in the revision stage, and did not enter the measured samples.

③ Each of the H dimensions has a good one-dimensional and reliability value, but the H dimensions have a high correlation with each other. The analysis of the fitting degree of the model also found that the best fitting with the data is the one-dimensional model, that is, the H dimensions are merged into the same dimension.

④ Through the analysis of the project subject estimation map, it is found that the level structure of empirical data analysis is basically consistent with the level structure of theoretical construction, whether in a single dimension or in three dimensions as a whole, except for individual topics (Cr6, CR7, cr11, is4, is5, CC3, cc6 and cc8).

⑤ By analyzing the quality of 45 items in the test tool, it is found that 6 items (CR1, CR2, CR3, Cr4, Cr5 and Cr6) in the dimension of teaching content presentation are not well fitted, which are all concentrated in the Preset level 1 stage. In the dimension of teaching strategy selection, 2 items are not well fitted, In the dimension of creating teaching atmosphere, only one topic (cc6) has a good fitting degree.

(2) Revision stage of measuring tools

In the revision stage, according to the analysis results of the test stage, this paper mainly does the following aspects of repair work:

① In terms of sample composition, 24 extreme lessons are deleted, and the remaining 159 lessons are taken as measured samples for data collection and analysis.

② In terms of the composition of raters, this paper adopts two raters (rater h and rater J) to collect the measured data.

③ As for the revision of measurement items, this paper mainly revises the items according to the items, scoring criteria, fitting index and horizontal structure chart S. By deleting and merging the original items, a measurement tool of 32 items is finally formed.

(3) Measurement stage of measuring tool

In the measurement stage, this paper mainly uses two raters to collect data from 159 related courses, and the data analysis is still processed and presented by conquest faces and winsteps software.

Through the model analysis of the measured data, the following six conclusions are found in this paper

① The scores of the two raters are significantly different, but both of them have good stability. Rater J is still more severe than rater J, which indicates that the revision scheme for raters is effective in the revision stage.

② Through the data analysis of the measured samples without obvious extreme cases, the indicators in the Rasch model measurement have been significantly improved compared with the test stage, especially in the rater, topic, scoring criteria and other fitting parameter estimates.

③ Although, from an empirical point of view, the one-dimensional model is better than the Lanwei model, but for theoretical considerations, the model is not modified in the repair stage, and its model fitting is measured and estimated, and it is found that the two-dimensional model is better than the h-dimensional and one-dimensional model

The model fitting is good.

④ In the stage of measurement, we analyze the parameter estimation map of item subject, and find that the empirical data is completely consistent with the level structure of the theoretical construction, whether in a single dimension or in the H dimension as a whole, which also confirms that the revision scheme of the topic is very effective in the revision stage.

⑤ By analyzing the quality of 32 measured items, it is found that only 2 items (crinq and crjnf) have a slightly higher fitting degree than the specified range, and all other items have a good fitting degree.

In general, after testing, revising and measuring the measurement tools, this paper develops a good quality classroom teaching performance evaluation tool of "the nature and change of matter", which can measure and evaluate the classroom teaching performance of science teachers in related concepts, It also provides the possibility and reliable guarantee for the construction of classroom teaching performance ability and level standard of science teachers.

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