

A review of the research on Teachers' observation ability

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Abstract. The guide to learning and development of 3-6-year-old children points out that one of the core development qualities of preschool teachers is to observe and understand children, and observation is reflected in whether the understanding of observation theory is complete. As a necessary part of improving teachers' professional quality, observation ability plays an important role in Teachers' teaching career and life. In recent years, the research on teacher observation at home and abroad has also shown a rising trend. However, on the whole, the domestic research focuses on the status quo and countermeasures, while the foreign research mostly focuses on the observation tools and observation methods, and the research scope is very wide. Therefore, this study will comment on the four aspects of observation theory, perspective, tools and methods.

Keywords: Teachers; Observation ability; Review of the research.

1. Overview of literature distribution

1.1 The distribution of literature about preschool teachers' observation ability

In recent years, there are many researches on teacher observation at home and abroad. In CNKI, Wanfang database, VIP and Duxiu knowledge base, key words of "teacher observation" were typed, and nearly 130000 records were displayed. Type in the keyword "observation ability of preschool teachers", and display nearly 12000 records. Among them, there are few works about the observation ability of preschool teachers. After consulting the titles of the records, it is found that the journal articles are mostly about observation problems and strategies, while the master's thesis is an empirical study and case study on the improvement of preschool teachers' observation ability in a certain region or an urban area. There are 5 Chinese core journals and 17 master's theses about the influence factors of preschool teachers' observation ability which are found on the Journal online. Among them, there is little research on the observation ability of preschool teachers in Tibet. Figure 1 shows the change trend of the number of research papers on preschool teachers' observation ability from 2009 to May 2022.



Figure 1. the trend of the number of research papers observed by teachers

From Figure 1, we can see that from 2005 to 2011, the number of research papers on teacher observation showed a slow growth and regression trend. Since the promulgation of "Kindergarten Teachers' professional standards (Trial)" in 2012, the number of papers published by teachers' observation began to grow slowly and then rapidly. The professional standards for preschool teachers stipulate that preschool teachers should have certain ability to observe children, From 2014 to 2019,

the number of published papers increased fastest, and showed a trend of gradual increase, which attracted the general attention of the education sector.



Figure 2. the trend of the number of research papers on preschool teachers' observation ability

It can be seen from Figure 2 that the research literature on Teachers' observation ability began to increase since 2015. The guide to learning and development of children aged 3-6 issued in May 2012 also clearly points out that one of the core qualities of teachers is to observe and understand children carefully. Since 2013, the research results on Teachers' observation ability have also gradually increased, However, it did not produce more results. From the point of view, it is necessary to carry out long-term experiment and summary after the promulgation of laws and regulations of preschool education.

In order to improve teachers' observation ability, the research has made a more intuitive understanding from the specific research perspective and content distribution. Through CNKI retrieval platform, this study clicks the "advanced search" column, input "teacher observation" as the search term, and accurately match and retrieve the relevant literature from 2005 to 2022, showing 1042 records. Through reading the literature summary, this paper summarizes the specific research perspective, essence and content distribution of research strategies of teacher communication, as shown in Table 1.

Table 1. the perspective, nature and content distribution of research strategies of teachers' observation related research

Research Perspective	essence	Specific content of research strategy
Video Workshop "5R" model (Management)	Loop design of cycle	Videotools; Discourse empowerment; Theoretical empowerment
Life activity perspective (Pedagogy)	The main structure of preschool education	Make observation plan; Observation method; Timely observation; Behavior information analysis
Ecological perspective (Ecology)	The whole of life and the concept of holism, system and connection	A variety of senses, instruments, tools, records of children
Professional consciousness Perspective (Psychology)	Objective and effective information can be obtained through observation	Have a correct and clear understanding, improve and improve their own educational concepts and behaviors,
hermeneutics	The study of understanding or interpreting meaning	The hermeneutic experience of observation and recording Hermeneutic cycle of observation and record Hermeneutic dialogue between observation and record

Note: Table 1 only summarizes the main research perspectives, essence and research strategies of teacher observation.

It can be seen from table 1 that the academic research on teacher observation is not limited to a certain discipline perspective, but based on a series of disciplinary perspectives such as management, pedagogy, ecology, psychology and so on, the research on teacher observation is focused. The teacher's problem has become a multi-disciplinary research method. Therefore, it is helpful to deepen the comprehensive understanding of teachers' observation. On the other hand, previous research results based on different perspectives provide a lot of valuable reference materials for the study of strategies to enhance teachers' observation ability.

1.2 The general distribution of the literature on the theory of observational infiltration

In this study, through CNKI search platform, click the "advanced search" column, and input "observation penetration theory" as the search term, the relevant literatures from 1988 to 2022 were accurately matched and searched, and 35 records were displayed. It can be seen that the previous research results on "observation penetration theory" are less. It is mainly distributed in the two university subjects of natural science theory and method and philosophy, of which there are 10 articles about the theory of observation infiltration. By analyzing the research contents of "observation penetration theory" from different research angles, we can understand the research field of existing achievements more intuitively. As shown in Table 2:

Table 2. content division of "observational infiltration theory" from different research perspectives

Serial number	Research Perspective	content
1	Psychological perspective	As empirical evidence of observational penetration theory
2	Epistemological Perspective (genetic epistemology)	Cognition is the result of the interaction between subject and object, which is the result of assimilation, selection and construction of object with its "schema" pattern
3	The perspective of scientific cognitive activities	Admitting the existence of "relatively neutral" observation and avoiding all observation are extreme views of theoretical penetration

It can be seen from the above table that the existing research on "observation penetration theory" has many levels, wide fields and rich contents, which provides rich resources for this study to sort out the issues related to behavioral intention.

2. Research on preschool teachers' observation at home and abroad

2.1 Related research abroad

The research perspective of observation in foreign academic circles presents a wide and in-depth discussion structure. The primary premise of observation is to have the support of observation theory. The applicability of observation tools is of great significance to teachers' observation. With the state's emphasis on the improvement of preschool teachers' professional ability, the improvement of observation ability provides professional guarantee for children's physical and mental development and smooth daily life. From the perspective of research methods and observation tools.

2.1.1 Research on the theory of observation

Theory is the premise of observation. Reasonable use of observation theory is of great significance for teachers to carry out teaching smoothly. The concept of observation theory in different perspectives is also different. The research on observation theory abroad involves many subjects. Under the natural observation theory and common semantic theory, there are related researches on the relationship between action observation and action language, observation learning theory and observation penetration theory.

2.1.1.1 Theory of natural observation

According to Taylor Imam (1994), natural observation theory is an alternative to Fourier analysis, which can be divided into two types: adjacent type and balanced type. These two types of theoretical systems originated from different starting points. When a set of basic observations is given, it is proved mathematically that another set of basic observations can be found. The interaction is proved by testing the observed values in mathematics.

Taylor Imam (2000) takes the parameters observed in instantaneous time as the transformed time waveform, and discusses the uncertainty between the behavior of the waveform as the normal observation object in the whole-time domain and the distribution of the basic observation values in the whole-time domain.

2.1.1.2 Common semantic theory

Mia NATO, Kikuyu Ramayana (2004) compared the use of semantic knowledge by Japanese autistic children, and tested and observed their active passive sentences and false belief understanding. It was found that the development of Japanese children's semantic understanding ability was later than that of Western children.

Chris Tel bilet Doux, Sophie Anne beau Prez, Barnaul bade TS (2020) proposed and defended the perceptual interpretation of the relationship between behavior and language by activating common semantic representations, which are used to understand the behavior of others as well as language. Specifically, we challenge this model by summarizing the literature on the relationship between action observation and action language processing, and emphasize the compatibility of the model with the results in the literature.

2.1.1.3 Observational learning theory

In her research on the professional development of foreign language teachers, Xu Ling (2018) according to Duran's "coding" and "drilling", that is, the content is transformed into Chinese language, and then oral practice is carried out to express and explain specific concepts to other trainees and drill knowledge, so that the acquisition effect is more effective.

Yun Qingping, Liu Min, Zhao Mei, Miao Jiangxia, Yang Lina, Chang Chun and others (2020) studied the acquisition process of mothers' brushing for infants' teeth based on the observational learning theory and qualitative analysis method. Most of human behaviors can be obtained by observing others' behaviors, and the observation learning process can be divided into attention process, retention process, reappearance process and reinforcement (motivation) process.

2.1.1.4 Observation penetration theory

Wu Wei (1992) denied that knowledge is only given by the object. He thinks that knowledge is produced by the interaction between the subject and the object. Observation can not be neutral to the test of theory, but a very complex process. "From this point of view," observation penetration theory "not only brings some new enlightenment to improve teachers' observation ability, but also helps to recognize the essence of teachers' observation and promote the practical improvement of teachers' observation ability.

Gao Hongyu and Huo Liyan (2020) summarized the specific connotation of the theory. They believed that "observation penetration theory" insisted that teachers' observation should be guided by theory, and the improvement of teachers' theoretical literacy should be regarded as the premise of improving the observation ability; Teachers' observation is accompanied by theory, and the scientific division and design of observation purpose, content and method should be strengthened; The theoretical explanation should be made by the theoretical observation and the actual observation.

2.1.2 Research on the perspective of observation

This paper mainly studies the foreign observation from multiple perspectives, to understand the research situation in various fields under different observation perspectives. The foreign research on observation perspective takes the form of multiple integration. Here, it lists three aspects: classroom observation perspective, "public observation" perspective, and Chinese lesson study perspective.

2.1.2.1 "Public observation" perspective

Raymond Williams' theory of "mass communication" has a deep meaning. In fact, no matter the concept of "culture" is elaborated, it is believed that "culture is the whole way of life". Ding Kewen

and Zhang Wen (2015) believe that Raymond Williams' theory of "public observation" is not out of date in this new century, and even can communicate and talk with the future.

2.1.2.2 Classroom observation perspective

Yang Bo; Moskovsky Christo(2018) thinks that most of the previous studies on the correlation between EFL learners' emotion and achievement rely on questionnaires or interviews. The author's research is conducted in the context of EFL in China. The author chooses to explore this relationship based on quantitative and qualitative classroom observation data, and studies learners' emotion, engagement, misconduct and achievement from the perspective of classroom observation.

2.1.2.3 The perspective of Chinese lesson study

In fact, China Lesson study is a domestic teaching activity. According to Schwab's curriculum theory defects, Zheng Xinhua (2020) proposed that the curriculum reform should turn from theory to practice, which plays an important role in improving the quality of curriculum, and constructed the teacher training curriculum as a lesson study community.

2.1.3 Research on observation tools

Under the guidance of observation theory, it is necessary to select appropriate observation tools for measurement. Foreign Studies on observation tools mainly list three aspects: observation tool for preschool children (Epcot), observation tool for evaluating mother child relationship (RIT) and assessment of children's skills (MESI).

2.1.3.1 Assessing children's skills (MESI)

Gregory S. Braswell(2016) created an observation tool to evaluate children's general skills in museum exhibits, described the development of 14 observation tools (Museum exhibition skills list MESI), and proposed three factor model and five factor model on this basis, which showed good fitting in the research. There was a strong convergence validity between MESI and the teacher's regular input rating scale.

2.1.3.2 Preschool children observation tool (Epcot)

Angora Florence K, Mia duckboards, Sarah laborer (2021) analyzed the learners' skills in the study of measuring preschool children's problem-solving, and developed an observation tool to measure the process of preschool children's learning and the application of problem-solving skills, that is, the steps of engineering design process (EDP).The project preschool observation tool (Epcot) is designed to evaluate the frequency of problem-solving behavior and the use of EDP Related words by observing the seeds of preschool children's participation in stem eight unit courses in class.

2.1.3.3 Observation tool for evaluating mother child relationship (RIT)

Edwards Hannah; BuismanPijlman Femke TA; Esterman Adrian; Phillips Craig; Orgeig Sandra; Gordon Andrea(2021) et al. Developed a new observational tool for the evaluation of maternal infant relationship in the context of naturalism standardization by using the recorded interactive task to evaluate the connection between mother and subjects, so as to solve the shortcomings of previous self-report tools.

2.1.3.4 Observation tool for observing and recording children's play process (PCOM)

King Pete; Atkins LaDonna; Burr Brandon(2021) developed a set of observation tool (PCOM) to observe and record children's game process, which shows good reliability when watching children's game videos. During the game, the observer had good reliability during the game period. The results show that PCOM can be used as an observation tool to record the game process of students and practitioners in various situations.

2.1.4 Research on observation method

This paper mainly studies the research situation of foreign teachers in the observation method, and discusses the implementation of este bick observation method and direct observation method. It fully shows that the research on observation method abroad is very complete and involves a wide and profound research field, which has high reference value.

2.1.4.1 Esther bick's observation method

Lemos Eliana de Jesus Souza; Silva C. V.; Pedroso J. da S. Several researchers mainly observe the phenomena in the natural background. Among them, Esther Bick's observation method (1964) provides investigators with the opportunity to observe the mother, the baby and the relationship between them. The method consists of three steps, which embodies the three stages of Freud's thinking process: the attention stage, the inscription stage and the judgment stage. Monitor the discovery and tracking of infant and family development.

2.1.4.2 Direct observation method

Alina Tekow (2018) to evaluate activities to promote education and social inclusion values in rural areas through direct observation method, and to evaluate activities organized in rural areas through market research results generated by direct observation method. The research has drawn some conclusions on how to promote such ideas as the importance of parents' participation in early childhood care and education, the importance of education for children's development, overcoming prejudice, tolerance, social responsibility and civic responsibility in rural areas.

To sum up, foreign scholars have made fruitful achievements in the study of teacher observation, which has laid a solid foundation and provided a good platform for future research. From the perspective of research status, the existing research mainly focuses on observation theory, observation perspective, evaluation of teachers' observation tools and observation methods. On the basis of inheriting the existing research results and based on the observation penetration theory, this study will investigate and analyze the observation ability of preschool teachers in Tibet, explore the influencing factors of preschool teachers' observation ability, and then put forward targeted suggestions.

2.2 Domestic research

Domestic researches on teacher observation mainly focus on the purpose, characteristics, problems and strategies. The overall research is relatively shallow. Compared with foreign research, domestic teacher observation research lacks technical evaluation tools and index system, and theoretical research is very few, mostly inheriting the research results of foreign theories. This paper mainly makes a specific analysis of some domestic teachers' observation, focusing on the domestic observation research.

2.2.1 Research on the theory of observation

The domestic research on observation theory is mainly distributed in classroom observation, and domestic scholars have little theoretical research. The references in the literature mainly use foreign theories for analysis and discussion, and there is almost no literature on domestic teachers' observation theory. This paper mainly discusses the scholars' opinions on the observation theory.

2.2.1.1 Observation theory of conventional science

Chen Gang (2004) believes that any observation is post observation and experiment of existing theories. He pointed out that "when we start to make observation or experiment, we usually accept the guidance from existing theories (i.e. theories of conventional science and old theories) and conventional expectations." he believes that any scientific research achievements and technologies are the discussion of previous research results, and the generation of new theories cannot be separated from the viewpoint of old theories, The observation phenomenon has created different theories, and then through the observation of the new theory, more abundant observation contents and theories have been produced. For a long time, he thought that the development of scientific observation was the result of scientific observation.

2.2.1.2 Classroom observation theory

Li Min (2018) discussed the concept from quantifying "teaching tasks" to experiencing "teaching activities" by reviewing and studying teachers' classroom observation theory. She believes that theory is an important step to promote teachers to flexibly handle the relationship between classroom generation and presupposition, which is of great help to the construction of knowledge system with teacher-student dialogue, mutual transmission of views and diversified perspectives.

2.2.1.3 Fodor's cognitive module theory

Zhou Yan always thinks: "even if we admit that there is cognitive access to perception, we can't think that this supports the penetration of observation theory. She tried to understand and elaborate the fruitful achievements of cognitive science, and learned from Jerry Frodo This paper attempts to make a new interpretation and differentiation of Hansen's theory on the relationship between perception and cognition, and try to understand the existence of observation which is not penetrated by theory. Therefore, it challenges Hansen's proposition.

2.2.2 Research on observation tools

Most of the domestic researches on observation tools are focused on classroom observation. This paper mainly discusses the specific situation of observation scales compiled by domestic researchers in classroom observation, including primary and secondary school classroom interaction observation tools, primary school classroom communication schedule, licc mode, etc. These observation tools also provide domestic teachers with observation research. It can be used for reference.

2.2.2.1 Primary school classroom communication schedule

Wu Yongjun and Wu Kangning (1995) jointly created the "primary school classroom communication schedule". The timetable has a clear goal and can be used to observe the communication between teacher-student relationship and student relationship in primary school classroom. He measured the amount of time taken up by various behavioral relationships, such as the communication between teachers and students, and their percentage of all classroom time. From the analysis of relevant literature, he opened the door of quantitative research in domestic classroom.

2.2.2.2 Licc mode

According to the recent research, the licc model led by Professor Cui Yunyi of East China Normal University is the outstanding one in the development of classroom observation scale in China. He (2012) felt that today's listening and evaluating class has no purpose and lacks professional knowledge. This mode is a paradigm of listening and evaluating lessons. Potential classroom teaching is usually composed of students' learning, teacher's teaching, curriculum nature and classroom culture, so it is called licc mode. It is mainly through the professional activities composed of the meeting before the class preparation, the observation in the classroom process and the meeting after the class. It is believed that the meaningful listening and evaluating system should start from cooperation, paying attention to evidence and advocating research. Listening to class means collecting evidence, and evaluating class is based on evidence. According to the contents of the licc model, the core concepts are described in this study (as shown in Table 3).He also described the structure of the classroom, in which students' learning is the main body, and the nature of the classroom, teachers' teaching and classroom culture are closely related.(as shown in Figure 3)

Table 3. observation Dimension Perspective of licc mode

Student learning (L)	get ready	listen for	interaction	autonomy	reach
Teacher teaching (L)	link	Presentation	dialogue	guidance	witty
Nature of classroom (c)	target	content	implementation	evaluate	resources
Classroom culture (c)	reflection	democratic	innovate	care for	Characteristics

2.2.2.3 Classroom teaching process evaluation based on entropy model

Li Wanchun (2013) created a new theoretical framework, namely "quantitative evaluation model of classroom teaching process based on information entropy", on the premise of elaborating and analyzing Flanders interactive analysis system. The introduction of classroom information entropy, in fact, is an analysis of classroom narration, which is a theoretical system to study how to adjust the classroom situation. The classroom observation scale based on information entropy is composed of teacher observation scale and student observation scale. It mainly includes four aspects: classroom organization activities, teachers (students) speech behavior, teachers (students) classroom activities,

teaching events. The scale also takes time as the main axis to record, and the time frequency is once every 1.5 minutes to record the classroom teaching situation.

2.2.2.4 Classroom interactive observation tool for primary and secondary schools

In the discussion of classroom interactive observation tools of primary and secondary schools in contrast to smart classroom, Wang Xiaochen, Jiang Shaoxiang, Huang Ronghuai (2015) and others believe that today's classroom environment has restrained the all-round strong interaction system to a certain extent, which is mainly manifested in the single form. Most of the interaction between teachers and students, less interaction between students and students, less interaction with the support of information technology; Type bias. Most of them are cognitive interaction, lack of emotional communication and behavioral interaction; Lack of depth. The classroom interaction observation tool developed in their research conforms to the characteristics of interactive behavior in the smart classroom environment, has good reliability and validity, and provides a solid foundation for the classroom interaction research supported by technology.

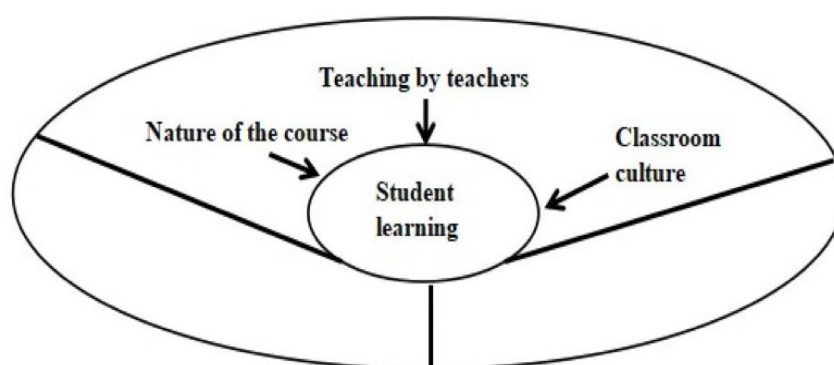


Figure 3. deconstruction of classroom

2.2.3 On the perspective of teachers' observation

2.2.3.1 In depth observation perspective

He Tao, Tu Yaqing, Zheng Yingsheng, Yang Huiyue and Ying Jianhua (2021) analyzed the problems existing in the evaluation object, evaluation perspective, evaluation analysis, evaluation relationship, evaluation results and effects of the current classroom teaching evaluation from the perspective of in-depth observation, and launched the observation based classroom teaching evaluation concept with diagnosis and monitoring as the core, briefly described its meaning, and opened up practical exploration. Taking teaching activities as the evaluation object, taking teaching effect as the starting point, relying on four kinds of observers, from different angles of learning experience, teaching reflection, teaching skills and art, appropriateness of teaching content, the whole teaching process is retrospectively, and the comprehensive teaching quality information is obtained in an all-round way.

2.2.3.2 Visual knowledge mapping Perspective

Zhang Sifang and Li Xiaonan (2021) analyzed the current problems of middle school chemistry classroom observation in China by using the functions of capacities network structure, clustering and knowledge map, and refined the researcher cooperation network map, thus proving that the chemistry classroom observation is in the trend of continuous development.

2.2.4 Research on observation method

Domestic observation methods are mainly theoretical and lack of technical support. Compared with foreign countries, the proportion of observation methods and research perspective is small. Here are three kinds of observation methods: observation experiment research method, sensory organ observation method, peer mutual help observation method, etc.

2.2.4.1 Experimental study of observation method

Based on the problems of children's observation ability in China, such as staying on the surface, testing for the purpose of diagnosis, and insufficient testing methods, Huang Lirong (1999) believes that the observation results of experimental class and control class should be investigated through

experimental research. The experiment includes three steps: front side, training and rear side. It is found that there is no significant difference between the front side and the back side. She thinks that children's observation is not aimless, but that the observation purpose has deviation, which affects the performance of observation purpose.

2.2.4.2 Observation on peer assisted classroom

Yang Dong (2014) mentioned in the types and methods of classroom observation: "peer assisted classroom observation" refers to teachers in a school or a certain area to listen to and discuss with each other, analyze the success or failure of teaching, and sum up the experience and methods in teaching. This paper discusses the problems from three aspects: observation focus, observation record focus and "academic spirit" of communication and discussion, and points out that teachers should improve their ability in classroom observation.

2.2.4.3 The sensory organ was used as the observation method

Zhang Pengli and ye Baosheng (2019) believe that in primary school science teaching, all sensory organs should be used as observation methods to guide students to carry out practical activities, and multiple sensory connections are conducive to a more comprehensive observation of students. In guiding students to use the senses to sense things, we can not ignore the training of students' observation ability.

3. Review of domestic and foreign research

The overall level of foreign research on teacher observation is relatively high, and the research on observation theory and observation tools is relatively perfect. Moreover, the scope of observation abroad is widely involved in medicine, politics and law, sociology, humanities and Social Sciences, and pedagogy. The research on observation theory has been quoted many times by Chinese scholars. The most famous "observation penetration theory" was first proposed by Hansen, an American scholar, and widely used in the field of teaching observation behavior and classroom observation. The theory of observational learning is of great academic significance for the students of compulsory education stage and higher education stage to conduct psychological research at the grassroots level. However, some theories are not applicable in the field of pedagogy and are not suitable for China's educational development. Therefore, we should learn from the useful experience and use them reasonably.

Domestic researches on teacher observation focus on Problems and strategies, while the research on observation theory is insufficient and lacks theoretical support. Observation tools are only limited to individual, which limits the ability of teachers in observation, and most of them are based on the experience of foreign countries. In a certain range, theories and tools at home and abroad may not be suitable for the development of domestic education. Therefore, from the perspective of domestic observation level, it is urgent for a group of talents in the field of observation to re compile a set of scales and tools suitable for teachers' observation in China. In terms of theory, we need to innovate ideas, break through the limitations on the basis of predecessors, incorporate the present situation of teachers' localization into theoretical research, and constantly revise the theory in combination with practice, Build a complete set of suitable and efficient observation system.

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