EXPLORING EARLY CHILDHOOD TEACHERS' WILLINGNESS TO INTEGRATE TABLETOP GAMES IN THEIR TEACHING: A CORRELATIONAL RESEARCH STUDY IN KUNMING, YUNNAN PROVINCE, CHINA

YUAN WANG

A THESIS SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
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RAJAMANGALA UNIVERSITY OF TECHNOLOGY KRUNGTHEP
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ABSTRACT

The study investigated the current practice of tabletop game integration into preschool teachers' teaching and the factors that may affect their intentions to use such games in their teaching. This study adopted the theoretical framework of Ajzen's Theory of Planned Behavior. The questionnaire survey was employed with the method, and 536 effective questionnaires were obtained through valid questionnaires. The data analysis methods used are the mean score and regression analysis. The study found that age, teaching experience, position, gender, and teaching subject influence behavioral attitudes, subjective norms, perceived behavioral control, and behavioral intentions concerning the integration of tabletop games in teaching. In addition, teachers' intentions were higher when they perceived that more suitable games were available. It concludes that schools can increase teachers' willingness to use tabletop games in teaching by providing relevant games using procurement strategies. Nevertheless, the study recognizes some limitations: one is the possibility of measurement errors and biases due to inconsistency between the actual teaching practices of the respondents and the questionnaire they answered. The other is that the research focuses only on preschool teachers from Kunming; thus, a limitation may result when teaching approaches differ at various educational stages. Future research is recommended to apply the change in sampling methods and study the behaviors of intentions toward teaching with tabletop games at different stages among teachers. Other researchers may use another theory to investigate intentions from various angles, ensuring a more transparent and credible result. Overall, the study reveals insights into the state of affairs and influencing factors of tabletop game integration in teaching from the perspective of preschool teachers. The results indicate that both available games and strategies to enhance the willingness of teachers to use tabletop games are needed.

Keywords: Preschool Teachers, Integration of Tabletop Games in Teaching, Theory of Planned Behavior Conflict

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Yuan WANG

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CHAPTER I
INTRODUCTION

1.1 Background and Statement of the Problem

1.1.1 Background of the Study

Preschool education is an essential stage of children's development, which is crucial for children's cognitive, emotional, social, and language development (Zhang, 2022). Traditional preschool education is usually dominated by classroom teaching, but in recent years, more and more educators have begun to recognize the potential of tabletop games in preschool education (You, 2022). As a highly interactive teaching tool that inspires thinking and promotes cooperation and communication, tabletop games provide a rich learning experience and encourage the development of children's comprehensive abilities (Du, Zhang, Ma, 2022).

The American philosopher John Dewey emphasized that learning by doing should start with practical actions and take students as the main body. Students should observe, experience, experiment by themselves, do it with their hands and think with their brains to cultivate their' initiative spirit. Automatic attitude and automatic learning ability (Wang, 2010). Many innovative teaching strategies guide students to learn actively so that teachers can arouse students' learning motivation through diversified teaching design and then generate active learning behavior. When students take the initiative to learn, curiosity will make them want to find the answer to the question or the method of doing things. They will gain a sense of accomplishment and satisfaction (Yang, 2022). Although the techniques are different, the concepts all lead to the same goal: a learning community, teacher professional development evaluation, group cooperative learning, or flipped classroom. They all emphasize that students should become the masters of learning and embody the concept of student-centered learning. (Wu, 2015). In addition to teaching in the classroom, teachers are more critical to inducing students' learning motivation, and students will take the initiative to learn when they are motivated. However, tabletop games can attract students and effectively connect teaching objectives and students’ interests (Li, 2015). Therefore, in recent years, more and more teachers have expected to use tabletop games to flip classroom learning

(Su, 2015).

Teachers are satisfied with integrating tabletop games into teaching; Ji's (2016) research shows that using tabletop games in English teaching can improve students' learning effectiveness, and students have positive feelings about it. Li's (2017) research indicates that tabletop games significantly enhance the learning motivation of high-grade students in the preschool education stage; therefore, many teachers have high hopes for tabletop games, expecting to improve student's learning motivation and enhance their interest in learning. Under such effective game teaching, He (2018) pointed out that most teachers agree that tabletop games can help students achieve cognitive and affective learning goals and cultivate soft skills; these are advantages of tabletop games for teaching. However, the high cost of game materials will make a teacher unwilling to implement them.

Yao (2017) pointed out that teachers feel that the most significant difficulty in integrating tabletop games into English teaching is that it is not easy to prepare the relevant accessories required for integrating tabletop games into teaching; the main reason why teachers never integrate tabletop games into English teaching is that they are worried about affecting the teaching progress. In addition, regarding the hard work of writing tabletop game lesson plans, developing a series of courses, and matching the teaching design of the existing curriculum, on-site teachers need to think about how to bring tabletop games with strong interaction and high knowledge value into the teaching site, to achieve the dream of combining education with fun, under such severe conditions, what kind of preschool teachers are willing to devote their efforts to integrating tabletop games into teaching is a topic worth exploring.

1.1.2 Motivation of the Study

Most of the existing literature explores the impact of tabletop games on learning motivation or effectiveness, but there is little research on teachers' willingness to use tabletop games in teaching. Therefore, this study hopes to use the theory of planned behavior (Theory of Planned Behavior, TPB) to design the questionnaire. The model of the Theory of Planned Behavior is mainly composed of behavioral beliefs, behavioral attitudes, normative beliefs, subjective norms, control beliefs, perceived behavioral control, behavioral intentions, and behaviors. What factors will affect teachers' intentions to integrate tabletop games into teaching? This study offers an

opportunity to analyze whether noteworthy disparities exist in teachers' inclinations towards incorporating tabletop games into their teaching methodologies based on varying factors such as gender, age, professional positions, years of experience, and teaching subjects. This survey seeks to gain insights into the present landscape of teachers' use of tabletop games as instructional tools. The findings from this research hold the potential to provide valuable reference points for educational institutions and authorities interested in integrating different tabletop games into their teaching approaches and promoting their effective use within academic settings.

The researcher’s interest in exploring the topic of tabletop games in education stems from a multifaceted perspective. Firstly, as an individual with a keen interest in education and game theory, the potential of games as powerful pedagogical tools was recognized. Tabletop games often encapsulate complex systems and rules that require strategic thinking, problem-solving, and social interaction skills that are highly valuable in educational settings. Secondly, exploring this subject could unveil patterns in teacher preferences and potential biases, which may inform the researcher’s understanding of broader educational practices and attitudes. This knowledge can be pivotal for personal or professional development, especially if involved in education, curriculum development, or educational policy. Lastly, examining the practical application of tabletop games provides an opportunity to contribute to the emerging field of game-based learning, potentially leading to innovative teaching strategies that the researcher could adopt or recommend.

For the schools in our region, understanding the use of tabletop games can have several implications. It may reveal how prepared our educators are to integrate non-traditional teaching methods into their classrooms, reflecting our educational institutions' innovative climate. It highlights areas where our schools could benefit from professional development, such as training in game-based learning methods. Furthermore, recognizing the potential of tabletop games for educational purposes could lead schools in our area to invest in these resources, thereby enhancing the learning experience and diversifying instructional techniques. Ultimately, this could position our schools as leaders in adopting progressive and interactive teaching methods that engage students in more meaningful learning.

For students in our region, the integration of tabletop games into their

education could have a profound impact on their learning experience. Tabletop games can make learning more engaging by providing a hands-on, interactive approach to understanding complex concepts and developing new skills. They offer a break from the traditional lecture-based instruction, potentially increasing student motivation and attendance. The social aspect of many tabletop games can also foster teamwork and communication skills, which are essential for students' personal and professional futures. Moreover, such games can cater to diverse learning styles and provide an inclusive environment where different types of learners can thrive. Hence, this study explores the extent to which early childhood educators are willing to integrate tabletop games into their teaching practices. The study uses a sequential exploratory mixed-methods design, incorporating qualitative and quantitative data gathering and analysis in two separate periods. By examining the use of tabletop games in the classroom, we can better understand how to support our student's educational needs and prepare them for a dynamic and collaborative world.

1.2 Research Questions

1.2.1 Research Problem

The research questions are listed as follows:

1. How do different personal background variables influence teachers ' attitudes, subjective norms, and perceived behavioral control?

2. How do the teachers' behavioral attitudes, subjective norms, and perceived behavioral control moderate their willingness to integrate tabletop games into teaching?

1.2.2 Research Objectives

Based on the Theory of Planned Behavior (TPB), this study focuses on the impact of different background variables on teachers' behavioral attitudes, subjective norms, perceived behavioral control, and behavioral intentions when using tabletop games to integrate into teaching and investigate whether behavioral attitudes, subjective norms, perceived behavioral control and behavioral intentions have impact on teachers' willingness to incorporate tabletop games into teaching. The research objectives are listed as follows:

1. To explore the impact of different background variables on teachers ' behavioral attitudes, subjective norms, and perceived behavioral control.

2. To investigate whether behavioral attitudes, subjective norms, and perceived behavioral control impact teachers' willingness to integrate tabletop games into teaching.

1.3 Research Scope and Sampling Method

1.3.1 Research Scope

(1) Research object

The researcher himself serves preschool teachers in Kunming, so this study takes public and private preschool teachers in Kunming as the parent group, including formal and substitute teachers. Regardless of whether they have ever used tabletop games to integrate into teaching, they are all the subjects of questionnaire distribution in this study.

(2) Incorporate tabletop games into teaching

This study investigates whether teachers have used tabletop games to integrate teaching, and based on the theory of planned behavior, the research investigates its influence on the intention of using tabletop games to incorporate teaching. The definition of tabletop games used by teachers surveyed in this study comes from the fact that they have used commercially available tabletop games for classroom teaching or have created their own tabletop games, teaching aids, and rules, which are included in the scope of using tabletop games to integrate into teaching.

(3) Research subject

Every teacher has a different acceptance of the integration of tabletop games into teaching and a different understanding of the integration of tabletop games into teaching. Under different prior knowledge, environments, and backgrounds, many variables affect the integration of tabletop games into teaching. Based on the Theory of Planned Behavior, this study analyzes the behavioral intention of using tabletop games to integrate into teaching. It mainly takes the behavioral attitudes, subjective norms, perceived behavioral control, and personal background variables mentioned in the theory as the research scope.

(4) Tabletop games

Chess is a two-player game where the objective is to checkmate the opponent's king, placing it in a position where it cannot escape capture. The game is played on an 8x8 grid board, with each player controlling 16 pieces, including the king, queen, bishops, knights, rooks, and eight pawns. Each type of piece has its unique way of moving. Chess is both an art and a science, requiring deep strategic planning and foresight. It serves as a tool for teaching adherence to rules, taking turns, and decision-making. In kindergarten, educators can introduce a simplified version of chess so that children can grasp the basic movements of the pieces and the game's goals. Children can explore the game during free play time by setting up a chess corner in the classroom. Chess enhances children's cognitive abilities, improves memory, and fosters logical thinking and problem-solving skills. Moreover, studies have indicated that playing chess can promote the development of children's mathematical and reading skills (Sala et al., 2017). It also helps children learn patience and concentration, which are vital for learning success.

Educational games are extensively utilized in children's education to teach specific cognitive skills, particularly in mathematics and language learning. For instance, Cool Math Games offers a variety of online games that enable children to learn advanced mathematical concepts ranging from basic arithmetic to algebra and geometry through play. Another popular game is the Prodigy Math Game, a free role-playing game that adjusts the difficulty of problems based on the child's skill level and adheres to educational standards for grades 1 through 8. In terms of language learning, Duolingo for Kids helps children learn new languages via interactive activities and stories. At the same time, Endless Alphabet teaches young learners about letters and vocabulary through engaging spelling games. These games capture children's attention and foster the development of crucial skills while they have fun.

Furthermore, role-playing games and cooperative games are also incorporated into the educational spectrum, as they encourage social interaction, teamwork, and problem-solving abilities among children. For example, "Zingo" is a game similar to Bingo that involves image and vocabulary matching, making it suitable for early readers; "Outfoxed!" is a cooperative detective game that requires players to work together to solve a mystery. These games not only aim to enhance children's

language and logical skills but also foster a spirit of teamwork through play. The tabletop games within the scope of this study were selected and evaluated to determine their applicability and effectiveness in early childhood educational settings.

1.3.2 Research Limitations

This study adopts the questionnaire survey method, which has inherent limitations, such as the possible errors caused by the emotions and attitudes of the respondent and whether the person completes the answer, which may be within the error range. In addition, there is no control over the situation and physical space in which the respondent completes the answer, nor is it possible to require the respondent to answer according to the sequentially arranged questions. That is to say, this research cannot show its correctness 100%, but it does have a reference value within the error range.

For the official questionnaire survey, the research sample consisted of teachers from preschool education schools in Kunming city. For regional samples, it is difficult to consider the variable factors of the urban-rural gap, so there is a specific limit in the breadth of inference.

1.3.3 Sampling Method

The study utilized a random sample method to select preschool teachers from Kunming city for the official questionnaire survey, excluding those who had participated in the preliminary pre-test questionnaire. This approach efficiently collected data from a readily accessible subset of the target population.

1.4 Definition of Key Terms

1.4.1 Tabletop Games

Tabletop games, referred to as tabletop games, also known as unplugged games, are aimed at such as card games (including collectible card games), tabletop games (tabletop games), dice games (Tile-Based games), as well as games that are played on other desktops or planes, have rules, the unknown result and reality do not interfere with each other, can attract players to invest, and also have an educational function, they can be called table games.

1.4.2 Teacher Willingness

“Teacher willingness” refers to a teacher's openness and enthusiasm for adopting and implementing a teaching method, tool, or innovation. In the context of educational research, this may include a teacher’s readiness to introduce new teaching resources, technologies, or strategies into their classroom. Teacher willingness is influenced by various factors, including but not limited to personal beliefs, teaching philosophy, past experiences, school culture, professional development support, availability of resources, and the anticipated impact on student learning outcomes.

In the context of research into integrating tabletop games into teaching, teacher willingness might specifically refer to the degree to which teachers recognize the value of using tabletop games as teaching tools, their intent to adopt them, and the likelihood of applying tabletop games in their teaching practices. This willingness could manifest as an interest in receiving relevant training, an intention to allocate time for game activities within lesson planning, and a desire to share experiences and observe student feedback on using tabletop games with colleagues.

1.4.3 Integrating Tabletop Games into Teaching

Tabletop game integrated into teaching (Tabletop game integrated into teaching) means that when teachers design course objectives and activities, the learning aids part chooses commercially available tabletop games or self-developed tabletop game teaching materials suitable for students' learning as one of the contents of classroom teaching. The design of courses must start from three aspects: course content, teaching methods, and the use of teaching materials. In the classroom, teachers should use commercially available tabletop games created by teachers to flexibly apply them in teaching so that students can participate in course activities and abide by the game's rules to gain a purposeful learning experience.

1.4.4 Behavioral Attitude

Behavioral Attitude (AT) refers to the continuous evaluation of an individual's liking or disliking of a specific object or idea, and the expression of attitude can predict possible behavior. The behavioral attitude referred to in this study relates to the teachers' attitude towards integrating tabletop games into teaching and the degree of pleasure after using them. Fishbein and Ajzen (1975) believed behavioral beliefs and outcome evaluations could measure behavioral attitudes. Their behavioral beliefs

indicate the results individuals believe will result after engaging in a specific behavior. For example, teachers believe that using tabletop games in teaching can help them improve teaching quality and may strengthen students' learning motivation; the result evaluation refers to the individual's assessment of the result, for example, the degree to which teachers have positively helped personal development or the teaching process after using tabletop games to integrate into teaching.

1.4.5 Subjective Norms

Subjective norm (Subjective norm, SN) refers to the social pressure an individual feels when taking a specific behavior, that is, the individual's perception of essential others or groups (such as parents, spouse, friends, colleagues)—the pressure to perform that particular behavior. When the positive subjective norm is more substantial, it is easier to induce the behavioral intention to engage in the behavior. Standard beliefs and obedience motives can explore subjective norms of behavior. Standard beliefs refer to the pressure that an individual perceives on whether an important person or unit thinks he should take the behavior. For example, the educational supervisory unit or the teacher’s chief recognizes teachers’ use of tabletop games to integrate into teaching; obedience motivation refers to whether an individual expects obedience from these important individuals or groups when taking a specific behavior (Yu, 2000). For example, teachers may integrate tabletop games into teaching according to educational authorities' requirements or students' opinions.

1.4.6 Perceived Behavioral Control

Perceived Behavioral Control (PBC) refers to the perception of an individual's ability to control the required resources and opportunities when engaging in a specific behavior; in addition to personal desires and intentions, it also includes things such as time, money, skills, and opportunities. Non-motivational factors that individuals cannot control, such as abilities, resources, or policies, are all related to the control of individual behavior. Control beliefs and convenience perception can explore perceived behavioral control. Beliefs of control refer to an individual's cognition of the resources, opportunities, and abilities they possess for a specific behavior. For example, teachers consider whether they can integrate tabletop games into teaching and how easily they think it is; convenience perception refers to how these resources, opportunities, or obstacles affect their behavior. For example, if teachers want to

integrate tabletop games into teaching, is there sufficient equipment, education, and training environment to assist users?

1.4.7 Behavioral Intent

Behavior Intention (BI) refers to the action tendency and degree of an individual wanting to engage in a specific behavior, that is, the psychological intensity of whether an individual takes action during the decision-making process of behavior choice. The behavioral intention of this study can be transformed into items such as whether teachers are willing to work hard or how much effort they put in. This variable can explain and predict the degree to which teachers are eager to try to integrate tabletop games into teaching.

1.4.8 Personal Background Variables

This study explores the differences in the influence of teachers' background variables on the use of tabletop games in teaching, including gender, age, years of experience, job title, teaching subjects, and tabletop games integration teaching experience are as follows:

(1) Gender refers to the gender of the teacher, which can be divided into two categories: male teachers or female teachers.

(2) Age: refers to the age of the teacher, which can be distinguished under 30 years old (inclusive), 31-35 years old (inclusive), 36-40 years old (inclusive), 41-45 years old (inclusive), 46-50 years old (inclusive), 51 years old (inclusive), a total of 6 categories.

(3) Years: refers to the time a teacher has served in an educational institution, divided into 5 years (inclusive), 6 to 10 years (inclusive), 11 to 15 years (inclusive), 16 to 20 years (inclusive), 21 years (inclusive) and above, 5 categories.

(4) Position: Refers to the position held by the teacher in the school, divided into junior teachers, intermediate teachers, and senior teachers, totaling 3 categories.

(5) Teaching subjects: These are the subjects in which the interviewed teachers have used tabletop games to integrate into teaching. This data can help us understand whether this variable impacts teachers' intention to use tabletop games to incorporate into teaching.

CHAPTER II
LITERATURE REVIEW

This chapter is mainly based on the theory of planned behavior, discusses the behavioral intention of teachers to integrate tabletop games into teaching, and discusses the influence of different backgrounds on behavioral intentions. The whole chapter is divided into three sections: the first section is the connotation and theoretical basis of tabletop games; The second section is related research on tabletop games integration into teaching; the third section is the meaning and related research of the theory of planned behavior.

2.1 Related Research on Table Games

Relevant research proves that games can be applied in teaching, creating a favorable learning situation and positively affecting learners' learning motivation. This section mainly explains the theoretical basis of the game and the definition, history, types, and characteristics of table games.

2.1.1 Definition of Game

Games are a common activity that has existed since the origin of human beings, so the importance of games has long been valued by Chinese and foreign scholars (Cai, 2004). Games play a vital role in our lives. Games will exist in our lives at every stage of life in different forms. Early education scholars emphasized the importance of games for children and believed that games are children's work and the hub of learning (Wu, 2003). Children love games, have fun, and grow from them. By combining games and learning, students can acquire concepts, master various skills, regulate emotions, learn interpersonal interaction, attract learners to actively participate in exercises, improve participation willingness, and stimulate high-level thinking. Therefore, learning through games can effectively enhance learning motivation and strengthen learning effectiveness (Huang, 2016). Students in the preschool education stage are at the stage when they like to have fun. From having fun, they can learn multiple thinking, brainstorming, and applying what they have learned in games that are not found in textbooks. Games can make people relax and have entertainment,

thinking and reasoning can be logical, and learning group interaction can be social. Liang (2006) integrated the views of many scholars and proposed six characteristics of games, including:

(1) The process is entirely of joy

(2) Active participation rather than passive participation

(3) No time limit

(4) There is no unique learning goal,

(5) There will be no winning or losing, and it will not cause the player's psychological burden

(6) Increase the player's self-awareness of the external world

Guo (2000) explained that games contain five characteristics:

(1) Games are intrinsic motivation

(2) Players freely choose to play or not to play

(3) Games are fun experiences that can be enjoyed

(4) Behaviors are not repeated; spend time trying and imagining

(5) Players are actively involved

Wu (2003) synthesized various theories and literature and defined games as the following seven items:

(1) Games are an unspoken behavior

(2) Games come from intrinsic motivation

(3) Games emphasize process and method

(4) Games are freely chosen, not assigned or specified

(5) Game plays have positive emotions

(6) Games are active participation and are dynamic

(7) Games focus on yourself; the purpose is to create stimulation

Lin (2010) defined games as the following four items:

(1) The game is a spontaneous activity that can attract people to participate actively

(2) The game has goals and rules

(3) The game has a certain degree of competition and conflict

(4) The game comes from intrinsic motivation

Most scholars now agree that games are spontaneous, autonomous, and intrinsically motivated activities that adults and children enjoy. Joy and fun are produced during the activity. The main focus is on the process of the game rather than the final result.

Tabletop games, also known as unplugged games, are aimed at such as card games (including collectible card games), tabletop games, dice games (tile-based games), and other generic terms for games played at a table or in any space where multiple people face to face in the same space (Wikipedia, 2018).

Tabletop games usually combine accessories such as boards, dice, cards, chess pieces, or trim boards, as well as matching rules, and are well-known in Germany (Wu et al., 2011). Chen (2013) mentioned that tabletop games, in a broad sense, include various rules. Participants can play games face-to-face on a flat surface. The game does not need to be plugged in. Players will operate chess pieces, dice or cards, and other accessories during the game. Moreover, there is a winner at the end of the game. Lu et al. (2013) stated that games that can be played on a desktop or plane have rules, the unknown result and reality do not interfere with each other, can attract players to invest, and also have an educational function, which can be called table games. Its unique feature is structured rules to define a field that can stimulate thinking and making choices. Players follow the regulations in the field and compete or cooperate to win.

2.1.2 Game Theory

Game theory helps us define behavior and why games are played. Later generations divided game theory into two schools: classical game theory and modern game theory. The former originated and developed from the 19th century to the early 20th century, while the latter began to grow after 1920 (Chen, 2003).

(1) Classical Game Theory

Classical game theory tries to explain why games exist, but it is more philosophical speculation than experimental research. It can be divided into two types: energy excess theory and leisure theory, which regard games as a way of energy regulation; the other is repetition theory and exercise theory, which use human instinct

to explain games. Two schools of thought hold opposing views on how play affects instinct and energy.

①Excess Energy Theory

Mentioned energy excess game theorists: Schiller and Spencer. They believe every organism must produce a certain amount of energy to meet survival needs. The energy remaining after meeting the needs of survival becomes surplus energy. This excess energy constitutes a stress that must be expended and is often considered a game of aimless behavior.

② Leisure Theory

Contrary to the excess energy theory, the leisure theory holds that play is used to restore energy expended at work. Moritz Lazarus, the founder of leisure theory, believes that work consumes energy and causes energy deficit. Play is the exact opposite of work and is an ideal way to restore energy. Early childhood educators have long recognized the educational principles behind the theory of leisure. Therefore, the school's daily activities are static mental activities and active games for some time.

③ Repeat Theory

American psychologist G. Stanley Hall extended the reenactment theory to children's games. He believed that children re-enacted the stages of human development from animal to savage to tribal member. In his view, the developmental stages of children's play follow the sequence of human evolution.

④Practice theory

Philosopher Karl Groos believes that the game does not weaken the primitive instinct but strengthens the instinct of need. Play provides a safe way for young species to practice and perfect this important skill and reinforce skills needed for adulthood.

(2) Modern Game Theory

Modern game theory is based on classical game theory and is supported by scientific research. The following four schools of game theory have been developed.

①Psychodynamic Theory

S. Freud (1856-1939) founded psychodynamic theory, carried forward by Erikson EHE Rikson (1902-1994). For the value of games, Freud's main argument is in

the emotional aspect. Games can make children happy, satisfy their desires, and allow them to put aside real situations and learn to resolve conflicts. In addition, games can help young children reduce anxiety, vent unpleasant experiences, and shift from a passive role. Erickson believes play development involves exploration and self-building and can enhance children's social skills. Only by carefully observing the form and content of the game, as well as the dialogue and emotion in the game, can we understand the meaning of the game to the individual (Jiang, 1997).

② Cognitive Development School

Swiss psychologist Piaget (1896-1980) is the primary representative of the cognitive development school. Cognitive developmentalism holds that play is a tool for learning and an indicator of mental development, through which young children learn about their own experiences and development. Therefore, games are regarded as one way to understand external things. At the same time, children can flexibly use thinking and multiple ideas to try to solve problems during the game process. Therefore, games are significant for cognitive development (Zhou, 2013).

Vygotsky (1896-1934) believed that play is one of the most critical factors in the development of young children, and it plays a vital role in their social and emotional development. The game can also continuously create its proximal development zone through interpersonal interaction to improve children's development. Play can even serve as a scaffolding for young children's zones of proximal development, thereby facilitating their future development to higher levels. According to Vygotsky's analysis, play can be a tool for young children to help themselves. In addition, children's potential development ability can be seen through games. When playing imaginary games, they often borrow one object to replace another. This symbolic game can develop children's abstract thinking (Zhou, 2013).

Bruner (1972) pointed out that the meaning of the game itself is more important than the results it brings. In the play, children do not have to worry about whether a specific goal can be achieved, but they can try many new and unusual behaviors. Children explore and use these new behaviors in play to solve real-life problems. What is learned in play helps establish behavioral patterns. Games also provide an opportunity to explore possible solutions when faced with life problems, avoid accepting the consequences of some behaviors in the real world, and avoid

mistakes made due to immaturity (Zhou, 2013).

③ Arousal Regulation Theory

Berlyne (1960), modified by Ellis, states that an individual's central nervous system requires appropriate stimulation to maintain arousal levels. When the stimulus is too much (for example, playing too many novel things), the stimulating activity must be reduced to achieve a constant. Game is a stimulation-seeking behavior. When the stimulation is insufficient, the individual will look for stimulation to increase the level of arousal. On the contrary, when the individual rises the stimulation, the level of arousal decreases, and the game will stop. Therefore, the theory believes the game helps humans stay awake at their best (Zhou, 2013).

So far, there is still much room for research and discussion about games. Based on the views of different schools of thought on games, the significance of games lies in the learning motivation of intrinsic motivation. Therefore, games are the best strategy to help teachers achieve their teaching goals. Suppose teachers can integrate tabletop games into teaching design. In that case, students can learn from games and deepen their behaviors and thinking methods displayed in games to acquire knowledge, skills, and attitudes, which will be the best arrangement.

2.1.3 Characteristics of Tabletop Games Integrated into Teaching

With the changes of the times and the large-scale changes in teaching concepts, many teachers use various teaching materials to enhance students' interest in learning. Tabletop games are one of the types of toys and games; fun and fun are essential elements of tabletop games (Liu, 2015). The knowledge, fun, and real-time nature of tabletop games will have different effects if combined with innovative teaching design and integrated into teaching. Guo (2017) mentioned that using tabletop games in teaching is like combining learning and games. It can allow learners to enhance learning motivation and improve learning effectiveness in games full of fun and challenges without realizing that they are learning things. Hinebaugh (2009) believes tabletop games will be effective teaching tools, mainly because they are fun, making children feel that tabletop games are not part of the school curriculum. Zeng (2012) mentioned that integrating tabletop games into teaching may not immediately improve students' performance, but it is of great help in enhancing students' classroom participation, learning attitude, and interest. Game teaching is like a key created with

curiosity and playfulness, which can help students open the door to explore the operating principles of the world. Game teaching opens up another way for learning and is the best catalyst for an enthusiastic game atmosphere and sound learning effects (Thanks & Hong, 2009).

Chen (2010) believes that tabletop games are more suitable for stimulating children's learning than other toys because it has the following three advantages:

(1) Provide real experience: children use cognitive skills in this situation. It is more realistic to tell what is learned in the classroom.

(2) Children are highly willing to participate; active participation will make learning more effective.

(3) Can stimulate high-level thinking: Games often require analysis and synthesis, and Advanced cognitive abilities such as evaluation can compensate for the deficiencies in traditional classrooms.

Huang (2013) also mentioned that tabletop games can be used in teaching because of the following advantages:

(1) Increase students' leisure activities and interpersonal interaction

(2) Learning through games can be entertaining

(3) Are diverse and can be selected according to different training objectives

(4) Easy to implement

(5) Time-saving

(6) The number of participants is moderate, teachers are easy to carry out in class, and students also have opportunities to participate.

Tabletop games have many advantages for learning, but it still has its limitations. Although most people love tabletop games, and many people have joined the ranks of innovative tabletop game teaching, there are still some teachers and students who are not keen on tabletop games and even confused by their changing rules, so the use of tabletop games is limited to those who are interested in tabletop games (Wu, 2010). Moreover, every tabletop game has rules, making it difficult for novices to start. Often, to focus on the content of the regulations or the achievement of goals, the game is interrupted, and the mechanism for maintaining the game is ignored; that is, the most basic fun function of the game cannot be played (Liu, 2011). There are many types of tabletop games, and the design connotations are different. Especially when the

design is more complicated, the participants' understanding is tested; if the participants' knowledge is not enough to cope with the tasks in the tabletop games, the participants quickly feel frustrated. The tour will not apply to the object trait (He, 2012). Therefore, teachers must carefully select the tabletop games used in teaching, and the prior concept of the teaching object is also one of the considerations.

2.1.4 Defining the Concept of Technology

Technology refers to the application of scientific knowledge for practical purposes. It encompasses the tools, machines, techniques, systems, and organization methods used to solve problems or improve existing solutions within various fields, including industry, science, medicine, and education. Here are three foundational perspectives on the concept of technology:

Instrumental View: Technology is tools and instruments created and used to achieve specific practical purposes. This is the most basic and widespread understanding, focusing on the tangible aspects of technology−everything from a simple hammer to complex computers and smartphones (Mumford, L.1961)

Socio-technical View: Technology is understood in terms of hardware and includes the knowledge, practices, and conditions under which it is developed and used. This perspective emphasizes that technology shapes and is shaped by the societal context − it involves human intentionality, organizational structures, and social consequences.

Philosophical View: Philosophers of technology explore technology's nature, its relationship to society, and its ethical implications. They investigate the essence of technology, its ontological status, and its impact on human existence and the natural world. (Heidegger, M. 1977).

In educational settings, technology can be defined as any tool or resource used to support learning and teaching processes. This includes, but is not limited to, computers, tablets, the internet, digital media, educational software, interactive whiteboards, audio and video equipment, and even more traditional forms of technology like television and tape recorders. Within this framework, technology is not just a collection of physical devices but also encompasses a variety of digital resources and educational platforms that support learning and creative expression. Teachers utilize these tools to provide rich learning materials, promote interactive learning, and

cater to the needs of diverse learners.

Teachers' integration of these technologies can be demonstrated in several ways. For instance, they might use educational games on tablets to enhance the development of language and mathematical skills or employ interactive whiteboards to display instructional content and encourage student participation. Moreover, early childhood educators might adopt specialized software to track children's progress and share that information with parents. Through these measures, technology becomes a powerful tool in teaching, enhancing the learning experience and providing means for educators to deliver personalized instruction and assessment. This integration requires teachers to continuously learn and adapt to new tools while also ensuring that the use of technology supports educational goals and is suitable for the developmental stage of the children. Hence, the following section introduces tabletop games as a particular technology that this study intends to study its application in the classroom.

2.2 The Integration of Tabletop Games into Teaching

Under the current design of many innovative teaching activities, teaching methods combining games and learning can improve students' concentration and motivation. Because the games are primarily cyclical, they allow students to think repeatedly without boredom (Lin, 2017).

2.2.1 Relevant Research on Subject-themed Tabletop Games Integration into Teaching

Yang (2014) conducted action research on integrating chart-and-card tabletop games into fifth-grade composition teaching in the preschool education stage. The research results help to improve students' learning motivation, enhance students' learning interest, and improve the interaction between students and teaching content, teachers, and peers. ***Interactive***. Li (2015) explored the effect of literacy tabletop games on the germination of literacy for children with insufficient stimulation in the preschool language environment. The study results showed that the knowledge of visual symbols in the experimental group has significantly improved, and tabletop games can improve the Chinese characters of participating children of different ages, language abilities, and regions. Class identification ability and tabletop games can effectively enhance the

perception performance of indirect literacy for children with insufficient stimulation in the preschool language environment.

The influence of story-creation tabletop games on the vocabulary ability of middle-class children. Children in the five-year-old group have limitations in improving their ability to form sentences and the efficiency of vocabulary acquisition.

Wei (2015) explored the action research on the integration of tabletop games and witty storytellers into the Mandarin remedial teaching plan in the preschool education stage - taking the third-grade students as an example, the research results:

(1) The witty storytellers can be integrated into different age groups

(2) Still need to match relevant Mandarin teaching strategies to improve student's learning effectiveness

(3) Can assist in the conduct of multiple assessments

Lin (2015) explored the application of tabletop games in different learning styles in studying the English learning motivation of low-grade students in the preschool education stage. The research showed that students in the low-English learning motivation group significantly increased motivation posttest after integrating tabletop games into English learning. ***Promote.*** Guo (2015) explored the relationship between English tabletop games and English learning effectiveness and interest. The result of the study is that English tabletop games significantly and positively impact learners' English learning effectiveness. Zeng (2015) found that tabletop games have a positive impact on the learning attitudes of English low-achieving students. Wang (2015) explored the benefits of using table games to improve children's English spelling ability. The research results showed that the spelling ability had improved significantly, and the experimental group's spelling performance and learning retention were better than the control group's. Pan (2015) explored the impact of tabletop games integrated into mathematics teaching on students' learning outcomes. The results of the study: the mathematics learning achievement of the experimental group was significantly better than that of the control group; the mathematics learning attitude of the experimental group was significantly better than that of the control group. Guo Yilin (2016) explored the relationship between the English learning effect and English learning interest in English tabletop games. The research results show that it can significantly improve learners' interest in English learning and significantly positively impact learners'

English learning effectiveness. The study pointed out that using tabletop games to integrate mathematics teaching strategies is feasible, which can improve students' learning achievements and learning attitudes, and students have positive feelings and love for integrating tabletop games into mathematics teaching activities.

2.2.2 Relevant Research on Special Education as the Theme of Tabletop Games Integration into Teaching

Liu (2016) discussed the case study of the application of tabletop games in the learning of social skills of junior high school students with cerebral palsy. It showed that the teaching of social skills courses was positive for students, the feeling of social skills courses was good, and the generalization of social skills courses had positive effects. ***To influence***. Gao (2015) explored a case study on the influence of tabletop games on graphic literacy teaching on the literacy ability of students with mild intellectual disabilities. The object was a student with mild intellectual disabilities in the sixth grade of preschool education. Literacy skills, improving overall Mandarin learning performance, including learning motivation, assessment performance, reading ability, and course participation.

2.2.3 Relevant Research on the Theme of Tabletop Games Integration into Teaching and Non-main Subject Teaching

Wei (2014) researched integrating tabletop games into the junior high school visual arts curriculum design. The research shows that it is helpful to students in art learning and can increase students' learning motivation and provide artistic expression, adding multiple values and interpersonal relationships. Interactivity. Ma (2016) researched the impact of a 48-player tabletop game for higher vocational students in Kunming on the effectiveness and motivation of higher vocational students in learning procedures−taking the design of the Poseidon tabletop games as an example, the research shows that there is a significant difference in the learning achievement of programming language Progress, the use of Poseidon tabletop games teaching aids will indeed improve students' learning motivation and satisfaction, and there is a high positive correlation between the two. Xie (2017) designed tabletop games to be used in the nutrition education course of the second grade of preschool education. Taking the second-grade students of a preschool education stage in Kunming as the research object, the experimental group consisted of 30 people. The research results found that the

learning of the two groups of students. The results have all improved. The use of tabletop games in teaching is more helpful than e-textbook teaching in enhancing the learning effects of students' nutritional knowledge and attitudes, and there is a significant difference. Still, there is no significant difference in the learning effects of improving eating behavior. Zhou (2018) conducted a study on the impact of tabletop games on the environmental education learning of preschool children in two fifth-grade classes in a preschool education stage in Yunlin County. High-quality teaching can improve knowledge and enhance learners' interest in learning.

Zhang (2018) conducted action research on tabletop games to enhance children's learning interests. The researcher taught 19 middle-class and 9 small classes, a total of 28 children, as the research object. Stimulating tabletop games is more interesting: Children in the middle class are more interested in playing tabletop games with hierarchical and regular toys. Adding tabletop games to the learning area can enhance children's interest.

Huang (2018) used the talent classroom taught by five preschool students in the first and second grades and one kindergarten student to integrate tabletop games into picture book teaching to improve children's character. The research pointed out that incorporating tabletop games into teaching can cause students to learn. Completed in fun and do-it-yourself, students gain a more concrete understanding of character. Wu's (2018) research topic is the study of renewable energy tabletop games on ninth-grade students' learning outcomes and decision-making processes. The research shows that the integration of tabletop games into renewable energy knowledge and concepts has a significant effect on improving learning outcomes. Fang (2018) experimented on the third grade of preschool education. The number of people in the experiment was 56. The test after the tabletop games teaching was analyzed, and the research results showed that the learning effect of procedural computing thinking improved significantly. Children like tabletop games. The learning method is interesting and liked. Students, teachers, and students give positive feedback through tabletop game interaction, improving students' learning motivation and satisfaction.

2.2.4 Summary

Based on the above analysis, it is found that the number of studies on the application of tabletop games in various subjects is gradually increasing, and it is also

found that many teachers have incorporated tabletop games into formal teaching courses or assessments and have achieved specific results. In addition, tabletop games have been widely used in various stages of education, including kindergartens, preschool education, junior high schools, and even adults. They are commonly used teaching materials. Most research results show that after using tabletop games in teaching, students' learning outcomes and attitudes have significant effects, and learning motivation and satisfaction have improved significantly. Therefore, it is not difficult to understand why teachers have begun integrating tabletop games into teaching in recent years. However, some teachers are still hesitant to do so. Therefore, this study further uses the theory of planned behavior to explore the current teachers' understanding of integrating tabletop games into teaching. Behavioral intentions, hoping to contribute to the academic field of tabletop games through reliable and valid research tools.

2.3 Theoretical Framework

This study employed two theories to properly explore preschool teachers' willingness to integrate tabletop games into their teaching—the theory of planned behavior. We know that to enhance a person's intention or behavior, we must change and acquire behavioral attitudes, subjective norms, and perceived behavioral control (Chen and Li, 2007). This section explains in detail the meaning of the theory of planned behavior and the relevant research on the application of the theory of planned behavior. It also analyzes why this research is based on the theory of planned behavior. The Technology-Pedagogical Content Information (TPACK) framework explains the knowledge teachers need to integrate technology successfully into their teaching practices.

2.3.1 Definition of Theory of Planned Behavior

The Theory of Planned Behavior (TPB) originated in social psychology and was extended from the Theory of Reasoned Action (TRA) proposed by Fishbein and Ajzen in 1975. It is mainly a behavioral theory that predicts the relationship between attitude and behavior. Fishbein and Ajzen (1975) proposed that in the hypothesis of TRA theory, behaviors occur voluntarily, which means that individuals can completely

control whether they want to perform behaviors. Factors that may affect the degree of personal volitional control include:

(1) Internal factors include individual differences in control behaviors, information, technology, ability, and willpower required to complete the behavior, as well as strong emotions and compulsions.

(2) External factors include the time and opportunity required to complete the behavior or the requirement that others cooperate to complete it.

It can be seen from the above that whether most actions can be completed has a certain degree of uncertainty. Ajzen (1985) proposed that human behavior is not entirely controlled by individual rationality; some behaviors must rely on the outside world to obtain resources, and the theory of planned behavior contains three main influencing variables, namely behavioral attitude, subjective norms, and perception behavior control. According to TRA theory, hypothetical behavior is influenced by behavioral intention (BI), which shows that the most direct factor influencing individual behavior is individual behavioral intention (BI). From the interdependent relationship between attitude, intention, and behavior, TRA theory holds that behavioral intention is affected by attitudes and subjective norms (SN). He believed that when the individual's thoughts no longer control an individual's behavior, the individual's ability to perform a particular behavior is more easily disturbed. The individual's ability to perform the behavior, the stronger the control over the behavior, the higher the behavioral intention, even if the intention to perform a specific behavior is strong, but because the individual's ability cannot be executed, it is believed that the perceived behavioral control will also affect the behavior Intention (Ajzen & Madden, 1986).

The more positive the individual's attitude towards behavior, the higher the behavioral intention appears. On the contrary, the more negative the individual's behavioral attitude is, the lower the behavioral intention will be. When an individual's behavioral intention is affected by subjective norms, the more positive the subjective norm is, the higher the behavioral intention is, and the more negative the subjective norm is, the lower the behavioral intention is. Perceived behavior control refers to the subjective judgment of individuals on the feasibility of completing a specific behavior. Ajzen & Madden (1985) indicated that individuals need sufficient incentives, including opportunities, resources, and other factors when performing behaviors, such as

encountering time, Money, friendship, and interests, when the individual thinks that he can perform the behavior of control or can complete the execution of the behavior, the more resources and opportunities appear between each other, it means that his relative cognition will appear more when he executes the behavior control. ***Strong state***. The theory of planned behavior mainly analyzes the formation process of behavior patterns in three stages: behavior is determined by individual behavioral intention; behavioral intention is determined by the influence of attitude towards behavior, behavioral, subjective norm, and cognitive behavioral control or some of them; Attitudes towards behavior, subjective norms of behavior, and cognitive behavioral control are affected by exogenous variables. We know that to enhance a person's intention or behavior, we need to start with changing and acquiring behavioral attitudes, subjective norms, and perceived behavioral control (Chen and Li, 2007). Figure 2.1 shows the framework of the Theory of Planned Behavior and introduces each factor. Source: Ajzen (1985)

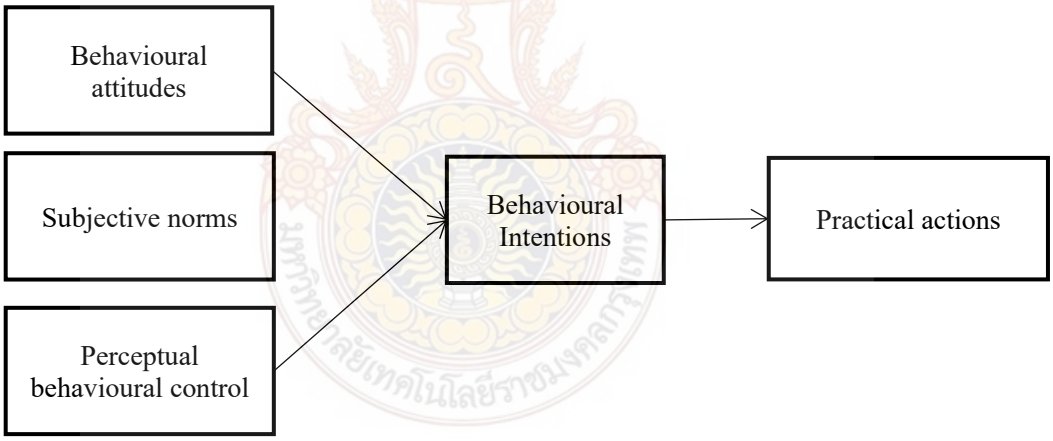

Figure 2.1 Framework of The Theory of Planned Behavior

(3) Attitude Toward the Behavior (ATT)

Behavioral attitude refers to a person's positive or negative attitude towards something, which reflects the degree of personal likes and dislikes towards this thing (Fissbein & Ajzen, 1975). It is the attitude formed after the individual's evaluation of this specific behavior has been conceptualized (Li, 2012). The higher the intensity of liking or positive feeling the individual presents, the higher the behavioral intention, and vice versa. Fishbein and Ajzen (1975) believed that measuring behavioral attitudes

can be composed of behavioral beliefs and outcome evaluations. Behavioral beliefs refer to individuals' beliefs that engaging in a specific behavior may lead to certain outcomes. For example, teachers believe that using tabletop games in teaching can help them improve the teaching quality and may strengthen students' learning motivation; the result evaluation refers to the personal assessment of the result, for example, the degree to which the teacher has positively helped the individual development or the teaching process after using tabletop games to integrate into the teaching.

(4) Subjective Norms (SN)

Subjective norms refer to whether a person engages in a particular behavior, whether the critical relationship person agrees with his behavior, or the external pressure given by society; that is, the individual feels that other important individuals or groups (such as parents, friends, spouses, colleagues) There is pressure to think whether he should carry out his behavior. Fishbein and Ajzen (1975) believed that subjective norms are formed by individuals' perception of social pressure on whether to take a specific behavior. Fishbein and Ajzen (1975) believed standard beliefs and obedience motivations can explore subjective norms. Standard beliefs refer to the pressure an individual perceives on whether important people or units think he should take the behavior. For example, the educational, supervisory unit, or the teacher's chief's sense of recognition of teachers using tabletop games to integrate into teaching; obedience motivation refers to whether an individual has a willingness to obey the expectations of these important individuals or groups when taking a specific behavior (Yu, 2000). For example, teachers may integrate tabletop games into teaching according to educational authorities' requirements or students' opinions.

(5) Perceived Behavioral Control (PBC)

Perceived behavior control refers to the individual's subjective judgment of the feasibility of completing a specific behavior; it also refers to the individual's perception of the ability to control the resources and opportunities needed when performing a particular behavior, including intentions, money, ability, Uncontrollable factors such as policies or policies, the more resources and opportunities an individual has, the smaller the expectations, the stronger the control over perceived behavior, and vice versa (Huang, 2011). Fishbein and Ajzen (1975) believed that control beliefs and convenience perception can explore perceived behavioral control. Beliefs of control

refer to an individual's cognition of the resources, opportunities, and abilities they possess for a specific behavior. For example, teachers consider whether they can integrate tabletop games into teaching and how easily they think it is; convenience perception refers to how these resources, opportunities, or obstacles affect their behavior. For example, if teachers want to integrate tabletop games into teaching, is there sufficient equipment, education, and training environment to assist users?

Perceived behavioral control affects behavior in two ways:

① Perceived behavioral control has motivational implications for behavioral intentions

Suppose an individual lacks resources and opportunities to complete a specific behavior. In that case, it is impossible to form a firm behavioral intention, even if he has a positive attitude towards the behavior and thinks that important people also favor it. Next, the same is true. In this case, the influence of perceived behavioral control on behavior is mediated through behavioral intentions (Ajzen & Madden, 1986).

② Perceived behavioral control can directly affect behavior

This situation needs to be established under two premises: one is that the behavior to be predicted is not under the control of willpower at all; the other is that the perceived behavioral control reflects a certain degree of actual power, and the perceived behavioral control does not need Through behavioral intentions, behavior can be directly influenced (Ajzen & Madden, 1986).

(6) Behavior Intention (BI)

The Theory of Planned Behavior maintains that individual behaviors come from behavioral intentions and behavioral intentions are mainly affected by individual behavioral attitudes, subjective norms, and perceived behavioral control (Ajzen, 1985). It means the individual's tendency and degree of action towards a specific behavior, that is, the psychological intensity in the decision-making process of personal behavior choice. The measurement method can be transformed into whether the individual is willing to try or pay and predict the individual's actual behavior. If the behavior is the more potent the intention, the higher the chances of carrying out the behavior.

Table 2.1 Definition of Theory of Planned Behavior

Dimension	Definition
Behavioral Attitude	Positive or negative feelings about the behavior
Behavioral Beliefs	A belief that engaging in a particular behavior may lead to specific outcomes
Result Evaluation	Comments on the result
Subjective Norm	Feelings of social pressure to engage in a particular behavior
Standard Belief	Perceives whether key stakeholders agree with the actions he explores
Obedience Motive	Whether a significant person has an expected willingness to comply when a particular behavior is taken
Perceived Behavioral Control	Subjective judgment of one's feasibility for performing a particular action
Control Belief	An individual's perception of their resources, opportunities, and capabilities for an activity
Convenience Perception	Awareness of resources, opportunities, or obstacles that one has
Behavioral Intention	A judgment on the subjective probability of taking a particular action
Behavior	The act of actually taking action

2.3.2 Relevant Research in the Field of Teaching

Wu (2007) studied the intentional model influencing junior high school natural science teachers to integrate information technology into teaching. The research results are as follows: Master teachers have a firm integration intention, followed by bachelor teachers, and doctor teachers are weak. Male teachers have greater perceptions of usefulness, ease of use, image, self-efficacy, and personal innovation than female teachers.

Yu (2010) analyzed the factors that affect preschool teachers' use of free software based on the theory of planned behavior. Taking Changhua County as an example, the research analysis concluded that male teachers are higher than female teachers in terms of attitude, perceived behavior control, and behavior in using free software.

Behavioral Intentions of Junior Middle School Teachers to Participate in

Professional Learning Communities—Taking the Theory of Planned Behavior as an Example. It is concluded that there are significant differences in the levels of subjective norms, perceived behavioral control, and behavioral intention among teachers with participation experience in different professional learning communities.

Chen (2018) took preschool teachers as an example and implemented willingness and influencing factors for teachers to integrate tabletop games into teaching. Its research found that attitude and perceived behavioral control positively impact teachers' desire to incorporate tabletop games into teaching. Perceived usefulness and perceived ease of use positively impact teachers' attitudes toward integrating tabletop games into teaching. The above research results are consistent with. The research hypotheses are consistent, and the hypothesis that subjective norms positively affect teachers' willingness to integrate tabletop games into teaching is not supported.

Attitude is the most critical factor affecting teachers' willingness to integrate tabletop games into teaching, and perceived ease of use is an essential factor affecting attitude.

Table 2.2 Relevant Research on the Application of the Theory of Planned Behavior in the Field of Teaching

Author/Year	**Research Topics**	**Research Object**	**Research Dimension**		
			Behavioral Attitude	**Subjective Norm**	**Perceived Behavioral Control**
Wu (2007)	Research on the Intentional Model of Influencing Junior Middle School Science Teachers Using Information Technology to Integrate Teaching	Junior high school teacher	0	0	0

Table 2.2 Relevant Research on the Application of the Theory of Planned Behavior in the Field of Teaching (continued)

Author/Year	Research Topics	Research Object	Research Dimension		
			Behavioral Attitude	Subjective Norm	Perceived Behavioral Control
Yu (2010)	Analysis of the Factors Affecting Preschool Teachers Using Free Software by Theory of Planned Behavior—Taking Changhua County as an Example	Preschool teacher	0	0	0
White (2012)	Behavioral Intentions of Junior Middle School Teachers to Participate in Professional Learning Communities Taking Theory of Planned Behavior as an Example	High school teacher	0	0	0
Chen (2018)	For the preschool teachers in Changhua County, as an example, the teachers' willingness to implement tabletop games into teaching and the influencing factors were investigated.	Preschool teacher	Behavioral attitude	subjective norm	perceived behavioral control

2.3.3 Related Research in Other Fields

Li (2012) used the theory of planned behavior to study the behavioral intentions of life insurance personnel towards the learning system and found that the behavioral attitudes, subjective norms, and perceived behavioral control of life insurance personnel using the learning network all have significant predictive power on the behavioral intentions of the learning network. Controls have greater predictive power.

Lin (2010) applied the planned behavior theory to explore bowling consumers' behavioral intentions. The study results showed that attitude and perceived

behavioral control will affect behavioral intentions, among which attitude has the most significant impact. The intention to play bowling decreases when the attitude is more optimistic. Will increase. However, subjective norms are negatively correlated with behavioral intentions, which may be related to the unique historical development of bowling in Yunnan.

Chen (2011) applied the theory of planned behavior to explore the riding behavior of mountain road cycling participants. The results showed that the proportion of male participants was higher than that of female participants, and the attitude, subjective norms, and perceived behavioral control of mountain road bike riding were significantly positively correlated with their beliefs. The prediction results for behavioral intentions showed that perceived behavioral control was higher than attitude, and Subjective norms did not reach a significant level.

Guo (2012) used the theory of planned behavior to explore consumers' willingness to buy healthy food. The research results showed that the theory of planned behavior did not work well in verifying the TPB model of consumers' purchase behavior of health food, and the identification attitude of health food positively affected consumers' purchase of health food. The cognitive intention of food is having a significant impact.

Xu (2014) used the Theory of Planned Behavior to explore the research on consumers' re-purchase of vegetarian products in Rounan District, Malaysia as an example; the study found that consumers' attitudes to purchasing vegetarian products are mainly based on the consideration of reducing animal slaughter and being able to help promote the awareness of natural ecological conservation, environmental protection groups and other groups have more significant influence on consumers' purchase of vegetarian food.

Lin (2013) used the research on the impact of gender on the purchase intention of gasoline-electric hybrid vehicles from the perspective of planned behavior theory. The results of the study and analysis showed that in the hybrid vehicle market in Yunnan, consumers' attitudes, subjective norms, and perceived behavior control all It will directly affect the purchase intention, especially the subjective specification, which has the most significant impact on the purchase intention of hybrid vehicles. In addition, male and female groups of different genders have different factors influencing

the purchase behavior of gasoline-electric hybrid cars.

Chen (2017) analyzed the purchase intention of long-term care insurance with the theory of planned behavior. The research shows that the perception of long-term care insurance significantly affects the purchase attitude, and the perceived purchase behavior control and purchase attitude significantly affect the final purchase intention.

Zheng (2017) used the theory of planned behavior to explore the relationship between parents' self-health awareness and willingness to buy organic snacks in the preschool education stage in the Hualien area. A study on parents' attitudes, subjective norms, perceived behavior control, self-health awareness, and organic snacks in purchasing organic snacks showed a significant correlation among purchase intentions, among which perceived behavioral control is the highest, followed by self-health awareness and subjective norm, and the lowest.

Chen (2018) used the theory of planned behavior to explore the purchase intention of souvenirs for overseas travel. The research found that when traveling abroad, one's attitude towards souvenirs and the control of perceived behavior have a positive and significant impact, positively affecting one's purchase intentions.

2.3.4 Technological Pedagogical Content Knowledge (TPACK)

The Technology-Pedagogical Content Information (TPACK) framework explains the knowledge teachers need to integrate technology into their teaching practices successfully. TPACK is a conceptual framework developed by Punya Mishra and Matthew Koehler. It emphasizes the interaction between three basic types of knowledge: Technological Knowledge (TK), Pedagogical Knowledge (PK), and Content Knowledge (CK).

Content Knowledge (CK) encompasses the teacher’s expertise in the subject matter they teach. It requires a deep and nuanced understanding of the discipline's content and knowledge structure. Educators must stay current with their field's latest developments and understandings to convey accurate and relevant information to their students.

Pedagogical Knowledge (PK): PK represents the methods and strategies of teaching and learning. It includes a broad range of educational practices that consider how students construct knowledge, the nature of the learning environment, classroom

management, lesson plan development, and learning assessment. This knowledge domain requires teachers to be reflective practitioners who continually assess and adapt their instructional strategies to meet the diverse needs of their learners.

Technological Knowledge (TK): In the TK domain, educators must be aware of various instructional technologies, including hardware and software. This knowledge extends beyond mere awareness; it is a comprehensive understanding of how these technologies function and how they can support learning objectives. Teachers must also possess the critical ability to select and use appropriate technological tools that align with educational goals.

Intersections of Knowledge： The second segment of TPACK focuses on the complex interrelations between the core domains, where the combined knowledge becomes more than the sum of its parts.

Technological Content Knowledge (TCK): At the intersection of CK and TK, educators explore how technology can represent and teach content in novel and effective ways. This may involve using digital simulations to explain scientific concepts or data visualization tools for historical analysis. It is about harnessing technology to provide learners diverse perspectives and an enriched understanding of the subject matter.

Technological Pedagogical Knowledge (TPK): The confluence of TK and PK demands that educators know about various technologies and how to embed them into teaching practices to enhance learning. This includes understanding different technologies' pedagogical affordances and constraints and the ability to design and manage digital learning environments.

Pedagogical Content Knowledge (PCK): PCK, the melding of CK and PK, is critical for effective teaching. It refers to the educator’s ability to convey content that is accessible and resonant with learners. This involves thoughtful instructional strategies considering learners’ prior knowledge, misconceptions, and the most effective ways to present new information.

The Holistic Convergence (TPACK)： The TPACK framework culminates in a holistic convergence of knowledge, where the integration of CK, PK, and TK is tailored to create the most effective and meaningful learning experiences.

Technological Pedagogical Content Knowledge (TPACK): This is the

central concept of the framework, which embodies a dynamic equilibrium between all three knowledge domains. It is about understanding and navigating the complex interplay between these areas to design instruction that delivers pedagogically sound and technologically enriched content. TPACK-equipped educators can identify the most appropriate technological tools and seamlessly integrate them into the curriculum to facilitate active, deep learning that is engaging, inclusive, and adaptive to the needs of all students.

As educators develop their TPACK capabilities, they become more adept at designing innovative and effective learning environments, ensuring technology integration enhances student learning outcomes rather than distracts them. The TPACK framework serves as a guide, inspiring educators to continuously reflect, adapt, and grow in their professional practice.

2.3.5 Summary

According to the literature analysis, applying tabletop games in teaching benefits students' motivation to learn and achieve learning goals. In addition, background variables have different research dimensions in various behaviors, producing different research results. Regarding planning, Behavioral theory is applied to the influence of behavioral intentions. Related literature indicates that behavioral attitudes and perceived control affect behavioral intentions, but some subjective norms do not. The specific question of this study is whether teachers' behavioral attitudes, subjective norms, and perceived behavioral control significantly impact the behavioral intentions of using tabletop games to integrate teaching. The improvement of students' learning motivation may be strengthened. Subjective norms refer to the principal's or parents' recognition of teachers' use of tabletop games in teaching. Perceived behavioral control refers to whether teachers have sufficient equipment and equipment when they want to use tabletop games in teaching. Education, training, and other environments are used to assist users. This study discovers the factors influencing teachers' intention to integrate tabletop games into teaching behavior.

CHAPTER III
RESEARCH METHODOLOGY

3.1 Research Design

The research design was quantitative. This study examines early childhood teachers' willingness to integrate tabletop games into their teaching. The research participants included individuals of various genders, ages, years of work experience, positions, and teaching subjects. Data were collected through an online survey questionnaire.

This study addresses the gap in understanding how tabletop games can be effectively integrated into early childhood education and identifies factors influencing teachers' willingness to adopt such methods. Relevant studies were reviewed to justify this research gap. Additionally, the study explores why this teaching approach is methodologically and behaviorally challenging for preschool teachers.

3.2 Collection Instruments

This research study employed a quantitative data collection and analysis questionnaire. This approach is widely accepted and utilized across various research fields. Wilkinson and Birmingham (2003) posited that questionnaires are a favored tool for many researchers, as they provide an inexpensive and effective means of collecting structured and manageable data. Questionnaires enable the collection of detailed information, covering diverse subjects while concentrating on a single significant area. Furthermore, the researcher or other individuals can administer questionnaires with minimal impact on their validity and reliability (Schmidt et al., 2009). Bauer and Gaskell (2000) and Cohen et al. (2000) maintained that questionnaires facilitate the collection of structured numerical data that can be generalized and administered by someone other than the researcher. Consequently, the formal questionnaire survey targeted teachers from preschool educational institutions in Kunming City, excluding those who participated in the pre-test questionnaire.

3.3 Research Framework and Hypothesis

This study collects data using questionnaires based on the theory of planned behavior proposed by Ajzen (1985). After referring to the literature, the researcher self-compiled and designed table games for preschool teachers to integrate into the influencing factors of teaching use intention and the current situation of teachers' use Questionnaire to investigate teachers' behavioral intentions to integrate tabletop games into teaching. Analyze whether their behavioral attitudes, subjective norms, perceived behavioral control, and behavioral intentions of using tabletop games in teaching have positive predictive power. This study also included personal background variables in the scope of the study, explored variables such as teachers' gender, age, years of experience, job title, teaching subjects, and previous use of tabletop games in teaching, and analyzed teachers' intentions of using tabletop games in teaching under different backgrounds whether there is a significant impact. The research structure is shown in Figure 3.1.

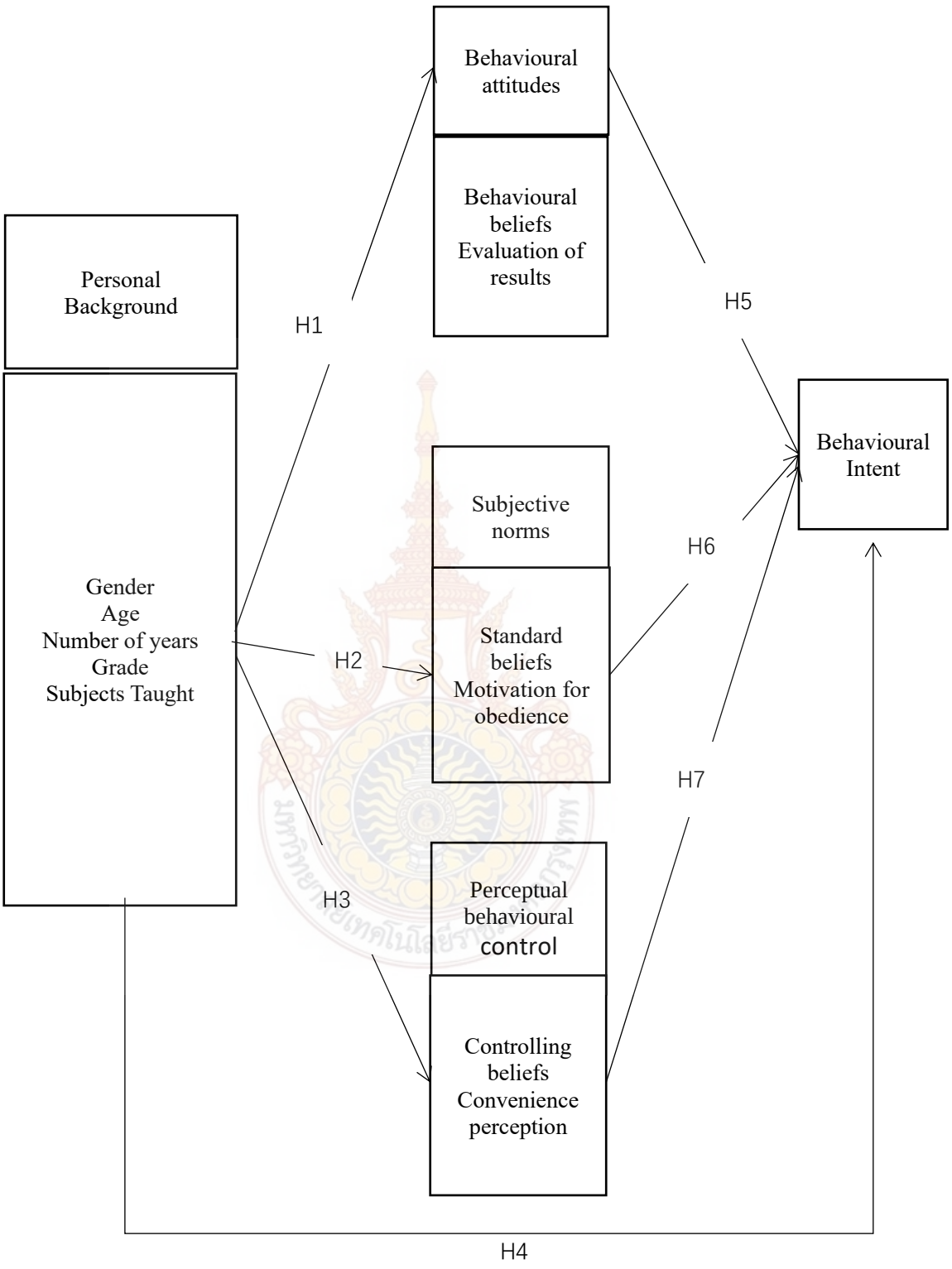

Figure 3.1 Research Architecture Diagram

Hypotheses are made for teachers' behavioral attitudes, subjective norms, and perceived behavioral control with different background variables. The research hypotheses are as follows:

H1: Teachers with different background variables significantly differ in their behaviors and attitudes towards using tabletop games to integrate into teaching.

H2: Teachers with different background variables significantly differ in the subjective norms of using tabletop games to integrate into teaching.

H3: Teachers with different background variables significantly differ in how they integrate tabletop games into the teaching of perceived behavioral control.

H4: Teachers with different background variables have significantly different behavioral intentions regarding integrating tabletop games into teaching.

H5: Whether the teacher's behavioral beliefs and outcome evaluation are significantly related to the behavioral intention of integrating tabletop games into teaching and can positively predict the behavioral intention of integrating tabletop games into teaching.

H6: Are teachers' standard beliefs and obedience motivation significantly related to the behavioral intention variables of tabletop games integration into teaching? Can they positively predict the behavioral intention of tabletop game integration into teaching?

H7: Whether teachers' control beliefs, convenience perception, and behavioral intentions of integrating tabletop games into teaching are significantly related and can positively predict behavioral intentions of integrating tabletop games into teaching.

3.4 Research Object

This study aims to understand the behavioral intentions of preschool teachers in Kunming to integrate tabletop games into teaching. The research takes public and private preschool teachers in Kunming as the parent group, including formal and substitute teachers. According to the statistical data of 2023 of the Statistics Office of the Ministry of Education, the number of preschool teachers in Kunming is 9,783. Regardless of whether the teachers have ever used tabletop games to integrate teaching, they are the subjects of this research. The behavioral intentions of teachers to incorporate tabletop games into teaching are investigated according to teachers'

different background variables.

3.4.1 Subjects of the Pre-test Questionnaire

To improve the feasibility of the questionnaire, this study conducted a pre-test of the questionnaire before conducting the formal test. Due to the test's limited time, workforce, and material resources, intentional sampling was used in the Xishan District, Kunming City preschool education stage. Teachers who integrate tabletop games into teaching are the pre-test objects. The questionnaires were filled out in written and anonymous form. During the questionnaire distribution period from July 1 to July 10, 2023, 20 questionnaires were distributed. After excluding unreturned and invalid questionnaires, 14 valid questionnaires were recovered. The effective recovery rate of the questionnaires was 70%.

3.4.2 Formal Questionnaire Subjects

In this study, a simple random sampling method is employed, a standard formula from statistical theory (Daniel, 2012) to determine the appropriate sample size:

1. Population size (N): This study's total number of teachers is 9,783.

2. Margin of error (e): The maximum permissible difference between the sample results and the population value. In this study, the margin of error is 5%.

3. Confidence level: The degree of confidence in the sample results. In this study, confidence levels were 95%.

4. Population standard deviation (σ): A measure of the dispersion of data points. Since the population data is unknown, an estimated value from a known sample or an approximate value (e.g., 0.5) can be used instead.

The required sample size can be calculated using the following formula:

$$n = (Z^2 \times \sigma^2 \times N) / ((e^2 \times (N - 1)) + (\sigma^2 \times Z^2))$$

Where Z values correspond to different confidence levels:

For a 95% confidence level: Z = 1.960

The required sample size can be obtained by substituting known values into the formula and calculating the necessary sample size based on the desired confidence level and margin of error (Lohr, 2019).

N = 9783

e = 0.05

Z = 1.960

$\sigma = 0.5$ (assumed)

$n = (1.960^2 \times 0.5^2 \times 9783) / ((0.05^2 \times (9783 - 1)) + (0.5^2 \times 1.960^2)) \approx 375$

Thus, approximately 375 teachers need to be sampled for the survey. If additional data is required, there is no need to remove any excess data. Using a larger sample may increase the accuracy and reliability of the survey. Studies with larger sample sizes tend to reduce sampling error, thus bringing sample statistics closer to population parameters and improving the precision of inferences (Lohr, 2019). Furthermore, in most cases, an increase in sample size extends the confidence interval length, making it closer to the population parameter (Cochran, 1977; Daniel, 2012).

3.5 Research Tools

The design of this questionnaire refers to the scales of Li (2012), Huang (2012) and Zhang (2015). After adjusting the relevant topics suitable for the school ecology and the teacher's teaching situation, they are revised and become the questionnaire scale of this study.

3.5.1 Pre-test Questionnaire Design

The pre-test questionnaire is divided into two parts. The first investigates teachers' background variables, and the second questions the teacher's intention to integrate tabletop games into teaching.

1) Questionnaire survey on personal background information

This research explores teachers' background variables, including gender, age, job title, years of experience teaching subjects, and tabletop games integration teaching experience, as shown in Table 3.1, with a total of 6 questions in the questionnaire. The subjects filled in the answers independently according to the actual situation.

Table 3.1 Questionnaire Survey on Teachers' Background Variables

Variable	Options
Gender	men and women
Age	Under 30 years old (inclusive), 31-35 years old (inclusive), 36-40 years old (inclusive), 41-45 years old (inclusive), 46-50 years old (inclusive), 51 years old (inclusive) and above
Number of Years	Less than 5 years (inclusive), 6 to 10 years (inclusive), 11 to 15 years (inclusive), 16 to 20 years (inclusive), 21 years (inclusive) or more
Position	Respect teachers in class, intermediate teachers, and senior teachers (including hourly substitutes acting substitutes)
Tabletop Games Integrated into the Teaching Experience	used, not used
Teaching Subjects	The subjects that teachers have used tabletop games to integrate into teaching are ( )

2) The intention of teachers to integrate tabletop games into teaching variables in this questionnaire, and a five-point Likert scale is adopted. Each item is divided into five equal points, ranging from very agree (5 points), agree (4 points), fair (3 points), disagree (2 points), and strongly disagree (1 point); the higher the score, the closer to the idea, the content of the questionnaire is as follows: The design of this questionnaire is the main factor affecting the behavioral intention defined by the theory of planned behavior, including behavioral beliefs and outcome evaluation in behavioral attitudes, standard beliefs and obedience motivation in subjective norms, and control beliefs and perceived behavioral control in perceived behavioral control. The pre-test questionnaire has a total of 39 questions, and the number of questions for each variable is 12 questions for behavior and attitude, 11 for subjective norms, 11 for perceived behavior control, and 5 for behavioral intentions.

3). Behavioral attitude subscale. The behavioral attitude subscale is divided into behavioral beliefs and outcome evaluation research variables, as shown in Table 3-3-2. There are 12 questionnaires. The behavioral belief variable questionnaire has 5 questions, and the outcome evaluation variable questionnaire has 7 questions.

Table 3.2 Subscale of Teachers' Attitude Towards Tabletop Games Integrating into Teaching Behavior

Research Variable	Questionnaire Topic	References
Behavioral Beliefs	1. I think using tabletop games in teaching can enhance my professional knowledge	Li (2012) Huang (2012) Zhang (2015)
	2. I think the use of tabletop games in teaching can improve the quality or effectiveness of my teaching	
	3. I think using tabletop games in teaching can improve my teaching quality	
	4. I think the use of tabletop games in teaching can improve students' learning interest or effectiveness	
	5. I think using tabletop games in teaching can enhance my value	
Result Evaluation	6. I think the integration of tabletop games into teaching is positive for personal career development	
	7. I think it is essential to use tabletop games in teaching to enhance my professional knowledge	
	8. I think it is essential to use tabletop games in teaching to improve the quality of my teaching	
	9. I think the use of tabletop games in teaching will enhance students' interest in learning	
	10. I think that the use of tabletop games in teaching will improve parents' trust in the quality of teaching	
	11. I think using tabletop games to integrate into teaching is very helpful for me in the teaching process	
	12. I think the process of using tabletop games in teaching is enjoyable	

4) Subjective Norm Subscale

The subscale of subjective norms is divided into standard beliefs and obedience motivation research variables, as shown in Table 3.3. There are 11 questionnaires. The standard belief variable questionnaire has 5 questions, and the obedience motivation variable questionnaire has 6 questions.

Table 3.3 Subscale of Teachers' Subjective Norms for Integrating Tabletop Games into Teaching

Research Variable	Questionnaire Topic	References
Standard Belief	13. The supervisor (Education Bureau, principal, or director) agrees that I use tabletop games to integrate teaching	Li (2012) Huang (2012)
	14. Colleagues agree that I use tabletop games to integrate into teaching	
	15. My students agree that I use tabletop games to integrate teaching	
	16. The parents of my students agree that I use tabletop games in teaching	
	17. Important people around me agree that I use tabletop games in teaching	
Obedience Motive	18. I will follow the supervisor's advice and use tabletop games to integrate into teaching	
	19. I will follow the advice of my colleagues and incorporate tabletop games into teaching	
	20. I will use tabletop games in teaching according to the needs of students	
	21. I will use tabletop games in teaching due to the suggestions of students' parents	
	22. Most of the media information shows that the integration of tabletop games into teaching is helpful to my teaching	
	23. Important people around me think that I should use tabletop games in teaching	

5) Perceived Behavioral Control Subscale

The Perceived Behavior Control subscale is divided into control belief and convenience perception research variables, as shown in Table 3.4. The questionnaire has 11 questions: 7 for the control belief variable and 4 for the convenience perception variable.

Table 3.4 Teachers' Perceived Behavioral Control Subscale of Tabletop Games Integrating into Teaching into Teaching

Research Variable	Questionnaire Topic	References
Control Belief	24. I think I am capable enough to incorporate tabletop games into teaching	Li (2012) Huang (2012) Zhang (2015)
	25. I think it is easy for me to incorporate tabletop games into teaching	
	26. Difficulty using it prevents me from incorporating tabletop games into my teaching	
	27. I am myself and want to incorporate tabletop games into teaching	
	28. I think I can fully integrate tabletop games into teaching	
	29. I will strive for opportunities to learn different tabletop games and integrate them into teaching	
	30. If there are no restrictions such as teaching aids or resources, I would like to learn to use various tabletop games to integrate into teaching	
Convenience Perception	31. There are enough tabletop games in school for me to use tabletop games in teaching	
	32. There are enough channels for language consultation or assistance when using tabletop games to integrate into teaching	
	33. When I encounter difficulties in integrating tabletop games into teaching, I can solve the problems by myself through channels such as the Internet or communities	
	34. I have many educational and training channels to learn how to integrate tabletop games into teaching	

6) Behavioral intention subscale

As shown in Table 3.5, the dimension of behavioral intention has 5 items.

Table 3.5 Subscale of Teachers' Intention to Integrate Tabletop Games into Teaching Behavior

Research Variable	Questionnaire Topic	References
Behavioral Intention	35. I am willing to try to incorporate various tabletop games into teaching	Li (2012) Huang (2012) Zhang (2015)
	37. Overall, I think I have a high willingness to use tabletop games in teaching	
	38. I would recommend to others to use tabletop games in teaching	
	39. In the next month, I am willing to look for tabletop games that are helpful to me to integrate into teaching	

3.5.2 Validity of the Pre-test Questionnaire

1) Questionnaire validity analysis process

After completing the first draft of the questionnaire, two scholars and experts were invited to provide comments on the content of the first draft of the questionnaire, to check whether the wording of the questionnaire content is appropriate, and to modify or delete the questions after discussions that may cause confusion, and to complete the validity of the questionnaire content. Then, conduct the face validity of the questionnaire, invite the current preschool teachers to conduct the questionnaire survey, check whether the wording of the questionnaire content is appropriate from the perspective of the preschool teacher, discuss the possible confusion, modify or delete the questions, and complete the questionnaire face validity. Finally, consult with the supervisor for the final confirmation of the questionnaire and complete the validity analysis.

2) Content validity

After the draft of the questionnaire was completed, two professors with a background in educational technology were invited to assist in filling out the expert questionnaire to help confirm its appropriateness, test the draft questionnaire, and evaluate whether its content is appropriate and in line with the research topic to ensure its content validity. The background of invited content experts and scholars is summarized in Table 3.6.

Table 3.6 List of Content Validity Experts and Scholars

Name	Position	Professional Field
A	Full professor Yunnan Open University	Educational Technology Theory and Research
B	Assistant Professor Yunnan Open University	Educational Technology Theory and Research

The revised opinions of the above two experts on the questionnaire on the intention to integrate tabletop games into teaching behavior are as follows:

1) For the fifth question in the first part of the questionnaire, if the wording needs to be clearly stated, there is no need to fill in the questionnaire if it has not been used before.

2) Modify the sentences for question 39 of the questionnaire to clarify the question's meaning.

3) Topics that do not need to be deleted.

(1) Face validity

To avoid improper wording in the questionnaire, which would cause the subjects to fail to understand the meaning of the questionnaire and cause incorrect answers, after completing the content validity and revising it, two formal teachers of preschool education in Kunming were invited to review it from the perspective of teachers themselves. Questionnaires (such as Annex 2) provide revision suggestions for the layout, content, and text description of the questionnaire so that the content of the questionnaire is more appropriate to the core of the question, and it also avoids misunderstandings caused by too many technical terms. Invite surface teaching experts to organize background 3.7.

Table 3.7 List of Face Validity Experts

Expert	Current Working Unit	Teaching Subjects
A	Kunming Yunbo Kindergarten	Preschool English teacher
B	Kunming Yunbo Kindergarten	Preschool physical education teacher

Summarize the opinions of two face validity experts on revising the questionnaire on the intention to use tabletop games in teaching.

In question 23 of the second part of the questionnaire, the researcher does not know who the important people around refer to. After careful discussion, it was agreed to use the term teaching partner to amend.

Question 26 in the second part of the questionnaire did not understand the definition of hindrance, so it was discussed that "hindrance" should be changed to "weaken" to clarify its meaning.

3.5.3 Reliability of the Pre-test Questionnaire

(1) Pre-test questionnaire administration and recovery

To improve the feasibility of the questionnaire, this study conducted a pre-test of the questionnaire before conducting the formal test. Due to the test's limited time, workforce, and material resources, intentional sampling was used in the Xishan District, Kunming City preschool education stage. Teachers who integrate tabletop games into teaching are the pre-test objects. The questionnaires were filled out in written and anonymous form. During the questionnaire distribution period from July 1 to July 10, 2023, 20 questionnaires were distributed. After excluding unreturned and invalid questionnaires, 14 valid questionnaires were recovered. The effective recovery rate of the questionnaires was 70%. After the preview questionnaire was recovered, the collected data were analyzed for the reliability of the questionnaire, and inappropriate items were deleted to compile a questionnaire on the intention of preschool teachers in Kunming to integrate tabletop games into teaching behavior.

(2) Reliability analysis of the pre-test questionnaire

Reliability refers to the stability of the measurement results. The higher the reliability, the higher the similarity and the more consistent or stable the measurement

results are (Qiu, 2011). In this study, the Cronbach α coefficient was used to evaluate the reliability of each dimension and the consistency and stability of the items in each dimension in the questionnaire. The Cronbach α coefficient is suitable for use in the Lix scale, and the higher the value of the Cronbach α coefficient, the better the scale's internal consistency. According to Cuieford (1965), the Cronbach's α value of each dimension is above .70, indicating that the questionnaire has good reliability.

(3) Sorting out the reliability of the questionnaire

A total of 14 questionnaires were deducted from the questionnaires for this study, and the incomplete and valid pre-test questionnaires were filled out. The number of female subjects in this pre-test is 10, and the number of males is 4; the age ratios are: 2 people under the age of 30 (inclusive), 5 people under the age of 31-35, 36 years old - 2 people under the age of 40; 3 people under the age of 41-45; 2 people over the age of 51. The current number of posts is mainly senior teachers, with 7 people. There have been 12 teachers currently (or once) using tabletop games in teaching. The subjects that tabletop games are used in teaching are 3 each for mathematics, comprehensive, and English, 2 for Chinese, and 1 for society, counseling, and physical education. The samples are arranged in the following table 3.8.

Table 3.8 Analysis of Individual-Related Factors

	Background Variables	**Number of People**	**Percentage (%)**
Gender	male	4	28.6
	female	10	71.4
Age	Under 30 (inclusive) years old	2	14.3
	31-35 years old	5	35.7
	36-40 years old	2	14.3
	41-45 years old	3	21.4
	46-50 years old	0	0
	51 years old (inclusive) and above	2	14.3
Teaching Years	5 years (inclusive) or less	1	7.1
	6 years to 10 years (inclusive)	6	42.9
	11 years to 15 years (inclusive)	4	28.6
	16 to 20 years (inclusive)	2	14.3

Table 3.8 Analysis of Individual-Related Factors (continued)

	Background Variables	Number of People	Percentage (%)
	21 years (inclusive) and above	1	7.1
Current Position	Class respect teacher	4	28.6
	Intermediate teacher	3	21.4
	Advanced teacher	7	50.0
Tabletop Games Integrated into the Teaching Experience	not yet used	2	14.3
	Currently (or used to) use tabletop games for teaching	12	85.7
Teaching Subjects	Math	3	214
	Comprehensive	3	21.4
	English	3	21.4
	Mandarin	2	14.2
	Society	1	7.1
	Fu Zun	1	7.1
	Physical Education	1	7.1

The research teacher's use of tabletop games to integrate the teaching behavior intention questionnaire is divided into 4 subscales: behavioral attitude subscale, subjective norm subscale, perceived behavior control subscale, and behavior intention subscale 3 scales. The dimensions of the behavioral attitude scale include behavioral beliefs and outcome evaluation, the dimensions of the subjective norm scale include standard beliefs and obedience motivation, and the dimensions of the perceived behavioral control scale include control beliefs and perception of convenience.

The questionnaire adopts a Likert-type five-point scale for scoring. 5= strongly agree, 4= agree, 3= Neutral, 2= disagree, and 1= strongly disagree; in the questionnaires of each subscale, the average score of behavioral attitude subscale is 3.88, the average score of subjective norm subscale is 3.79, the average score of perceived behavioral control subscale is 3.66. The average score of the behavioral intention subscale was 4.07. In the behavioral attitude subscale, the average score of the behavioral belief dimension is 3.87, and the average score of the result evaluation dimension is 3.88; in the subjective norm subscale, the average score of the standard belief dimension is 4.03, and the average score of the obedience motivation dimension

is 3.58; in the subscale of perceived behavioral control, the average score of the control belief dimension is 3.77, and the average score of the convenience perception dimension is 3.38. The analysis and explanation of each dimension are as follows, as shown in Table 3.9 and Table 3.10.

Table 3.9 Analysis of the Questionnaire Scale Level of Teachers Using Tabletop Games to Integrate Teaching Behavior Intention

	Number of Questions	**Average**	**Standard Deviation**	**To Sort**
Behavioral Attitude Subscale	12	3.88	0.43	
Behavioral Beliefs	5	3.87	0.52	2
Result Evaluation	7	3.88	0.42	1
Subjective Norm Subscale	11	3.79	0.49	
Standard Belief	5	4.03	0.41	1
Obedience Motive	6	3.58	0.72	2
Perceived Behavioral Control Subscale	11	3.66	0.44	
Control Belief	7	3.77	0.40	1
Convenience Perception	4	3.38	0.73	2
Behavioral Intentions Subscale	5	4.07	0.54	

Table 3.10 Reliability Analysis of Each Dimension

Variable (dimension)	**Number of Questions**	**Cronbach's Value**
Behavioral Attitude Subscale	12	.85
Behavioral Beliefs	5	.75
Result Evaluation	7	.75
Subjective Norm Subscale	11	.84
Standard Belief	5	.74
Obedience Motive	6	.87
Perceived Behavioral Control Subscale	11	.76
Control Belief	7	.64
Convenience Perception	4	.77

Table 3.10 Reliability Analysis of Each Dimension (continued)

Variable (dimension)	Number of Questions	Cronbach's Value
Behavioral Consciousness Subscale	5	.81

The internal consistency reliability coefficient (Cronbach's α) of each subscale of the questionnaire on teachers' use of tabletop games in teaching behavior questionnaire is between .64 and .81, and the reliability value of the overall scale is .94, which belongs to the high reliability. The scale has high internal consistency, reliability, and stability, as shown in Table 3.11.

Table 3.11 Total Dimension Reliability Statistics (Cronbach's α Value)

Variable (dimension)	Cronbach's Value	Dimension Questions
Questionnaire scale of teacher's use of table avoidance to integrate teaching behavior intention	.94	.39

The pre-test data of this study used the three statistics of the extreme group test, the total correlation of the corrected items, and the Cronbach's α value when the item was deleted to analyze the items, and obtained the decision value, correlation coefficient, and Cronbach's α value of each item as the selected items—the basis of the question.

1) Extreme group test

Through the extreme group comparison method, the total score of the pre-sample in the scale is divided into a high group and a low group (each accounting for 25%). Then, the two extreme groups are used as independent variables based on the scores of individual items. In an Independent sample t-test for variables, the scores of discriminative items in the two extreme groups should have a significant difference; the deletion standard set in this study is that the considerable level of the item is up to ($p>.05$) and the decision value (Critical Ratio, CR) is lower than 3 (Wu, 2013). It can be seen from Table 3.12 that, among the 12 items of the Behavioral Attitude Subscale, except Items 1, 6, 10, and 11; Table 3.13, except for Items 14, Questions 16, 17, and 23; Table 3.14 Perceived Behavioral Control Subscale 11 items except Questions 26, 27,

29, 30, 31, and 32; Table 3.15 Behavioral Intention Subscale Except for the 36th question, among the 5 items, all reached the statistically significant level ($p<.05$) and the cutoff value was more important than 3, the other items had good discrimination.

2) Correlation analysis and Cronbach's α value when items are deleted

The revised item and total score correlation method calculates the Pearson product difference correlation coefficient between each item and the sub-dimension total score (DeVellis, 1998). When the Cronbach's α value when the item is deleted is greater than the Cronbach's α value of the dimension, and the total correlation of the corrected items is also lower than .3, its contribution to the Cronbach's α value is low. If the correlation is low, the item can be considered for deletion. Therefore, the standard for multiple-choice items in this study is that the correlation coefficient between the revised items and the total score of the scale must be above .3. It can be seen from Table 3.12 that except for the 6th and 10th items of the behavioral attitude subscale, the correlation between the rest of the items and the total score of each aspect of the questionnaire on teachers' use of tabletop games into teaching behavior intention is higher than .3 marked value. In this questionnaire dimension, Cronbach's α value of the behavioral attitude subscale is .85, Cronbach's α value of the subjective norm subscale is .84, Cronbach's α value of the perceived behavioral control subscale is .76, and the behavioral intention. The Cronbach's alpha value of the subscale is .81. The Cronbach's α value when the 12 items of the behavioral attitude subscale are deleted except items 6 and 10; the Cronbach's α value when the items of the 11 items of the subjective norm subscale are deleted except items 17 and 23. The Cronbach's α value when the 11 items of the perceived behavioral control subscale are deleted except items 26 and 31. The Cronbach's α value when the 5 items of the behavioral intention subscale are deleted except item 36. The remaining items are all lower than the total Cronbach's α value of each dimension, indicating that the reliability of each item is higher than the total Cronbach's α value of each dimension, which has a high degree of credibility. Based on the analysis results of the above items, the items that can be reserved in this pre-test questionnaire are retained. Then, the construct validity analysis (exploratory factor analysis) is continued.

Table 3.12 Summary Table of Analysis and Summary of Pre-test Items of Behavioral Attitude Subscale (High and Low Grouping Test)

	Behavior Belief Cronbach's α =.75	**Extreme Group Test (CR Value)**	**Corrected Total Items Correlation**	**Cronbach Alpha on Item Deletion**
1.	I think using desk avoidance to integrate teaching can improve my professional knowledge	.61	.40	.74
2.	I think using table avoidance to integrate teaching can improve the quality or effectiveness of my teaching	3.39**	.70	.65
3.	I think using table avoidance to integrate into teaching can improve my teaching quality	3.25**	.58	.67
4.	I think using table avoidance to integrate teaching can improve students' learning interests or effectiveness	4.79**	.37	.75
5.	I think using standard avoidance to integrate teaching can enhance my value	4.66**	.57	.68
	Result Evaluation Cronbach's α=.75			
6.	I think that the use of table avoidance in teaching will have a positive effect on personal career development	.61	.20	.77
7.	I think it is important to use table avoidance to integrate teaching to improve my professional knowledge	3.50*	.57	.69
8.	I think it is important to use table avoidance to integrate teaching to improve the quality of my teaching	3.21**	.66	.67
9.	I think the use of standard avoidance in teaching will enhance students' interest in learning	4.00*	.49	.71
10.	I think the use of table avoidance in teaching will improve parents' trust in the quality of teaching	1.74	.21	.77
11.	I think using table avoidance to integrate into teaching is very helpful for me in the teaching process	1.73	.59	.69
12.	Using standard avoidance to integrate into the teaching process is pleasant.	3.33**	.55	.70

Note 1: *p<.05, **p<.01

Table 3.13 Summary Table of Analysis and Summary of Pre-test Items of Subjective Norm Subscale (high and low grouping test)

		Extreme Group Test (CR Value)	Corrected Total Items Correlation	Cronbach α on Item Deletion
	Tree rate belief Cronbach's α=.74			
13.	The supervisor (education bureau, principal, or director) agrees that I use tabletop games to integrate teaching	3.83**	.58	.74
14.	My colleagues agree that I integrate tabletop games into teaching.	1.58	.65	.66
15	My students agree with my use of tabletop games in teaching	3.17*	.77	.58
16.	Parents of my students approve of my use of tabletop games in teaching	1.45	.57	.68
17.	Important people around me agree that I use tabletop games in teaching	1.49	.39	.76
	Obedience motivation Cronbach's α=.87			
18.	I will follow the supervisor's advice and use tabletop games to integrate into teaching	3.65**	.82	.82
19.	I will follow the advice of my colleagues to incorporate tabletop games into teaching	5.60**	.93	.79
20.	I will use tabletop games to teach according to the needs of the students.	3.78*	.65	.86
21	I will use tabletop games in teaching based on the suggestions of the students' parents.	5.26**	.57	.86
22	Most of the media news shows that integrating standard avoidance into teaching is helpful to my teaching.	6.32**	.65	.85
23	My school teaching partner thinks I should use desk avoidance to integrate into teaching.	1.72	.47	.88

Note 1: *p<.05, **p<.01

Table 3.14 Summary Table of Analysis and Summary of Pre-Test Items of Perceptual Behavior Control Subscale (High And Low Grouping Test)

	Extreme Group Test (CR Value)	**Corrected Total Items Correlation**	**Cronbach α on Item Deletion**
Controlling belief Cronbach's α=.64			
I think I have enough ability to use desk avoidance to integrate into teaching	3.16*	.58	.55
I think it is easy for me to incorporate table avoidance into teaching	4.59**	.71	.48
When I encounter difficulties in teaching with tabletop games, it will weaken my idea of using tabletop games to integrate into teaching	0.59	.33	.83
I want to use tabletop games in teaching by myself	1.29	.61	.53
I think I can fully integrate tabletop games into my teaching	3.53**	.32	.62
I will strive for opportunities to learn different tabletop games while teaching	0.82	.51	.56
If there are no restrictions, such as teaching aids or resources, I would like to learn to use various tabletop games to integrate into teaching.	1.69	.53	.54
Convenience Perception Cronbach's α=.77			
The school has enough tabletop games for me to use in teaching	1.52	.45	.79
When using standard avoidance to integrate into teaching, there are enough channels for language consultation or assistance	1.73	.61	.70
When I encounter difficulties in using desk avoidance to integrate into teaching, I can solve the problem by myself through channels such as the Internet or the community	5.23**	.70	.65
I have many educational training channels to learn to use table avoidance in teaching.	4.66**	.55	.72

Note 1: *p<.05, **p<.01

Table 3.15 Behavioral Intention Subscale Pre-Test Item Analysis Summary Table (High And Low Grouping Test)

	Extreme Group Test (CR Value)	**After Correction Total Number of Items Related**	**Cronbach Alpha on Item Deletion**
Behavioral Intent Cronbach's α = .81			
I am willing to try to integrate various tabletop games into teaching	3.92*	.55	.78
I am willing to try more tabletop games in different subjects to integrate into teaching and use them in teaching	1.73	.43	.82
Overall, I think I have a high willingness to use tabletop games in teaching	6.53**	.76	.71
I would recommend the use of tabletop games in teaching to others	5.76**	.62	.76
In the future, I am willing to find other desk avoidances that are helpful to my teaching in order to carry out desk avoidance integration teaching.	3.82**	.62	.76

Note 1: *p<.05, **p<.01

The Behavioral Attitude subscale in this study underwent exploratory factor analysis using the Maximum Likelihood (ML) and Promax pivot methods. Before removing any items, the sampling appropriateness measure indicated by the Kaiser-Meyer-Olkin (KMO) value was 0.59, suggesting suitability for factor analysis. The Bartlett spherical test showed an approximate chi-square distribution with a value of 98.98 and 66 degrees of freedom, yielding a highly significant p-value of <.001, indicating that the 12 items in the Behavioral Attitude subscale share common factors and that the data are suitable for factor analysis.

With an explanatory variability of 53.20%, two eigenvalues greater than 1 were extracted. Item deletion followed the criteria proposed by Tabachnick and Fidell in 2007, where items with factor loadings less than 0.32 were considered unsatisfactory, as they explained less than 10% of the observed variation. Consequently, two questions, precisely the 6th and 10th questions, were removed from the preliminary factor analysis. These two questions exhibited a low correlation with the overall scale score in the item

analysis, measuring below 0.3, indicating their weak association with the 10-item scale. Furthermore, during exploratory factor analysis, these two questions were assigned to different factors than initially designed according to the literature, warranting their deletion. Following the removal of these items, the Behavioral Attitude subscale retained a total of 10 items.

Table 3.16 Factor Analysis of Behavioral Attitude Subscale

Question Number	**Factor**	
	1	**2**
A1	.126	.410
A2	.376	.750
A3	.235	.664
A4	.837	.072
A5	.181	.772
A6	.008	.533
A7	.484	.397
A8	.575	.331
A9	.863	-.082
A10	-.061	.436
A11	.500	.402
A12	.780	.313

Table 3.17 Factor Analysis of Subjective Norm Subscale

Exploratory Factor Analysis Loading Matrix Summary Table		
Question Number	**Factor**	
	1	**2**
A13	-.064	.417
A14	.088	.832
A15	.269	.814
A16	.129	.630
A17	.299	.357
A18	.832	.021

Table 3.17 Factor Analysis of Subjective Norm Subscale

Exploratory Factor Analysis Loading Matrix Summary Table		
Question Number	**Factor**	
	1	**2**
A19	.979	.226
A20	.658	416
A21	.561	.259
A22	.700	.154
A23	.605	-.202

Table 3.18 Factor Analysis of Perceived Behavioral Control Subscale

Exploratory Factor Analysis Loading Matrix Summary Table		
Question Number	**Factor**	
	1	**2**
A24	.394	.570
A25	.631	.640
A26	.144	-.396
A27	.003	.598
A28	.271	.392
A29	-.072	.806
A30	.320	.722
A31	.369	.152
A32	.510	-.194
A33	.995	.089
A34	.760	.051

According to the statistical data from "Wen Juan Xing" (an online survey platform), the Perceived Behavioral Control subscale used in this study was evaluated using the method of Maximum Likelihood (ML) and the Promax axis method in exploratory factor analysis. The sampling appropriateness measure (Kaiser-Meyer-Olkin, KMO) value of the preliminary factor analysis before deleting the question is

0.33, which can be used for factor analysis; the approximate chi-square distribution of the Bartlett spherical test is 90.57, and the degree of freedom is 55, which is significant the probability value is p<.001, reaching a considerable level, explaining the variability of 48.78% and extracting two eigenvalues with large.

For factors less than 1, the item deletion standard is based on the item deletion standard proposed by Tabachnica and Fidell in 2007. The factor loading is less than 0.32, which means that this factor explains less than 10% of the observed variation, which is an unsatisfactory situation, so this item is deleted. Delete question 26 for preliminary factor analysis. During factor analysis, the factor loading of this question is less than 0.32, so delete this question. Ten items are reserved for the overall scale. The factor structure is divided into two new factors, named the first factor: control belief and the second factor: convenience perception motivation.

Table 3.19 Factor Analysis of Behavioral Intent Subscale

Exploratory Factor Analysis Loading Matrix Summary Table	
Question Number	**Factor**
	1
A35	.713
A36	.591
A37	.884
A38	.781
A39	.781

The behavioral intention subscale used in this study was assessed using principal components analysis (PCA) on exploratory factor analysis. The sampling appropriateness measure (Kaiser-Meyer-Olkin, KMO) value of the preliminary factor analysis before deleting the question is 0.63, which can be used for factor analysis; the approximate chi-square distribution of the Bartlett spherical test is 21.66, and the degree of freedom is 10, which is significant the probability value is p<.001, reaching a significant level; the explanatory variation is 57.18%, and a factor with an eigenvalue greater than 1 is extracted. After preliminary factor analysis, 5 items were reserved for

the overall scale. A factor is extracted and named the behavioral intention factor.

3.6 Research Process

This section describes the research process, from the background and purpose to collecting and arranging relevant literature and planning to establish the research structure and questionnaire topic design. After the actual questionnaire survey, the data were analyzed statistically to obtain the research results, and finally, the research conclusions and recommendations were put forward.

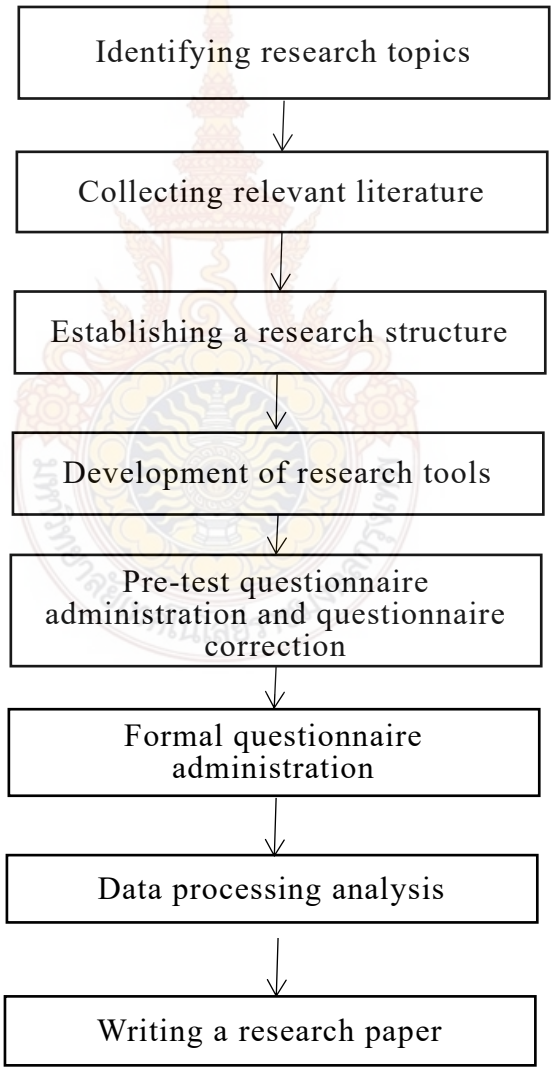

Figure 3.2 Research Process

3.7 Data Analysis

In this study, the questionnaires were recovered and sorted for data analysis, and the sorted data were discussed and analyzed through SPSS for Windows 21.0 software. The statistical methods used are as follows.

3.7.1 Descriptive Statistics

Based on the questionnaire data filled out by the tested teachers, the arithmetic mean, standard deviation, percentage, and other descriptive statistics are used to analyze the teachers' gender, age, years of experience, job title, teaching subjects, and whether they have used it under different background variables—distribution situation.

3.7.2 Inferential Statistics

1) Independent sample t-test

Whether the mean of the dependent variable of two different samples differs due to the difference of the independent variable, this study uses the independent sample t-test to analyze whether there are significant differences in the behavioral attitudes, subjective norms, and perceived behavioral control of teachers of different genders for integrating tabletop games into teaching. Whether there are substantial differences in factors such as behavioral attitude, subjective norms, and perceived behavioral control integrated into teaching.

2) One-way ANOVA

One-way analysis of variance can test whether the mean of the dependent variable of three or more groups will be different due to the difference of a variable. In this study, the single factor variance is used to analyze whether there are significant differences between different ages, job titles, years of experience, and teaching subjects on teachers' behavioral attitudes, subjective norms, and perceived behavioral control when integrating tabletop games into teaching.

3) Correlation analysis

Correlation analysis can be used to measure the strength relationship between two variables. In this study, Pearson product difference correlation is used to estimate whether each research dimension is related by correlation coefficient, and the results are checked to verify whether the hypothesis of this study is met.

4) Stepwise regression analysis method

Using the stepwise regression analysis method can establish the variable relationship between the independent variable and the dependent variable, and the standardized regression coefficient can understand the degree of mutual influence between each variable. This study used the stepwise regression method to analyze the impact of behavioral attitude, subjective norm and perceived behavioral control on each variable and to understand the relationship with behavioral intention.

CHAPTER IV
ANALYSIS RESULT

4.1 Research Finding

This chapter performs the statistical analysis using an independent sample t-test, one-way ANOVA, and multiple regression. Finally, a summary of all hypotheses testing was also provided. The analysis of data and interpretation use statistics symbols and meanings as follows:

N	=	number of Population
n	=	number of Sample
X	=	Mean
SD	=	Standard Deviation
t	=	t-Distribution
F	=	F-Distribution
df	=	Degree of freedom
LSD	=	Least Significant Difference
Sig	=	the level of statistics significance to test the hypothesis
*	=	The statistical significance is at the 0.05 level

This study takes preschool teachers in Kunming as the research object. During the questionnaire distribution period from March 1 to March 28, 2024, 650 valid questionnaires were sent out, and 536 valid questionnaires were recovered, with an effective recovery rate of 83%. This section mainly organizes the background data of the subjects who have effectively recovered the questionnaires, including five variables such as gender, age, years of experience, position, and tabletop games teaching subjects. It analyzes the basic data of the questionnaire samples. Variables are described below.

4.1.1 Demographic Data

Gender: The subjects are mainly female teachers, 423 people, accounting for 78.9 % of the valid sample number; 113 male teachers, accounting for 21.10 % of the valid sample number.

Table 4.1 Gender Factor Analysis Table

Item	Frequency	Percentage	Cumulative Percentage
Female	423	78.9	78.9
Male	113	21.1	100
Total	536	100	

Age: In terms of the age distribution of the subjects, 178 (33.20 %) were under the age of 30, followed by 135 (25.20 %) under the age of 31-35, and 51 (Inclusive) the minimum number of people is 25 (4.70 %).

Table 4.2 Age Factor Analysis Table

Item	Frequency	Percentage	Cumulative Percentage
under 30 years old	178	33.20	33.20
31-35 years old	135	25.20	58.40
36-40 years old	89	16.60	75
41-45 years old	86	16	91
46-50 years old	23	4.30	95.30
over 51 years old	25	4.70	100
Total	536	100.00	

Teaching Years: The number of subjects ranges mainly from 6 years to 10 years (inclusive), with 116 (21.60 %) being the most. The lowest number is less than 5 years, 92 people (17.20 %).

Table 4.3 Analysis Table of Factors of Teaching Years

Item	Frequency	Percentage	Cumulative Percentage
under 5 years	92	17.20	17.20
6 years to 10 years	116	21.60	38.80
11 to 15 years	111	20.70	59.50
16 years to 20 years	112	20.90	80.40
21+ years	105	19.60	100.00
Total	536	100.00	

Position: In terms of the proportion of teachers' posts in the subjects, there are 221 junior teachers (41.20 %), 215 middle-level teachers (40.10 %), and 100 senior teachers (18.70 %). The number of junior teachers is the largest.

Table 4.4 Job Factor Analysis Table

Item	Frequency	Percentage	Cumulative Percentage
Junior teacher	221	41.20	41.20
Intermediate teacher	215	40.10	81.30
advanced teacher	100	18.70	100.00
Total	536	100.00	

Integration into subjects: Among the practical subjects, the subjects that have used tabletop games to integrate into teaching are mainly physical education, with a total of 124 (23.10 %), followed by music, with a total of 107 (20%), and the least integrated subject is language, with a total of 17 (3.20 %).

Table 4.5 Analysis Table of Subject Factors for Tabletop Games Integration into Teaching

Item	Frequency	Percentage	Cumulative Percentage
literacy	28	5.20	5.20
language	17	3.20	8.40
math	106	19.80	28.20
English	28	5.20	33.40
physical education	124	23.10	56.50
art	28	5.20	61.80
music	107	20	81.70
manual	21	3.90	85.60
dance	22	4.10	89.70
Pinyin	55	10.30	100.00
Total	536	100.00	

4.1.2 Descriptive Statistics of Variables

In this study, the questionnaire on teachers' use of tabletop games in teaching behavior intention is divided into four subscales: behavioral attitude, subjective norm, perceived behavioral control, and behavioral intention. The dimensions of the behavioral attitude scale include behavioral beliefs and outcome evaluation, the dimensions of the subjective norm scale include standard beliefs and obedience motivation, and the dimensions of the perceived behavioral control scale include control beliefs and perception of convenience.

The questionnaire adopts a Likert-type five-point scale for scoring. 5= strongly agree, 4= agree, 3= Neutral, 2= disagree, and 1= strongly disagree; in the questionnaires of each subscale, the average score of the behavioral attitude subscale was 4.18, the average score of the subjective norm subscale was 3.92, the average score of the perceived behavioral control subscale was 3.73, and the average score of the behavioral intention subscale The score is 4.21, and the analysis and explanation of each dimension are as above.

In the behavioral attitude subscale, the average score of the behavioral belief dimension was 4.17, and the average score of the result evaluation dimension was 4.19; in the subjective norm subscale, the average score of the standard belief dimension was 4.12, and the average score of the obedience motivation dimension was 3.75; in the subscale of perceived behavioral control, the average score of the control belief dimension is 4.02, and the average score of the convenience perception dimension is 3.31. The analysis of the answers of each dimension is shown in Table 4.6.

Table 4.6 Analysis of the Scale Level of the Questionnaire of Teachers' Intention to Integrate Tabletop Games into Teaching Behavior

	Number of Questions	**Average**	**Standard Deviation**	**To sort**
Behavioral attitude subscale	**10**	**4.18**	**0.56**	
behavioral beliefs	5	4.17	0.55	2
result evaluation	5	4.19	0.64	1
Subjective norm subscale	**9**	**3.92**	**0.53**	

standard belief	4	4.12	0.62	1

Table 4.6 Analysis of the Scale Level of the Questionnaire of Teachers' Intention to Integrate Tabletop Games into Teaching Behavior (continued)

	Number of Questions	Average	Standard Deviation	To sort
obedience motive	5	3.75	0.68	2
Perceived Behavioral Control Subscale	**10**	**3.73**	**0.69**	
control belief	6	4.02	0.78	1
convenience perception	4	3.31	0.84	2
Behavioral Circle Scale	**4**	**4.21**	**0.73**	

4.2 Hypothesis Verification

4.2.1 Analysis of Differences in Teachers' Behaviors and Attitudes Toward Using Tabletop Games to Integrate Teaching with Different Background Variables

H1_1: Analysis of differences in behavior and attitudes of different genders who have used tabletop games to integrate into teaching

According to the analysis results, whether teachers of different genders had significant differences in each behavioral attitude scale model dimension, in terms of behavioral beliefs, the average score of female teachers is 4.16; the average score of male teachers is 4.19. Gender did not differ significantly in behavioral belief scores (t (351) =-.48, p=.63). Regarding outcome evaluation, the average score of female teachers is 4.27, and the average score of male teachers is 4.02. Gender has a significant difference in outcome evaluation scores (t (351) =3.55, p<.01), indicating that female teachers have significantly higher scores than male teachers in the dimension of outcome evaluation. Overall, the average score for female teachers was 4.21; the average for boys was 4.10. There were no significant differences between genders in the total scale scores (t (351) =1.74, p=.08). The sorting results are shown in Table 4.7.

Table 4.7 Behavior and Attitude Subscale of Teachers of Different Genders t-test

	Gender	Number of People	Average	Standard Deviation	t-value	p-value
Behavioral beliefs	female	423	4.16	0.54	-.48	.63
	male	113	4.19	0.58		
Result evaluation	female	423	4.27	0.57	3.55**	<.01
	male	113	4.02	0.72		
Total scale	female	423	4.21	0.53	1.74	0.08
	male	113	4.10	0.62		

Note 1: *p<.05, **p<.01

H1_2: Analysis of differences in behavior and attitudes of different ages who have used tabletop games to integrate into teaching

Taking the teacher's age as the independent variable, a single-factor analysis of variance was performed on each dimension of the subscale model of the behavior and attitude of teachers using tabletop games in teaching. It is found that behavioral beliefs, dimensions of outcome evaluation, and total scales are significantly different for teachers of various ages. It can be explained that the behavior and attitude of teachers towards integrating tabletop games into teaching will have significant differences due to their different ages. According to Scheffé's post-event comparison, regarding age variables, the average value of behavioral beliefs, outcome evaluations, and total scales for those aged 41-45 were significantly higher than those aged 36-40 and the average of the total scale. The sorting results are shown in Table 4.8.

Table 4.8 Significance Analysis of Teachers' Behavior and Attitude Subscales of Different Ages

	Age	Number of People	Average	Standard Deviation	F value	p-value	Hindsight Comparison
Behavioral beliefs	A	178	4.31	0.51	3.69**	<.01	D>C
	B	135	4.11	0.57			
	C	89	4.04	0.55			
	D.	86	4.35	0.54			
	E.	23	4.13	0.52			

Table 4.8 Significance Analysis of Teachers' Behavior and Attitude Subscales of Different Ages (continued)

	Age	Number of People	Average	Standard Deviation	F value	p-value	Hindsight Comparison
Result evaluation	F	25	4.30	0.32	3.07	0.01	D>C
	A	178	4.29	0.58			
	B	135	4.13	0.71			
	C	89	4.05	0.59			
	D	86	4.38	0.72			
Total scale	E	23	4.23	0.38	3.68**	<.01	D>C
	F	25	4.50	0.11			
	A	178	4.30	0.53			
	B	135	4.12	0.61			
	C	89	4.05	0.52			
	D	86	4.36	0.59			
	E	23	4.18	0.44			
	F	25	4.40	0.21			

Note 1: A = under 30 years old; B = 31 years old - under 35 years old; C = 36 years old - under 40 years old; D = 41 years old - under 45 years old; E = 46 years old - under 50 years old; F = 51 years old (Including) above
Note 2: *p<.05, **p<.01

H1_3: Analysis of differences in behavior and attitudes among those who have used tabletop games for different years to integrate into teaching

Taking the teacher's years as the independent variable, a single-factor analysis of variance was performed on each dimension of the behavioral attitude subscale model of the teacher's use of tabletop games in teaching. It was found that there are significant differences in behavioral beliefs, dimensions, and total scales of outcome evaluation for teachers with different years of experience. It can be explained that teachers' behavioral attitudes will significantly differ in behavioral beliefs, dimensions of outcome evaluation, and overall scales due to their different years of experience. According to Scheffé's post-event comparison, in terms of behavioral beliefs, dimensions of outcome evaluation, and scores of the total scale, the average number of years under 5 years (inclusive) was significantly higher than that of 6 to 10 years (inclusive); Dimensions and scores of the total scale, the average number of years between 16 and 20 years (inclusive) was significantly higher than that of 6 to 10 years (inclusive); The average is significantly higher than that for years 11 to 15, inclusive. The sorting results are shown in Table 4.9.

Table 4.9 Significance Analysis of the Behavior and Attitude Subscale of Teachers with Different Teaching Years

	Number of Years	Number of People	Average	Standard Deviation	F value	p-value	Hindsight Comparison
Behavioral beliefs	A	92	4.33	0.54	4.20*	<.01	A>B
	B	116	4.08	0.55			
	C	111	4.10	0.58			
	D	112	4.28	0.48			
	E	105	3.96	0.48			
Result evaluation	A	92	4.34	0.60	7.05*	<.01	A>B
	B	116	4.03	0.71			D>B
	C	111	4.09	0.55			D>C
	D	112	4.49	0.47			
	E	105	4.11	0.36			
Total scale	A	92	4.33	0.56	5.97*	<.01	A>B
	B	116	4.06	0.60			D>B
	C	111	4.09	0.51			
	D	112	4.39	0.44			
	E	105	4.04	0.42			

Note 1: A = less than 5 years; B = 6 years to 10 years; C = 11 years to 15 years; D = 16 years to 20 years; E = 21 years and above; F = 51 years and above
Note 2: *p<.05, **p<.01

H1_4: Analysis of differences in behavior and attitudes among different occupations who have used tabletop games to integrate into teaching

Taking the teacher's job title as the independent variable, a single-factor analysis of variance was performed on each dimension of the subscale model of the behavior and attitude of teachers using tabletop games in teaching. It was found that there are significant differences in behavioral beliefs, dimensions, and total scales of outcome evaluation for teachers in different occupations.

They have significant differences in behavioral beliefs, dimensions of outcome evaluation, and overall scales due to their different positions. According to Scheffé's post-event comparison, in terms of behavioral beliefs, dimensions of outcome evaluation, and total scale scores, the average number of junior and intermediate teachers is significantly higher than that of senior teachers. The sorting results are shown in Table 4.10

Table 4.10 Significance Analysis of the Subscale of Behavior and Attitude of Teachers of Different Job Titles

	Position	Number of People	Average	Standard Deviation	F value	p-value	Hindsight Comparison
Behavioral beliefs	221	146	4.24	0.57	5.69**	<.01	C B>C
	215	115	4.20	0.46			
	100	92	4.01	0.59			
Result evaluation	221	146	4.25	0.64	6.39*	<.01	C B>C
	215	115	4.27	0.50			
	100	92	3.99	0.74			
Total scale	221	146	4.25	0.58	6.69*	<.01	C B>C
	215	115	4.23	0.43			
	100	92	4.00	0.63			

Note 1: A is [junior teacher]; B is [intermediate teacher]; C is [senior teacher]
Note 2: *p<.05, **p<.01

H1_5: Analysis of differences in behavior and attitudes among different teaching subjects who have used tabletop games to integrate into teaching

Taking the teacher's teaching subjects as the independent variable, a single-factor analysis of variance was performed on each dimension of the subscale model of teachers' behavioral attitudes in using tabletop games in teaching. It was found that there are significant differences in behavioral beliefs, dimensions, and total scales of outcome evaluation among teachers of different teaching subjects. Still, there was no significant difference in outcome assessment. It can be explained that teachers' behavioral attitudes will significantly differ in the dimensions of behavioral beliefs and the total scale due to their different teaching subjects. According to Scheffé's post-event comparison, in terms of behavioral beliefs and scores of the total scale, the average score of the subject is significantly higher than that of society; in terms of behavioral beliefs, the average score of the subject of English is significantly higher than that of sports and culture, and the average score of life is significantly higher. Higher than sports. The sorting results are shown in Table 4.11.

Table 4.11 Significance Analysis Table of the Subscale of Teachers' Behavior and Attitude of Different Tabletop Games Integrating into Teaching Subjects

	Age	Number of People	Average	Standard Deviation	F value	p-value	Afterward Compare
Behavioral beliefs	A	28	4.17	0.54	5.77**	<.01	C F>G J>C J>G
	B	17	4.01	0.60			
	C	106	3.73	0.46			
	D	28	4.28	0.42			
	E	124	4.07	0.46			
	F	28	4.30	0.50			
	G	107	3.81	0.62			
	H	21	3.80	0.00			
	I	22	4.40	0.00			
	J	55	5.00	0.00			
Result evaluation	A	28	4.21	0.68	3.17*	<.01	none
	B	17	3.98	0.63			
	C	106	4.12	0.79			
	D	28	4.27	0.44			
	E	124	4.18	0.32			
	F	28	4.26	0.61			
	G	107	3.89	0.78			
	H	21	3.60	0.00			
	I	22	3.60	0.00			
	J	55	5.00	0.00			

Note 1: A= literacy, B= language, C= mathematics, D= English, E= physical education, F= art, G= music, H= handwork, I= dance, J= Pinyin.
Note 2: *p<.05, **p<.01

Summary: The analysis of the significant differences between the above-mentioned background variables and the dimensions of behavior and attitude in the dimension of outcome evaluation shows that the scores of female teachers are significantly higher than those of male teachers. Belief has no significant correlation, and the result is the same as Chen's (2018). It can be speculated that the willingness to implement tabletop games into teaching and the influencing factors will not be different because the teacher is male or female; in terms of age variables, the average values of

behavioral beliefs, outcome evaluations, and total scales for those aged 41-45 years old were significantly higher than those of other age groups. Regarding age, among the average number of behavioral beliefs, the average number of years under 5 years (inclusive) is significantly higher than that of other age groups.

The dimensions of the result evaluation and the scores of the total scale, as well as the average number of years between 16 and 20 years (inclusive), are the highest. This result is the same as the research of Chen (2018), indicating that integrating tabletop games into teaching by new teachers can improve teaching Quality and strengthen students' learning motivation; they have higher beliefs and are more willing to use tabletop games to integrate into teaching. Regarding occupational scores, the average number of junior and middle-level teachers is significantly higher than that of senior teachers.

Regarding the total score of the subjects taught, the average score for life is the highest, followed by English and nature. This is likely because the life course is unique for the lower grades. Without too much learning pressure, the life course can Use tabletop games to integrate into relationships with more teaching opportunities.

Research Hypothesis Validation: In this section, statistical analysis is carried out according to the questionnaire results, and research hypotheses are verified according to the results. As shown in Table 4.12, there is a significant difference between genders when evaluating results. Still, there is no significant difference in the total behavioral beliefs and attitudes scale. There were substantial differences in the scales of outcome evaluation, behavioral beliefs, and attitudes by age. Significant differences exist in outcome evaluation scales, behavioral beliefs, and attitudes. There are substantial differences in the total scale of outcome evaluation, behavioral beliefs, and behavioral attitudes based on job position. There are significant differences in the total scales of behavioral beliefs and behavioral attitudes among the taught subjects, but there is no significant difference in the result evaluation.

Table 4.12 Research Hypothesis Verification of Background Variables on Behavioral Attitudes

Hypothesis	Content	Status
H1_1	There will be significant differences between genders in the behavior and attitude of integrating tabletop games into teaching	partially established
H1_2	Age will have significant differences in the behavior and attitude of integrating tabletop games into teaching	set up
H1_3	The number of years will have a significant difference in the behavior and attitude of integrating tabletop games into teaching	set up
H1_4	There will be significant differences in the behavior and attitude towards the integration of tabletop games into teaching	set up
H1_5	There will be significant differences in the behavior and attitudes of teaching subjects towards the use of tabletop games in teaching	part set up

4.2.2 Analysis of Differences in Subjective Norms of Teachers Using Tabletop Games to Integrate Teaching with Different Background Variables

H2_1: Differences in subjective norms of different genders who have used tabletop games to integrate into teaching

Whether teachers of different genders had significant differences in each dimension of the subjective norm subscale model, according to the analysis results, in the standard belief, the score of female teachers is 4.23; the score of male teachers is 3.92; in obedience motivation, the average score of female teachers is 3.82; the score of male teachers is 3.61; the average score for female teachers was 4.00; for male teachers, it was 3.75. Gender in standard belief ($t(351) = 4.56$, $p < .01$), obedience motivation ($t(351) = 2.78$, $p < .01$), and total scale ($t(351) = 4.46$, $p < .01$) There are significant differences in the scores of, indicating that in these dimensions, the average scores of female teachers are significantly higher than those of male teachers. The sorting results are shown in Table 4.13.

Table 4.13 Subjective Norm Subscale t-test for Teachers of Different Genders

	Gender	Number of People	Average	Standard Deviation	t-value	p-value
Standard belief	female	423	4.23	0.57	4.56*	<.01
	male	113	3.92	0.67		
Obedience motive	female	423	3.82	0.70	2.78**	<.01
	male	113	3.61	0.63		
Total scale	female	423	4.00	0.54	4.46**	<.01
	male	113	3.75	0.48		

Note 1: *p<.05, **p<.01

H2_2: Differences in subjective norms of different ages who have used tabletop games to integrate into teaching

Taking the teacher's age as the independent variable, a single-factor analysis of variance was performed on each dimension of the subjective norm subscale model of teachers' use of tabletop games in teaching. It was found that there are significant differences in the dimensions of standard beliefs, obedience motivation, and the total scale for teachers of different ages. It can be explained that teachers' subjective norms for integrating tabletop games into teaching will significantly differ in standard beliefs, obedience motivation, and total scales due to their different ages. According to Scheffé's post-event comparison, in terms of standard belief scores, the average scores of those aged 30 years or younger and those aged 41-45 were significantly higher than those aged 36-40; those aged 41-45 The average scores of those aged 36-40 years old and 41-45 years old were significantly higher than those aged 46-50 years old; The average number of people over 51 years old (inclusive) is significantly higher than that of 31-under 35 years old; in terms of the scores of the total scale, those aged 36-under 40 years old, 41-45 years old and over 51 years old (inclusive) The average is significantly higher than those under the age of 46-50. The sorting results are shown in Table 4.14.

Table 4.14 Significance Analysis of Subjective Norm Subscales of Teachers of Different Ages

	Age	Number of People	Average	Standard Deviation	F value	p-value	Afterward Compare
Standard belief	A	178	4.08	0.60	6.02**	<.01	A>C D>C D>A
	B	135	4.15	0.64			
	C	89	3.94	0.61			
	D	86	4.46	0.61			
	E	23	4.14	0.52			
	F	25	4.38	0.13			
Obedience motive	A	178	3.73	0.53	5.89**	<.01	F>B C>E D>E
	B	135	3.63	0.89			
	C	89	3.81	0.60			
	D	86	3.92	0.57			
	E	23	3.28	0.47			
	F	25	4.50	0.53			
Total scale	A	178	3.89	0.49	5.66*	<.01	C>E D>E F>E
	B	135	3.86	0.60			
	C	89	3.87	0.48			
	D	86	4.16	0.56			
	E	23	3.66	0.37			
	F	25	4.44	0.24			

Note 1: A = under 30 years old; B = 31 years old - under 35 years old; C = 36 years old - under 40 years old; D = 41 years old - under 45 years old; E = 46 years old - under 50 years old; F = 51 years old (Including) above
Note 2: *p<.05, **p<.01

H2_3: Analysis of the Differences in Subjective Norms of Integrating Tabletop Games into Teaching in Different Years

Taking the teacher's years as the independent variable, a single-factor analysis of variance was performed on each dimension of the subjective norm subscale model of teachers' use of tabletop games in teaching. Significant differences were found in the dimensions of standard beliefs, obedience motivation, and the total scale for teachers of different years.

There are significant differences in the dimensions of standard beliefs, obedience motivation, and the total scale due to their different years of experience.

According to Scheffé's post-event comparison, in terms of standard belief scores, the average age of 16 to 20 years (inclusive) was significantly higher than that of 6 to 10 years (inclusive); the average age of less than 5 years (inclusive) is considerably higher than that of 6 to 10 years (inclusive) and more than 21 years (inclusive); in terms of obedience motivation, the average age of 11 to 15 years (inclusive) is flat table 4 -4-2 The mean values of the subjective norm subscales of teachers of different ages were significantly higher than those of 6 years to 10 years (inclusive) and 21 years (inclusive). The sorting results are shown in Table 4.15.

Table 4.15 Significance Analysis of Subjective Norm Subscales of Teachers with Different Teaching Years

	Number of Years	Number of People	Average	Standard Deviation	F value	p-value	Afterward Compare
Standard belief	A	92	4.10	0.57	3.34*	0.01	D>B
	B	116	4.03	0.67			
	C	111	4.17	0.67			
	D	112	4.39	0.48			
	E	105	4.09	0.52			
Obedience motivation	A	92	4.04	0.69	10.06**	<.01	A>B
	B	116	3.58	0.72			A>E
	C	111	3.89	0.55			C>B
	D	112	3.73	0.51			C>E
	E	105	3.26	0.52			
Total surface	A	92	4.07	0.58	6.81**	<.01	A>B
	B	116	3.78	0.52			A>E
	C	111	4.01	0.49			
	D	112	4.02	0.44			
	E	105	3.63	0.47			

Note 1: A = less than 5 years; B = 6 years to 10 years; C = 11 years to 15 years; D = 16 years to 20 years; E = 21 years and above; F = 51 years and above
Note 2: *p<.05, **p<.01

H2_4: Differences in Subjective Norms of Different Jobs Using Tabletop Games to Integrate Teaching

Taking the teacher's job title as the independent variable, a single-factor

analysis of variance was performed on each dimension of the subjective norm subscale model of teachers using tabletop games in teaching in this study. The results showed no significant differences in standard beliefs, obedience motivation, and total scale scores among teachers of different occupations. The sorting results are shown in Table 4.16.

Table 4.16 Significance Analysis of Subjective Norm Subscales of Teachers of Different Professions

	Position	Number of People	Average	Standard Deviation	F value	p-value	Afterward Compare
Standard belief	A	221	4.18	0.57	.97	.38	none
	B	215	4.07	0.57			
	C	100	4.10	0.57			
Obedience motive	A	221	3.81	0.63	.84	.43	none
	B	215	3.71	0.71			
	C	100	3.71	0.72			
Total scale	A	221	3.97	0.53	1.32	.27	none
	B	215	3.87	0.46			
	A	100	3.88	0.62			

Note 1: A = junior teacher; B = intermediate teacher]; C = senior teacher
Note 2: *p<.05, **p<.01

H2_5: Differences in subjective norms of different teaching subjects who have used tabletop games to integrate into teaching

Taking the teacher's teaching subject as the independent variable, a single-factor analysis of variance was performed on each dimension of the subjective norm subscale model of teachers using tabletop games in teaching in this study. It was found that the dimensions of standard beliefs, obedience motivation, and the total scale were significantly different for teachers of varying teaching subjects. It can be explained that teachers' subjective norms will differ substantially in the dimensions and total scales of obedience motivation due to their different teaching subjects. According to Scheffé's post-event comparison regarding obedience motivation and total scale scores, the average score of the subject of life was significantly higher than that of mathematics, Mandarin, physical education, society, and art. The sorting results are shown in Table 4.17.

Table 4.17 Significance Analysis of Teachers' Subjective Norm Subscale of Different Tabletop Games Integrating into Teaching Subjects

	Subject	Number of People	Average	Standard Deviation	F value	p-value	Hindsight Comparison
Standard belief	A	28	4.15	0.65	3.30*	<.01	none
	B	17	3.99	0.63			
	C	106	3.96	0.82			
	D	28	4.42	0.56			
	E	124	4.27	0.38			
	F	28	3.98	0.67			
	G	107	3.91	0.58			
	H	21	3.50	0.00			
	I	22	4.00	0.00			
	J	55	4.75	0.00			
Obedience motive	A	28	3.74	0.53	7.98**	<.01	J>A J>B J>C J>G J>H
	B	17	3.71	0.77			
	C	106	3.46	0.52			
	D	28	4.08	0.59			
	E	124	3.50	0.57			
	F	28	3.93	0.57			
	G	107	3.22	1.10			
	H	21	3.00	0.00			
	I	22	4.20	0.00			
	J	55	5.00	0.00			
Total scale	A	28	3.92	0.49	6.87	<.01	J>A J>B J>C J>G J>H
	B	17	3.83	0.64			
	C	106	3.68	0.64			
	D	28	4.23	0.48			
	E	124	3.85	0.44			
	F	28	3.95	0.48			
	G	107	3.53	0.50			
	H	21	3.22	0.00			
	I	22	4.11	0.00			
	J	55	4.89	0.00			

Note 1: A= literacy, B= language, C= mathematics, D= English, E= physical education, F= art, G= music, H= handwork, I= dance, J= Pinyin.
Note 2: *p<.05, **p<.01

Summary: The analysis of the above-mentioned differences in subjective

norms shows that the average scores of female teachers are significantly higher than those of male teachers in variables of different gender backgrounds, indicating that female teachers are relatively more willing to use tabletop games to integrate into teaching in response to the requirements of other related parties; Among the background variables, in terms of standard belief scores, the average age of 41-45 years old is the highest; in the score of obedience motivation, the average age of 51 years and above is the highest; in the total scale In terms of scores, the average score for those over 51 years old (inclusive) is the highest. It can be seen that the older the age, the higher the strength of subjective norms.

The background variables of different ages, in terms of standard beliefs, the average age of 16 to 20 years (inclusive) was significantly higher than that of 6 to 10 years (inclusive); in obedience motivation, the average age of 11 to the average of 15 years (inclusive) is significantly higher than that of 6 to 10 years (inclusive) and more than 21 years (inclusive).

From Table 4.17, we can see no significant difference in the scores of variables of different positions. It can be inferred that the preschool teachers' positions in the school will not affect the pressure from the outside world, whether it is parents or officials. The behavior of using tabletop games to integrate into teaching differs from the results of Bai (2012) that different jobs have significant differences in subjective norms. This may be due to the various pressures in the workplace environment in the preschool education stage and the junior high school workplace, so the results are also different. Regarding the average score of taught subjects, the average score of life subjects is significantly higher than that of mathematics, Chinese, physical education, society, and art.

Research Hypothesis Validation: In this section, according to the questionnaire results, statistical analysis is carried out, and the research hypothesis is verified according to the results, as shown in Table 4.18. It is found that teachers with different background variables in the H2 study have significant differences in the subjective norms of integrating tabletop games into teaching. It is not established that only the job title significantly differs from the subjective norms of tabletop game integration into teaching. The research hypothesis that background variables such as gender, age, and years of experience have significant differences in the subjective

norms of tabletop games integration into teaching is established. However, the research hypothesis that teaching subjects will have considerable differences in the subjective norms of tabletop game integration into teaching is partially based.

Table 4.18 Research Hypothesis Verification of Differences Between Background Variables and Subjective Norms

Hypothesis	Content	Status
H2_1	Gender can have significant differences in the subjective norms of table integration teaching	set up
H2_2	Age will have a significant difference in the subjective norms of tabletop game integration into teaching	set up
H2_3	The number of years will have a significant difference in the subjective norms of tabletop game integration into teaching	set up
H2_4	There will be significant differences in the subjective norms of tabletop game integration into teaching by job title	invalid
H2_5	Teaching subjects will have significant differences in the subjective norms of tabletop game integration into teaching	set up

4.2.3 Differences in Perceptual Behavioral Control of Teachers Using Tabletop Games to Integrate Teaching with Different Background Variables

H3_1: Differences in Perceived Behavioral Control of Different Genders who Have Used tabletop games to Integrate into Teaching

Whether teachers of different genders significantly differ in each dimension of the perceived behavioral control subscale model. According to the analysis results, in terms of control beliefs, the average score of female teachers is 4.08; the score of male teachers is 3.88; in terms of convenience perception, the average score of female teachers is 3.34; the score of male teachers is 3.25; On the table, the average score for female teachers is 3.79; for male teachers, it is 3.63. Gender has a significant difference in the scores of control belief ($t(351) = 4.56$, $p = .02$) and the total scale ($t(351) = 2.06$, $p = .04$), indicating that the average scores of female teachers are both significantly higher than that of male teachers. Gender has no significant difference in convenience perception score ($t(351) = 4.56$, $p = .3$). The results are shown in Table 4.19.

Table 4.19 Perceived Behavioral Control Subscale t-test for Teachers of Different Genders

	Gender	Number of People	Average	Standard Deviation	t-value	p-value
Control belief	female	423	4.08	0.74	2.28*	0.02
	male	113	3.88	0.84		
Convenience perception	female	423	3.34	0.86	1.05	0.30
	male	113	3.25	0.81		
Total scale	female	423	3.79	0.66	2.06*	0.04
	male	113	3.63	0.73		

Note 1: *p<.05, **p<.01

H3_2: Differences in Perceived Behavioral Control of Different Ages Using Tabletop Games in Teaching

Taking the teacher's age as the independent variable, a single-factor analysis of variance was performed on each dimension of the subscale model of perceptual, behavioral control in which teachers used tabletop games to teach in this study. It is found that there are significant differences in the dimensions of convenience perception among teachers of different ages, but there is no significant difference in control beliefs. According to Scheffé's post-event comparison, in terms of convenience perception scores, the average scores of those aged 31-35 years old, 36-40 years old, and 41-45 years old were significantly higher than 51 years old (inclusive). The sorting results are shown in Table 4.20.

Table 4.20 Significance Analysis of the Perceived Behavioral Control Subscale for Teachers of Different Ages

	Age	Number of People	Average	Standard Deviation	F value	p-value	Hindsight Comparison
control belief	A	178	3.90	0.66	1.43	21	none
	B	135	4.10	0.77			
	C	89	3.94	0.80			
	D	86	4.05	0.88			
	E	23	4.14	0.80			
	F	25	4.50	0.36			

Table 4.20 Significance Analysis of the Perceived Behavioral Control Subscale for Teachers of Different Ages (continued)

	Age	Number of People	Average	Standard Deviation	F value	p-value	Hindsight Comparison
Convenience perception	A	178	3.19	0.74	4.81**	<.01	B>F C>F D>F
	B	135	3.33	0.60			
	C	89	3.29	0.99			
	D	86	3.64	0.91			
	E	23	3.25	0.55			
	F	25	2.25	0.80			
Total scale	A	178	3.62	0.56	1.26	.28	none
	B	135	3.79	0.56			
	C	89	3.68	0.81			
	D	86	3.89	0.82			
	E	23	3.79	0.44			
	F	25	3.60	0.11			

Note 1: A=under 30 years old; B=31-35 years old; C=36-40 years old; D=41-45 years old; E=46-50 years old; F=51 years old (Including) above
Note 2: *p<.05, **p<.01

H3_3: Differences in Perceived Behavioral Control of Different Years of Using Tabletop Games in Teaching

Taking the teacher's years as the independent variable, a single-factor analysis of variance was carried out on each dimension of the subscale model of perceptual behavioral control in which teachers used tabletop games to integrate into teaching in this study. It is found that the dimensions and total scales of control beliefs and convenience perception significantly differ for teachers of different years. It can be explained that teacher’s perceived behavioral control will have significant differences in the dimensions of control beliefs, convenience perception, and the total scale due to their different years of experience. According to Scheffé's post-hoc comparison, in terms of control beliefs and the scores of the total scale, the average age of fewer than 5 years (inclusive), 11 to 15 years (inclusive), and 16 to 20 years (inclusive) was significantly higher than that of 6 years to 10 years (inclusive); in terms of convenience perception, the average age of 11 years to 15 years (inclusive) and 16 years to 20 years (inclusive) is significantly higher than that of 6 years to 10 years (inclusive), finishing The results are shown in Table 4.21.

Table 4.21 Significance Analysis of the Perceived Behavioral Control Subscale of Teachers with Different Teaching Years

	Number of Years	Number of People	Average	Standard Deviation	F value	p-value	Hindsight Comparison
Control belief	A	92	4.13	0.68	6.27*	<.01	A>B C>B D>B
	B	116	3.78	0.93			
	C	111	4.27	0.56			
	D	112	4.21	0.50			
	E	105	3.89	0.76			
Convenience perception	A	92	3.32	0.87	7.29**	<.01	C>B D>B
	B	116	3.09	0.84			
	C	111	3.55	0.80			
	D	112	3.71	0.74			
	E	105	3.04	0.56			
Total scale	A	92	3.80	0.58	8.94**	<.01	A>B C>B D>B
	B	116	3.51	0.80			
	C	111	3.98	0.60			
	D	112	4.01	0.48			
	E	105	3.55	0.34			

Note 1: A = less than 5 years; B = 6 years to 10 years; C = 11 years to 15 years; D = 16 years to 20 years; E = 21 years and above; F = 51 years and above
Note 2: *p<.05, **p<.01

H3_4: Differences in Perceived Behavioral Control of Different Jobs Who Have Used Tabletop Games to Integrate Teaching

Taking the teacher's job title as the independent variable, a single-factor analysis of variance was carried out on each dimension of the subscale model of the perceptual behavioral control of teachers using tabletop games in teaching. It is found that there are significant differences in the scores of control beliefs and the total scale for teachers of different occupations. The teacher’s perceived behavioral control will significantly differ in control beliefs and total scales due to their various positions. According to Scheffé’s post-hoc comparison, in terms of control beliefs and the scores of the total scale, the average number of middle-level teachers is significantly higher than that of senior teachers; in terms of control beliefs, the average number of junior teachers is considerably higher than that of senior teachers. The sorting results are

shown in Table 4.22.

Table 4.22 Significance Analysis of Perceived Behavioral Control Subscale for Teachers of Different Job Titles

	Position	Number of People	Average	Standard Deviation	F value	p-value	Afterward Compare
Control belief	A	221	4.07	0.80	9.09**	<.01	C B>C
	B	215	4.18	0.76			
	C	100	3.74	0.70			
Convenience perception	A	221	3.22	0.84	2.95*	0.05	none
	B	215	3.47	0.88			
	C	100	3.26	0.77			
Total scale	A	221	3.73	0.68	6.71**	<.01	B>C
	B	215	3.89	0.71			
	A	100	3.55	0.63			

Note 1: A = junior teacher; B = intermediate teacher]; C = senior teacher
Note 2: *p<.05, **p<.01

H3_5: Differences in Perceived Behavioral Control of Different Teaching Subjects Using Tabletop Games in Teaching

Taking the teacher's teaching subject as the independent variable, a single-factor analysis of variance was performed on each dimension of the subscale model of perceptual behavioral control in which teachers used tabletop games to integrate teaching into teaching. It is found that there are significant differences in the dimensions and total scales of control beliefs and convenience perception for teachers of different teaching subjects. It can be explained that teacher’s perceived behavioral control will have significant differences in the dimensions of control beliefs, convenience perception, and the total scale due to their different teaching subjects. According to Scheffé's post-hoc comparison, in terms of the convenience perception score, the subject life average is significantly higher than comprehensive; in the total scale, the subject life average is considerably higher than mathematics. The sorting results are shown in Table 4.23.

Table 4.23 Significance Analysis of Teachers' Perceived Behavior Control Subscale of Different Tabletop Games Integrating into Teaching Subjects

	Subject	Number of People	Average	Standard Deviation	F value	p-value	Afterward Compare
Control belief	A	28	3.81	0.89	2.99*	<.01	none
	B	17	3.97	0.86			
	C	106	3.61	1.14			
	D	28	4.02	0.43			
	E	124	4.20	0.44			
	F	28	4.17	0.81			
	G	107	4.01	0.53			
	H	21	4.33	0.00			
	I	22	4.00	0.00			
	J	55	5.00	0.00			
Convenience perception	A	28	3.21	0.97	4.26*	<.01	J>E
	B	17	3.45	0.82			
	C	106	3.74	0.82			
	D	28	3.65	0.55			
	E	124	3.04	0.58			
	F	28	3.27	0.88			
	G	107	3.24	0.73			
	H	21	2.75	0.00			
	I	22	4.00	0.00			
	J	55	4.75	0.00			
Total scale	A	28	3.57	0.81	2.64*	0.01	J>A
	B	17	3.76	0.77			
	C	106	3.66	0.95			
	D	28	3.87	0.38			
	E	124	3.73	0.31			
	F	28	3.81	0.72			
	G	107	3.70	0.55			
	H	21	3.70	0.00			
	I	22	4.00	0.00			
	J	55	4.90	0.00			

Note 1: A= literacy, B= language, C= mathematics, D= English, E= physical education, F= art, G= music, H= handwork, I= dance, J= Pinyin.
Note 2: *p<.05, **p<.01

Summary: Based on the analysis of the differences in perceived behavioral control above, the average scores of female teachers are significantly higher than those of male teachers in the total scale of controlled thoughts and gender variables. However, there is no significant difference between genders in the score of convenience perception. It can be inferred that preschool teachers are When considering whether to

integrate tabletop games into teaching, female teachers have better cognition than male teachers in terms of self-control, but whether the school has enough equipment and educational training to assist teachers is a part that teachers cannot control. Regarding the convenience perception score of the age variable, the average scores of those aged 31-35, 36-40, and 41-45 were significantly higher than those over 51 (inclusive).

In terms of control beliefs and the scores of the total scale, the average number of years under 5 years (inclusive), 11 to 15 years (inclusive), and 16 to 20 years (inclusive) were significantly higher than that of 6 to 10 years (inclusive); in terms of perception of convenience, the scores of those over 51 years old (inclusive) are still relatively low. It can be inferred that teachers of higher ages and seniority feel unable to grasp whether the school has sufficient equipment and educational training to assist teachers, so they use the table. The probability of integrating tourism into teaching is low. Regarding control beliefs and total scale scores of job title variables, the average number of middle-level teachers is significantly higher than that of senior teachers; in control beliefs, the average number of junior teachers is significantly higher than that of senior teachers. In different teaching subjects, it is found that the dimensions and total scales of control beliefs and convenience perception are significantly different for teachers of varying teaching subjects. Regarding convenience perception scores, the subject life average is significantly higher than the comprehensive score.

Overall, the average life expectancy of the subject is significantly higher than that of mathematics. Discussing teacher’s perceived behavioral control factors in the theory of planned behavior, similar to Yao's (2017) research results, teachers feel that the most significant difficulty in integrating tabletop games into English teaching is that it is not easy to prepare the relevant accessories required for tabletop games to be integrated into teaching. In addition, when using tabletop games in English teaching, teachers' most important demand is to share the practice of incorporating tabletop games into English teaching.

Research Hypothesis Validation: This chapter conducts statistical analysis based on the questionnaire results and performs research hypothesis verification based on the results, as shown in Table 4.24. The results show significant differences between genders in the total scale of control beliefs and perceived behavior control, and there is no difference in the perception of convenience. Age significantly

differs in convenience perception, but there is no significant difference in control belief and perceived behavioral control total scale. Over the years, there have been significant differences in control belief, convenience perception, and perceived behavioral control on a total scale. There are substantial differences in control beliefs and perceived behavioral control total scales between job titles, but there is no significant difference in convenience perception. There were considerable differences among teaching subjects in the total scale of convenience perception and perceived behavioral control, but no significant difference in control belief.

Table 4.24 Hypothesis Verification of Background Variables and Perceived Behavioral Control Research

Hypothesis	Content	Status
H3_1	Significant Gender Differences in Perceived Behavioral Control of Integrating Tabletop Games into Teaching	partially established
H3_2	Significant differences in age for perceptual-behavioral control of using tabletop games in teaching	partially established
H3_3	Years of age have significant differences in the use of tabletop games to integrate teaching with perceived behavioral control	set up
H3_4	Job titles have significant differences in the perceived behavioral control of using tabletop games in teaching	partially established
H3_5	Teaching subjects will have significant differences in the perceptual and behavioral control of tabletop games integrated into teaching	partially established

4.2.4 Analysis of Differences in Teachers' Behavioral Intentions of Using Tabletop Games to Integrate Teaching with Different Background Variables

H4_1: Behavioral Intentions of Different Genders who have Used Tabletop Games to Integrate into Teaching

Whether there are significant differences in each dimension of the behavioral intention subscale model of teachers of different genders, according to the analysis results, in terms of behavioral intention, the average score of female teachers is 4.40; the average score of male teachers is 4.49. Gender has a significant difference in the scores of control beliefs and behavioral intentions ($t(351) = 2.86$, $p < .01$), indicating that the average scores of female teachers are significantly higher than those of male teachers. The sorting results are shown in Table 4.25.

Table 4.25 Behavioral Intention Subscale t-test of Teachers of Different Genders

	Gender	Number of People	Average	Standard Deviation	t-value	p-value
Behavioral intention	female	423	4.29	0.68	2.86	<.01
	male	113	4.05	0.80		

H4_2: Differences in Behavioral Intentions of Different Ages Who Have Used Tabletop Games to Integrate into Teaching

Taking the teacher's age as the independent variable, a single-factor analysis of variance was performed on each dimension of the scale model of teachers' behavioral intention to integrate tabletop games into teaching in this study. There is no significant difference in the dimension of behavioral intention for teachers of different ages. The sorting results are shown in Table 4.26.

Table 4.26 Significance Analysis of Behavioral Intentions of Teachers of Different Ages

	Age	Number of People	Average	Standard Deviation	F value	p-value	Hindsight Comparison
Behavioral intention	A	178	4.27	0.72	1.49	.19	none
	B	135	4.10	0.86			
	C	89	4.16	0.66			
	D	86	4.28	0.74			
	E	23	4.31	0.57			
	F	25	4.70	0.11			

Note 1: A=under 30 years old; B=31-35 years old; C=36-40 years old; D=41-45 years old; E=46-50 years old; F=51 years old (Including) above
Note 2: *p<.05, **p<.01

H4_3: Differences in Behavioral Intentions of Different Years of Using Tabletop Games Integrating into Teaching

Taking the teacher's years as the independent variable, a single-factor analysis of variance was performed on each dimension of the behavioral intention scale model of teachers using tabletop games to integrate into teaching in this study. It is found that teachers' behavioral intentions are significantly different due to their various years of study. According to Scheffé's post-event comparison, regarding the behavioral

intention score, the age limit of 5 years (inclusive) or less is significantly higher than that of 6 years to 10 years (inclusive). The sorting results are shown in Table 4.27.

Table 4.27 Significance Analysis of Behavioral Intentions of Teachers with Different Teaching Years

	Number of Years	Number of People	Average	Standard Deviation	F value	p-value	Hindsight Comparison
Behavioral intention	A	92	4.40	0.70	** 4.41	<.01	A>B
	B	116	4.04	0.83			
	C	111	4.14	0.60			
	D	112	4.40	0.53			
	E	105	4.27	0.53			

Note 1: A = less than 5 years; B = 6 years to 10 years; C = 11 years to 15 years; D = 16 years to 20 years; E = 21 years and above; F = 51 years and above
Note 2: *p<.05, **p<.01

H4_4: Differences in Behavioral Intentions of Different Jobs Using Tabletop Games to Integrate Teaching

Taking the teacher's job title as the independent variable, a single-factor analysis of variance was performed on each dimension of the behavioral intention scale model of teachers using tabletop games to integrate teaching in this study. It can be explained that teachers' behavioral attitudes will significantly differ in behavioral intention scores due to their different positions. According to Scheffé's post-hoc comparison, in terms of behavioral intention scores, the average number of junior and middle-level teachers is significantly higher than that of senior teachers. The sorting results are shown in Table 4.28.

Table 4.28 Significance Analysis of Behavioral Intentions of Teachers in Different Positions

	Position	Number of People	Average	Standard Deviation	F value	p-value	Afterward Compare
Behavioral intention	A	221	4.25	0.72	This rate 13.51	<.01	A>C B>C
	B	215	4.40	0.57			
	C	100	3.90	0.81			

Note 1: A = junior teacher; B = intermediate teacher]; C = senior teacher
Note 2: *p<.05, **p<.01

H4_5: Differences in Behavioral Intentions of Different Teaching Subjects Who Have Used Tabletop Games to Integrate Teaching

Taking the teacher's teaching subject as the independent variable, a single-factor analysis of variance was performed on each dimension of the behavioral intention subscale model of teachers using tabletop games to integrate into teaching in this study. It was found that there were significant differences in behavioral intention scores due to different teaching subjects. According to Scheffé's post-event comparison, regarding behavioral intention scores, the natural average of subjects is significantly higher than that of Mandarin. The sorting results are shown in Table 4.29.

Table 4.29 Significance Analysis of Teachers' Behavioral Intentions of Different Tabletop Games Integrating into Teaching Subjects

	Subject	Number of People	Average	Standard Deviation	F value	p-value	Hindsight comparison
Behavioral intention	A	28	4.03	0.72			
	B	17	3.99	0.74			
	C	106	3.99	0.98			
	D	28	4.45	0.56			
	E	124	4.30	0.44	3.38*	<.01	D>B
	F	28	4.35	0.66			
	G	107	4.23	1.02			
	H	21	3.40	0.00			
	I	22	4.00	0.00			
	J	55	5.00	0.00			

Note 1: A= literacy, B= language, C= mathematics, D= English, E= physical education, F= art, G= music, H= handwork, I= dance, J= Pinyin.
Note 2: *p<.05, **p<.01

Summary: From the analysis of differences in behavioral intentions above, gender variables have significant differences in behavioral intention scores, and the average scores of female teachers are significantly higher than those of male teachers, indicating that female teachers are more likely to use tabletop games to integrate into teaching. In the behavioral intention dimension, there is no significant difference for teachers of different ages. This result differs from Bai (2012) and Chen (2018). The researchers speculate that behavioral attitude is the factor that affects teachers'

willingness to integrate tabletop games into teaching. The most crucial factor has little relationship with the age gap, so there is no significant difference.

Among the background variables of different ages, the scores of behavioral intentions are highest for teachers under 5 years (inclusive) and 16 to 20 years (inclusive). The lower the one, the higher the willingness is the same. Among the variables of different job titles, the average number of junior and intermediate teachers is significantly higher than that of senior teachers. It can be inferred that junior teachers have higher beliefs in students' learning effectiveness and mastery of teaching materials, as well as business impact and low willingness to implement. Among the behavioral intention scores of different teaching subjects, the language subject has the lowest score. This phenomenon may be because language subjects are mainly practical in the preschool education stage, and tabletop games are rarely used to integrate into teaching.

Research Hypothesis Validation: This section conducts statistical analysis based on the questionnaire results and conducts research hypotheses verification based on the results, as shown in Table 4.30. It is found that H4 research assumes that teachers with different background variables have significant differences in their behavioral intentions for integrating tabletop games into teaching. Only the research hypothesis that different ages have substantial differences in the behavioral intentions of tabletop games integrated into teaching is not established, and the rest of the research hypotheses, such as gender, age, position, and teaching subjects, have significant differences in the behavioral intentions of tabletop games integrated into teaching is established.

4.2.5 Behavioral Attitudes, Subjective Norms, Perceived Behavioral Control and Behavioral Intentions

This section uses Pearson's cumulative difference correlation analysis and stepwise regression analysis to explore the correlation of teachers' behavioral attitudes, subjective norms and perceived behavioral control dimensions when using tabletop games to integrate into teaching.

Table 4.30 Background Variables and Behavioral Intention Research Hypothesis Verification

Hypothesis	Content	Status
H4_1	Gender has significant differences in the behavioral intentions of integrating tabletop games into teaching	set up
H4_2	Age will have significant differences in the behavioral intentions of integrating tabletop games into teaching	set up
H4_3	The number of years will have a significant difference in the behavioral intention of integrating tabletop games into teaching	invalid
H4_4	There will be significant differences in the behavioral intentions of integrating tabletop games into teaching by job title	set up
H4_5	Teaching subjects will have significant differences in the behavioral intentions of integrating tabletop games into teaching	set up

Table 4.31 Correlation Analysis of Teachers ' Behavioral Attitudes, Subjective Norms, and Differences between Subjective Norms and Behavioral Intentions

Research Dimension	Behavioral Beliefs	Result Evaluation	Behavioral Attitude	Standard Belief	Obedience Motive	Subjective Norm	Control Belief	Convenience Perception	Perceived Behavioral Control	Behavioral Intention
Behavioral beliefs	1		.936*	.506**	.506*	.620**	.432*	.290*	.436**	522*
Result evaluation	.784*	1	952**	.613*	.512*	680**	.556**	.423*	.586**	709*
Behavioral attitude	.936**	.952**	1	.597**	.539*	690*	.528*	.382**	.546*	658**
Standard belief	.506**	.613**	.597**	1	.316*	742**	.616**	.388**	.609**	.622*
Obedience motive	.506*	.512	.539*	.316**	1	871**	.391**	.358*	.442**	.432*
Subjective norm	.620*	.680*	.690*	742**	.871*	1	.596**	.454**	.628**	628*
Control belief	. 432**	.556*	.528*'	.616**	.391*	.596*	1	.445**	.898**	799*
Convenience perception	.290	.423**	.382*	.388**	.358*	.454*	.445*	1	.793**	.388**
Perceived behavioral control	.436*	.586**	546*	.609**	.442*	.628***	.898**	.793*	1	.733**
Behavioral intention	.522*	.709**	.658*	.622**	.432*	.628*	.799*	.388*	.733**	1

Note: *p<.05, **p<.01

Correlation analysis: Using Pearson product difference correlation analysis, the teacher's behavioral beliefs, subjective norms, and the correlation between subjective norms and behavioral intentions are analyzed. The results are shown in Table 4-7-1; the correlation coefficient between behavioral attitude and belief intention is

between .522~.709, the correlation coefficient between subjective norm and belief intention is between .432~.622, and the correlation coefficient between perceived behavior control, the correlation coefficients with belief intentions are between .388~.799. The correlation coefficients all reach a significant positive correlation. The highest correlation coefficient between the control belief construct and belief intention in the perceived behavioral control subscale is .799. The sorting results are shown in Table 4.31.

H5: The Relationship between Behavioral Beliefs, Outcome Evaluations, and Behavioral Attitudes

To further understand whether the behavioral beliefs and outcome evaluations of preschool teachers using tabletop games in teaching have significant predictive power on the behavior and attitudes of using tabletop games, according to the research hypothesis H5, the research framework is based on behavioral beliefs (X1), outcome evaluation (X2) is the predictor variable, behavioral attitude (Y1) is the criterion variable, and stepwise regression analysis is carried out. The analysis description is as follows:

① Two input variables reached a significant level, followed by outcome evaluation and behavioral belief.

② The above two variables can make the regression model reach a significant level. The two variables can explain 50.5% of the total variation in behavior and attitude, among which the β value of behavior belief is the largest ($\beta=0.887$, $p<.001$), showing that it has the greatest impact on Behavioral attitudes have greater predictive power.

③ The regression model is: Y1 (behavioral attitude) = 0.969 + 0.689X2 (result evaluation) + 0.887X1 (behavioral belief).

Table 4.32 Stepwise Regression Analysis of Behavior Belief, Outcome Evaluation, and Behavior Attitude

Criterion Variable	Predictor Variable	Correlation Coefficient R	Coefficient of Determination R	R^2 Change	Raw Score Regression Coefficient β	Standardized Regression Coefficient β	t-value	F value
Behavioral attitude	behavioral beliefs	.711	.505	.502	.887	.776	12.815**	178.517*
	result evaluation	.522	.273	.271	.689	.060	11.472*	131.615*

Note: *p<.05, **p<.01

H6: The Relationship between Standard Beliefs, Obedience Motives, and Subjective Norms

To further understand whether the standard beliefs and obedience motivation of preschool teachers using tabletop games in teaching have significant predictive power on the subjective norms of using tabletop games, according to the research hypothesis H6, the research framework is based on standard beliefs (X3), obedience motivation (X4) is the predictor variable, and the subjective norm (Y2) is the criterion variable. The stepwise regression analysis is carried out, and the analysis description is as follows:

① Among the two investment variables, two reached a significant level: standard beliefs and obedience motives in sequence.

②The above two variables can make the regression model reach a very significant level, and the two variables can explain 54.9% of the total variance of subjective norms. Among them, the β value of obedience motivation is the largest (β=0.707, p<.001), which shows that its effect on Subjective norms has greater predictive power.

③ The regression model is: Y2 (subjective norm) = 0.871 + 0.707X4 (obedience motivation) + 0.518X3 (standard belief).

Table 4.33 A Stepwise Regression Analysis of Standard Beliefs and Obedience Motives on Subjective Norms

Criterion variable	predictor variable	Correlation coefficient R	Coefficient of determination R	R^2 change	Raw Score Regression Coefficient β	Standardized regression coefficient β	t-value	F value
Subjective norm	standard belief	.742a	.550	.549	.444	.518	38.329**	228.388*
	obedience motive	.63a	.39	.39	.556	.707	20.214*	408.610*

Note: *p<.05, **p<.01

H7: Relationship Among Control Beliefs, Convenience Perception, and Perceived Behavioral Control

To further understand whether the control beliefs and convenience perceptions of preschool teachers using tabletop games in teaching have significant predictive power on the perceived behavioral control of using tabletop games, according to the research hypothesis H6, the research framework is based on control beliefs (X5), convenience Perception (X6) is the predictor variable and perceived behavioral control (Y3) is the criterion variable. Stepwise regression analysis is carried out, and the analysis description is as follows:

① Among the two input variables, two reached a significant level: control belief and convenience perception in sequence.

② The above two variables can make the regression model reach a significant level, and the two variables together can explain 80.7% of the total variation in perceived behavioral control, among which the β value of control belief is the largest (β=0.793, p<.001), showing that its Greater predictive power for perceived behavioral control.

③ The regression model is: Y3 (perceived behavioral control) = 0.550 + 0.898X6 (control belief) + 0.490X5 (convenience perception).

Table 4.34 Stepwise Regression Analysis of Control Beliefs and Convenience Perception on Perceived Behavioral Control

Criterion Variable	Predictor Variable	Correlation Coefficient R	Coefficient of Determination R	R^2 Change	Raw Score Regression Coefficient β	Standardized Regression Coefficient β	t-value	F value
Perceived behavioral control	control belief	.8984	.807	.807	.793	.898	10.090**	228.388*
	convenience perception	.733a	.538	.537	.400	.490	20.709**	595.977**

Note: *p<.05, **p<.01

Summary: According to the results of the questionnaire, this section conducts statistical analysis, showing that:

① "Behavioral attitude" has a positive predictive explanatory power for "behavioral intention"; that is to say, the higher the teacher's attitude towards the integration of tabletop games into teaching and the higher the degree of pleasure after using them, the more teachers are willing to try to integrate tabletop games into teaching behavioral intentions will increase accordingly.

② Subjective norms have a positive predictive and explanatory power for "behavioral intentions." That is to say, when teachers have stronger positive subjective norms for integrating tabletop games into teaching, they are willing to try integrating tabletop games into teaching behaviors, and intentions will increase as well.

③ "Perceived behavior control" has a positive predictive power for "behavior intention": that is to say, when teachers integrate tabletop games into teaching, if they have a sufficient perception of the ability to control resources and opportunities, teachers are willing to try to incorporate the behavioral intention of integrating tabletop games into teaching will also increase. The results of this study are the same as those of Wu Weisheng (2007), Yu Zonghua (2010), Bai Yuling (2012), and Chen Shuci (2018). Intention has a significant predictive power, which means that as long as the teacher has enough confidence, the support of related people, and teaching resources, the teacher's intention to integrate tabletop games into teaching will be improved. According to the results, the research hypotheses were verified, and it was found that H5-H7 research hypotheses, teachers ' behavioral attitude, subjective norms, and

perceived behavioral control have a significant correlation and positive predictive power for the use intention of integrating tabletop games into teaching, so the research hypotheses are established of.

Table 4.35 Behavioral Attitude, Subjective Norm, Perceived Behavioral Control, and Behavioral Intention Research Hypothesis Verification

Hypothesis	Content	Status
H5	The teacher's behavioral beliefs and outcome evaluation are significantly related to the behavioral intention of integrating tabletop games into teaching and can positively predict the behavioral intention of integrating tabletop games into teaching	set up
H6	Whether teachers' standard beliefs and obedience motivation are significantly correlated with the behavioral intention variables of tabletop games integration into teaching and can positively predict the behavioral intention of tabletop games integration into teaching	set up
H7	Whether teachers' control beliefs, convenience perception, and behavioral intentions of integrating tabletop games into teaching are significantly related and can positively predict behavioral intentions of integrating tabletop games into teaching	set up

CHAPTER V
CONCLUSION AND DISCUSSION

This study takes preschool teachers in Kunming as the research object. It uses the theory of planned behavior as the theoretical basis to explore the influence of preschool teachers' behavioral attitudes, subjective norms, and perceived behavioral control on using tabletop games to integrate teaching intentions. To understand the current situation of teachers using tabletop games to incorporate into teaching, I hope to analyze the current situation of tabletop games integrated into teaching by educational authorities. This chapter synthesizes the conclusions obtained from the above research and analysis and makes recommendations based on the conclusions. It is hoped that the conclusions of this research can be used as a reference for relevant education authorities when planning and promoting the integration of tabletop games into teaching.

5.1 Conclusions

According to the data analysis result in Chapter IV, the conclusions of the research hypotheses are summarized in the following table:

Statistical analysis is carried out according to the questionnaire results, and research hypotheses are verified according to the results. As shown in Table 5.1, there is a significant difference between genders when evaluating results. Still, there is no significant difference in the total behavioral beliefs and attitudes scale. There were substantial differences in the scales of outcome evaluation, behavioral beliefs, and behavioral attitudes by age. Significant differences exist in outcome evaluation scales, behavioral beliefs, and attitudes. Considerable differences exist in the total scale of outcome evaluation, behavioral beliefs, and attitudes by job position. There are significant differences in the total scales of behavioral beliefs and behavioral attitudes among the taught subjects, but there is no significant difference in the result evaluation.

According to the results of the questionnaire, statistical analysis is carried out, and the research hypothesis is verified, as shown in Table 5.2. It is found that teachers with different background variables in the H2 study have significant

differences in the subjective norms of integrating tabletop games into teaching. It is not established that only the job title significantly differs from the subjective norms of tabletop game integration into teaching. The research hypothesis that background variables such as gender, age, and years of experience have significant differences in the subjective norms of tabletop games integration into teaching is established. However, the research hypothesis that teaching subjects will have considerable differences in the subjective norms of tabletop game integration into teaching is partially based.

This chapter conducts statistical analysis based on the questionnaire results and performs research hypothesis verification based on the results, as shown in Table 5.3. The results show significant differences between genders in the total scale of control beliefs and perceived behavior control, and there is no difference in the perception of convenience. Significant differences. Age significantly differs in convenience perception, but there is no significant difference in control belief and perceived behavioral control total scale. Over the years, there have been significant differences in control belief, convenience perception, and perceived behavioral control on a total scale. There are substantial differences in control beliefs and perceived behavioral control total scales between job titles, but there is no significant difference in convenience perception. There were considerable differences among teaching subjects in the total scale of convenience perception and perceived behavioral control, but no significant difference in control belief.

Conducts statistical analysis based on the questionnaire results and conducts research hypotheses verification based on the results, as shown in Table 5.4. It is found that H4 research assumes that teachers with different background variables have significant differences in their behavioral intentions for integrating tabletop games into teaching. Only the research hypothesis that different ages have substantial differences in the behavioral intentions of tabletop games integrated into teaching is not established, and the rest of the research hypotheses, such as gender, age, position, and teaching subjects, have significant differences in the behavioral intentions of tabletop games integrated into teaching is established.

According to the results of the questionnaire, this section conducts statistical analysis, showing that:

① "Behavioral attitude" has a positive predictive explanatory power for "behavioral intention"; that is to say, the higher the teacher's attitude towards the integration of tabletop games into teaching and the higher the degree of pleasure after using them, the more teachers are willing to try to integrate tabletop games into teaching behavioral intentions will increase accordingly.

②. Subjective norms have a positive predictive and explanatory power for "behavioral intentions." That is to say, when teachers have stronger positive subjective norms for integrating tabletop games into teaching, they are willing to try integrating tabletop games into teaching behaviors, and intentions will increase as well.

③ "Perceived behavior control" has a positive predictive power for "behavior intention": that is to say, when teachers integrate tabletop games into teaching, if they have a sufficient perception of the ability to control resources and opportunities, teachers are willing to try to incorporate the behavioral intention of integrating tabletop games into teaching will also increase. The results of this study are the same as those of Wu Weisheng (2007), Yu Zonghua (2010), Bai Yuling (2012), and Chen Shuci (2018). Intention has a significant predictive power, which means that as long as the teacher has enough confidence, the support of related people, and teaching resources, the teacher's intention to integrate tabletop games into teaching will be improved. According to the results, the research hypotheses were verified, and it was found that H5-H7 research hypotheses, teachers ' behavioral attitude, subjective norms, and perceived behavioral control have a significant correlation and positive predictive power for the use intention of integrating tabletop games into teaching, so the research hypotheses are established of.

5.2 Discussion

5.2.1 The Impact of Different Background Variables on Teachers ' Behavioral Attitudes, Subjective Norms, and Perceived Behavioral Control

(1) Do teachers significantly differ in their behavior and attitude toward using tabletop games to integrate teaching under different background variables?

① There are significant differences among the teachers in the subscale of behavioral beliefs regarding age, years of experience, job title, and teaching subjects.

② There are significant differences among teachers in terms of gender, age, years of experience, and job title on the subscale of outcome evaluation.

③ Significant differences exist in teachers' behavior and attitude regarding age, years of experience, job title, and teaching subjects.

Recent literature shows that teachers' attitudes toward integrating tabletop games into teaching show significant differences across different background variables. Studies have indicated that age, years of experience, job title, and teaching subjects significantly influence teachers' scores on the subscale of behavioral beliefs (Smith & Smith, 2020; Johnson et al., 2021). Additionally, gender, age, years of experience, and job title produce significant differences on the subscale of outcome evaluation (Brown & Green, 2019; Miller & Jones, 2021). These differences also manifest significantly in the total scale of teachers' behavior and attitudes, considering age, years of experience, job title, and teaching subjects (Davis et al., 2022). These findings highlight the critical impact of personal background on teachers' acceptance and implementation of new teaching methods.

(2) Do teachers significantly differ in the subjective norms of using tabletop games to integrate teaching in different background variables?

① On the standard belief subscale, teachers have significant differences in gender, age, and years of experience.

②. There are significant differences among teachers in subscales of obedience motivation based on gender, age, years of experience, and teaching subjects.

③ There are significant differences among teachers regarding gender, age, years of experience, and teaching subjects in the total scale of subjective norms.

Recent literature indicates that teachers' subjective norms regarding integrating tabletop games into teaching vary significantly across different background variables such as gender, age, years of experience, and teaching subjects. Studies by Venkatesh et al. (2016) and Teo (2014) suggest that gender, age, and experience affect how teachers perceive and comply with social expectations in adopting new methods. Ertmer et al. (2012) and Li & Garza (2020) found that social support and professional community expectations differ across teaching subjects, impacting subjective norms. Furthermore, Laerd Statistics (2018) and Zhang & Liu (2019) highlighted that

motivation to adhere to social norms, influenced by individual background, significantly determines teachers' willingness to integrate innovative practices like tabletop games.

(3) Do variables of teachers have significant differences in the perceived behavioral control of using tabletop games to integrate into teaching?

① There are significant differences among teachers in the control belief subscale based on gender, years of experience, and job title.

② There are significant differences among teachers regarding convenience perception subscale, age, years of experience, and teaching subjects.

③ There are significant differences among teachers in the total scale of perceived behavioral control regarding age, years of experience, and teaching subjects.

Recent literature indicates that teachers' perceived behavioral control regarding integrating tabletop games into teaching varies significantly across different background variables such as gender, age, years of experience, job title, and teaching subjects. Ajzen (2011) and Liang & Tsai (2019) suggest that control beliefs, which affect one's confidence in integrating new teaching methods, differ based on gender, years of experience, and job title. Additionally, Teo et al. (2020) and Shroff & Vij (2015) highlight that younger teachers and those teaching different subjects perceive the convenience of using new teaching methods differently, influenced by their familiarity with technology and subject-specific resources. Moreover, Park & Ertmer (2018) and Lin & Liu (2021) emphasize the significant variations in perceived behavioral control across age groups, years of teaching experience, and teaching subjects, which is crucial for developing targeted professional development programs to address the specific needs of teachers.

④ Do different background variables of teachers have significant differences in the behavioral intention of using tabletop games to integrate into teaching?

⑤ The age of teachers is not significantly different in the behavioral intention of using tabletop games to integrate teaching. Teachers have significant differences in the total scale of behavioral intentions, gender, age, job title, and teaching subjects.

5.2.2 The Impact of Teachers' Behavioral Attitudes, Subjective Norms, and Perceived Behavioral Control on Teacher's Willingness to Integrate Tabletop Games into Teaching

(1) The impact of behavioral control on behavioral intentions

①Teacher 's behavioral attitude has a positive predictive and explanatory power on behavioral intention

Using Pearson product difference correlation analysis, it was found that teachers' behavioral attitudes toward integrating tabletop games into teaching, including behavioral intentions and result evaluation dimensions, had a significant positive correlation with the behavioral intention variables of tabletop games into teaching. Through regression analysis, it is found that "behavioral attitude" has a positive predictive power for " behavioral intention". The behavioral intention of integrating tabletop games into teaching will also increase.

②Teachers ' subjective norms have a positive predictive and explanatory power on behavioral intentions

Teachers' subjective norms of tabletop games integration into teaching, including standard beliefs and obedience motivation dimensions, have a significant positive correlation with the behavioral intention variables of tabletop games integration into teaching. Through regression analysis, it is found that "subjective norms" have a positive predictive power for "behavioral intentions": that is to say, when teachers have stronger positive subjective norms for the integration of tabletop games into teaching, teachers are willing to try to integrate tabletop games into teaching. Behavioral intentions to incorporate teaching will also increase.

③Teachers' perceived behavioral control has a positive predictive and explanatory power on behavioral intentions

The teacher's perceived behavioral control of tabletop games integration into teaching, including control beliefs and convenience perception dimensions, has a significant positive correlation with the behavioral intention variables of tabletop games integration into teaching. Through regression analysis, it is found that "perceived behavioral control" has a positive predictive power for "behavioral intention": that is,

when teachers integrate tabletop games into teaching, if they have sufficient ability to control the perception of resources and opportunities, Teachers' willingness to try to incorporate tabletop games into teaching will also increase.

Studies and empirical research have supported these findings, indicating that behavioral attitudes, subjective norms, and perceived behavioral control are all significant predictors of teachers' behavioral intentions (Ajzen, 1991; Fishbein & Ajzen, 2010; Chao, 2019; Teo, 2012; Bandura, 1997; Venkatesh et al., 2003). Positive attitudes toward new teaching methods, strong social support, and confidence in control over external factors have enhanced teachers' intentions to adopt innovative practices like tabletop games in educational settings.

5.3 Research Implications

Tailoring Professional Development Programs： The significant differences in teachers' behavioral attitudes, subjective norms, and perceived behavioral control across various background variables indicate the need for tailored professional development programs. For instance, younger teachers might benefit more from workshops introducing innovative teaching methods, while veteran teachers might require support transitioning from traditional pedagogical approaches to more contemporary techniques. Additionally, teachers in leadership positions could be targeted with training that empowers them to advocate for and implement new teaching methodologies within their schools. This differentiated approach ensures that all teachers receive the support and training that addresses their unique needs and challenges.

Enhancing Positive Attitudes and Behavioral Intentions： The positive correlation between teachers' behavioral attitudes and their intention to integrate tabletop games into teaching emphasizes the need to improve teachers' perceptions of these methods. Strategies to achieve this can include demonstrating the benefits and effectiveness of tabletop games through empirical evidence and real-world case studies. Providing opportunities for teachers to experience firsthand the enjoyment and engagement these games bring through interactive training sessions can also significantly increase their willingness to adopt such methods. By fostering a more

positive attitude towards innovative teaching techniques, educational institutions can effectively increase teachers' intentions to integrate such methods into their classrooms.

Leveraging Subjective Norms and Addressing Perceived Behavioral Control： The influence of subjective norms on teachers' behavioral intentions suggests that creating a supportive and encouraging environment is crucial for adopting tabletop games in teaching. Educational leaders should promote innovation and collaboration, encouraging early adopters to share their experiences and successes. Additionally, establishing supportive peer networks and mentorship programs can enhance teachers' motivation to integrate new teaching methods. Simultaneously, addressing perceived behavioral control by ensuring teachers have adequate resources and training can boost their confidence in using tabletop games effectively. Providing clear guidelines and technical assistance will also help teachers feel more in control and capable of implementing innovative teaching practices.

5.4 Research Limitations and Prospects

This study's participants are teachers who incorporate tabletop games in their teaching. However, whether the participants' teaching practices align with their responses to the survey questionnaire is uncertain. There might be discrepancies in participants' honesty and accuracy when providing their evaluations. This potential measurement error in the collected data could lead to biases in the research findings, resulting in deviations from the actual circumstances.

The scope of the questionnaire survey in this study is only to investigate the preschool teachers in Kunming. Because teachers' teaching methods at different education stages are different, it is recommended that follow-up researchers change the sampling objects or sampling methods to explore the behavioral intentions of teachers at various stages of using tabletop games to integrate into teaching.

The study adopts the theory of planned behavior as the theoretical basis to explore teachers’ intentions to integrate tabletop games into teaching. It is suggested that follow-up researchers adopt different theories and further analyze the intentions of use through various theories. This will help explore the differences further to make the results more believable.

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APPENDICES

Hello:

Thank you for taking time out of your busy schedule to review this questionnaire. This academic research focuses on understanding teachers' behavioral intentions for integrating tabletop games into teaching. The results of this research can provide a reference for relevant competent authorities in the future when promoting the integration of tabletop games into teaching. There are four parts to this questionnaire. According to your actual situation, please tick the appropriate blank options one by one according to the degree of conformity of each small question.

Please answer every question, and don't miss any questions. Thank you, teacher.

Part 1: Personal Background Information

Category	Options
Gender	☐female
	☐male
Age	☐Under 30 years old (inclusive)
	☐31-35 years old (inclusive)
	☐36-40 years old (inclusive)
	☐41-45 years old (inclusive)
	☐46-50 years old (inclusive)
	☐51 years old (inclusive) and above
Number of years teaching	☐5 years (inclusive) or less
	☐6 years to 10 years (inclusive)
	☐11 years to 15 years (inclusive)
	☐16 to 20 years (inclusive)
	☐21 years (inclusive) and above
Current position	☐junior teacher ☐Intermediate teacher ☐advanced teacher
Tabletop games integrated into the teaching	☐have used ☐not yet used

experience

Part 2: Using Tabletop Games to Integrate Teaching Behavioral Intentions

5= strongly agree, 4= agree, 3= neutral 2= disagree 1= strongly disagree

Topic	1	2	3	4	5
1. I think using tabletop games in teaching can enhance my professional knowledge	□	□	□	□	□
2. I think the use of tabletop games in teaching can improve the quality or effectiveness of my teaching	□	□	□	□	□
3. I think using tabletop games in teaching can improve my teaching quality	□	□	□	□	□
4. I think the use of tabletop games in teaching can improve students' learning interest or effectiveness	□	□	□	□	□
5. I think using tabletop games in teaching can enhance my value	□	□	□	□	□
6. I think it is essential to use tabletop games in teaching to improve my professional knowledge	□	□	□	□	□
7. I think it is essential to use tabletop games to integrate teaching to improve the quality of my teaching	□	□	□	□	□
8. I think the use of tabletop games in teaching will enhance students' interest in learning	□	□	□	□	□
9. I think using tabletop games to integrate into teaching is very helpful for me in the teaching process	□	□	□	□	□
10. I think the process of using tabletop games in teaching is enjoyable	□	□	□	□	□
11. The supervisor (education bureau, principal, or director) agrees that I use tabletop games to integrate into teaching	□	□	□	□	□
12. Colleagues agree that I use tabletop games to integrate into teaching	□	□	□	□	□
13. My students agree that I use tabletop games to integrate teaching	□	□	□	□	□
14. The parents of my students agree that I use tabletop games in teaching	□	□	□	□	□
15. I will follow the supervisor's advice and use tabletop games in teaching	□	□	□	□	□
16. I will follow the advice of my colleagues and incorporate tabletop games into teaching	□	□	□	□	□
17. I will use tabletop games in teaching according to the needs of students	□	□	□	□	□

Topic	1	2	3	4	5
18. I will use tabletop games in teaching due to the suggestions of students' parents	□	□	□	□	□
19. Most of the media information shows that the integration of tabletop games into teaching is helpful to my teaching	□	□	□	□	□
20. I think I am capable enough to incorporate tabletop games into teaching	□	□	□	□	□
21. I think it is easy for me to incorporate tabletop games into teaching	□	□	□	□	□
22. Difficulty using it prevents me from incorporating tabletop games into my teaching	□	□	□	□	□
23. I am myself and want to incorporate tabletop games into teaching	□	□	□	□	□
24. I think I can fully integrate tabletop games into teaching	□	□	□	□	□
25. I will strive for opportunities to learn different tabletop games and integrate them into teaching	□	□	□	□	□
26. If there are no restrictions such as teaching aids or resources, I would like to learn to use various tabletop games to integrate into teaching	□	□	□	□	□
27. There are enough channels for consultation or assistance when using tabletop games to integrate into teaching	□	□	□	□	□
28. When I encounter difficulties in integrating tabletop games into teaching, I can solve the problems by myself through channels such as the Internet or communities	□	□	□	□	□
29. I have many educational and training channels to learn how to integrate tabletop games into teaching	□	□	□	□	□
30. I am willing to try to incorporate various tabletop games into teaching	□	□	□	□	□
31. Overall, I think I have a high willingness to use tabletop games in teaching	□	□	□	□	□
32. I would recommend to others to use tabletop games in teaching	□	□	□	□	□
33. In the next month, I am willing to look for tabletop games that are helpful to me to integrate into teaching	□	□	□	□	□

BIOGRAPHY

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