

Piano Enlightenment Education Based on Jean William Fritz Piaget's Cognitive Psychology

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Abstract. This paper takes Piaget's cognitive development theory as the framework and deeply explores its application and practice in the piano enlightenment teaching of children in the pre-operational stage. Research indicates that piano enlightenment teaching should follow the cognitive development characteristics of children at different stages: For children in the pre-operational stage, teaching should adopt gamification and embodiment strategies to transform abstract music theory knowledge into tangible and role-playing game activities, thereby stimulating their intrinsic motivation and musical instincts, and transforming children from passive knowledge receivers to active knowledge constructors, thus promoting the development of children's music perception, logical thinking and creativity. The ultimate goal of piano enlightenment education should not merely be to teach children the skills of playing the piano, but to cultivate their sustainable and comprehensive musical literacy by stimulating their motivation to learn and integrating music with emotions, logic, the body and social interaction.

Keywords: Piaget; cognitive psychology; piano enlightenment education; Piano performance.

1. Introduction

The piano holds a central position in the artistic initiation education of Chinese children, owing to its rich expressiveness and its role in cultivating comprehensive musical literacy. According to data released by the Chinese Musicians Association, the number of Chinese children learning piano had exceeded 60 million by 2025, indicating the widespread prevalence of piano education in China [1]. However, as the target age for introductory piano education continues to lower and its scale keeps expanding, numerous problems and challenges lurking within these practices cannot be overlooked. In piano learning, some children often struggle to sit still, comprehend concepts, or master skills, facing difficulties in areas such as technique and practice methods. Meanwhile, teachers frequently exhibit a "technical proficiency above all" tendency in their teaching philosophy. Both teachers and parents often regard exam certifications and competition awards as the primary markers of successful piano learning, reducing the teaching process to mechanical repetition focused solely on the accuracy of fingering, rhythm, and notes. This "forcing the shoots to grow" approach neglects the cultivation of children's musical sensitivity, curiosity, and creativity. In addition, during the teaching process, the "active construction" of children as the main learning subjects has been neglected, and indoctrination-style teaching methods have been adopted. For instance, abstract music theory knowledge is introduced too early, or children are required to maintain standard hand positions for a long time for dull practice. Such educational methods have eliminated children's curiosity and independent exploration ability in piano learning. It is very likely to cause children to feel frustrated and tired at the very beginning of learning to play the piano [2].

The occurrence of the above-mentioned problems indicates that piano enlightenment education has overlooked the laws of children's psychological and cognitive development. View children as passive containers for receiving knowledge rather than active knowledge explorers. Against this backdrop, Jean Piaget's theory of cognitive development offers us a highly enlightening theoretical perspective. How piano teachers can enhance children's initiative in learning the piano and stimulate their interest in it is the focus of this study.

2. Overview of Piaget's Theory of Cognitive Development

Piaget believed that the development of children's thinking or wisdom is staged, and the cognitive structure of children varies at each stage. Moreover, the development of cognitive structure is a continuous process. He divided children's cognitive development into The Sensorimotor Stage, The Preoperational Stage, The Concrete Operational Stage, and The Formal Operational Stage [3]. The Sensorimotor Stage is for children aged 0 to 2. During this stage, children's language ability development is relatively weak, and they will adapt to new environments through their own senses, perceptions, and movements. The Preoperational Stage refers to children aged 2 to 7, whose language thinking ability has developed somewhat compared to the sensorimotor stage, and they can gradually express their thoughts through language. However, at this stage, children still face certain limitations in the development of their objective cognitive abilities. They are always accustomed to viewing the world from their own perspective. Therefore, before the age of six, children in this age group have obvious self-centered characteristics in their thinking. After the age of six, in terms of language, it gradually shifts from self-centered language to socialized and communicative language. In terms of thinking, it gradually changes from one's own perception of the world to being able to conform to others' viewpoints and ideas. In addition, at this stage, children's cognition still relies on sensory perception to judge things, mainly based on emotional thinking. The Concrete Operational Stage is from 7 to 12 years old. At this stage, children's thinking has characteristics such as internalization, reversibility, conservation and wholeness. During the specific operation stage, children's way of thinking becomes more rational. They can use their own logic and ability to solve some specific problems. But it still cannot solve some abstract and hypothetical problems. The Formal Operational Stage is from the age of 12 to adulthood. This stage is the peak period of children's cognitive ability development, and the thinking during this period is more flexible, systematic and abstract. Basically, one can think logically about any problem, solve hypothetical, purely verbal and abstract problems [4].

In Piaget's theory of cognitive development, Piaget emphasized that knowledge is the result of the gradual construction through the continuous interaction between the subject and the external environment [5]. Cognitive development is an active and continuous constructive activity. He emphasized that children's initiative in construction, the mutual influence between the subject and the environment, and the fact that knowledge stems from action, with action serving as the intermediary when children interact with the environment. Children develop their cognitive structure through the gradual construction of knowledge about the outside world.

During the process of cognitive development, there are four fundamental factors that influence it: biological maturation, practice and experience (physical experience and logico-mathematical experience), social experience, and the process of self-regulation [6]. Biological maturation in an individual refers to the growth of the organism, particularly the maturation of the nervous and endocrine systems. Practice and experience mainly refer to the knowledge or experience gained through the individual's actions upon objects. Only through interaction with the environment can children form cognitive structures (schemata) through assimilation and accommodation, thereby acquiring corresponding knowledge. Social experience primarily involves the exchange of ideas, interactions between people, and the transmission of social culture within the social environment. Self-regulation refers to the interaction between the individual (maturation) and the environment (both physical and social), which leads to the new construction of cognitive schemata. The individual responds to external disturbances through a series of active compensations. This is the fundamental factor in cognitive development, illustrating that children's cognitive development involves subjective initiative.

Piaget's Theory of Cognitive Development reminds us that piano teaching should be designed according to children's cognitive abilities. It is essential to understand the physical and mental development characteristics of children at different ages and adopt appropriate teaching methods to foster a strong interest in piano among children of all age groups. Teachers should familiarize themselves in advance with the children's age, cognition, intelligence, psychological traits, and other

abilities and characteristics to determine suitable course content and teaching approaches. Failure to fully consider children's cognitive abilities and psychological characteristics may result in courses that are either too simple or too difficult, thereby compromising the effectiveness of piano instruction. For example, during The Sensorimotor Stage, a wide variety of high-quality piano music from different styles, periods, and cultures can be played in daily life through online media or other forms—ranging from the contrapuntal rigor of Bach to the impressionistic colors of Debussy, and from Mozart's lively sonatas to Chopin's romantic nocturnes. This consistent and high-quality musical input not only helps create a rich and refined family music environment but also subtly awakens children's auditory sensitivity, promoting their initial discrimination and memory of melody, rhythm, and timbre. This lays a solid foundation for the deep development of their future musical aesthetic perception.

Piaget's perspective emphasizes that children's learning involves subjective initiative. Therefore, in teaching, piano instructors should adopt a child-centered approach, fully mobilizing children's enthusiasm and initiative in learning piano. Teachers should use diverse teaching materials and methods to capture children's attention, enabling them to actively explore music theory and interact with the piano teacher. Reducing monotonous teaching and rote instruction helps prevent stifling children's curiosity and desire for exploration. Additionally, Piaget emphasized the role of practice, experience, and self-regulation in children's development. Each child has different experiences and varying levels of self-regulation, leading to individual differences in cognitive development. Thus, in the educational process, teachers should pay attention to these individual variations. In piano teaching in China, the one-on-one teaching model is almost universally adopted. Therefore, piano teachers should provide personalized and targeted instruction based on each child's unique characteristics. Finally, Piaget highlighted that children's cognitive development results from interactions with the environment and people. Therefore, in piano teaching, emphasis should be placed on interactions between children and teachers, as well as among children themselves. Traditional teaching methods, where the piano teacher explains music theory and demonstrates playing, often overlook the influence of peers. Peer interactions can effectively create cognitive conflicts, helping children recognize issues in their piano performance. Thus, in addition to one-on-one lessons, piano teachers can regularly organize group activities, such as rhythm games or collaborative performances (e.g., piano duets), to promote communication and mutual learning among children.

3. Enlightenment From Piaget's Cognitive Psychology for Piano Teaching

Children in the initial stage of piano education in China are typically aged 5 to 7, which falls within the preoperational stage. As mentioned earlier, children at this stage are characterized by egocentrism, the initial formation of symbolic function, and a lack of reversible thinking and understanding of conservation. Therefore, this study adopts methods incorporating games, stories, and imagination to integrate piano learning into their instinctive world, focusing on cultivating interest, exploring sounds, and establishing positive musical connections. The specific approaches are as follows:

(1) Teaching Objective: Identifying Different Timbres

Teaching Strategy: Guiding children to use their ears to capture different timbres

Specific Methods:

The teacher plays in the low register of the piano with a heavy, slow touch and says, "Listen, this is the big bear walking: thump, thump, thump!" Then, playing in the high register with a crisp, quick touch, the teacher says, "This is the little bird singing: tweet, tweet, tweet!" The children are encouraged to imitate these sounds and find the "big bear's sound" and the "little bird's sound" on the keyboard themselves.

"Big bear" and "little bird" are images very familiar to children from picture books, cartoons, and daily life. Their sounds, body movements, and traits are already stored in the children's experiential memory. This teaching strategy uses these existing experiences as "anchors" for understanding new knowledge (timbre), making unfamiliar concepts accessible. It transforms abstract musical elements

into vivid images and stories that children can intuitively grasp, significantly lowering the cognitive barrier. This approach does not rely solely on auditory input. It creates a multi-sensory learning loop: auditory (listening to sounds) → visual imagination (associating images) → verbal expression (imitating sounds) → action exploration (finding notes on the keyboard). Such whole-body engagement helps children form more solid and vivid memories of different timbres. The entire teaching process is designed a "imitation and discovery" game, perfectly suited to children in this stage, who are in a sensitive period for imitating language and actions. Encouraging them to mimic animal sounds aligns with and nurtures their natural tendency to imitate. Meanwhile, the act of "searching on the keyboard" satisfies their need to explore and understand the world through physical movement. This method effectively sparks children's curiosity, imagination, and playful instincts, allowing them to achieve the teaching objective naturally through joyful experiences and build positive emotional connections with the piano. From the very beginning, children learn that music is not just about notes—it is a tool for expression and storytelling. This lays valuable groundwork for their future understanding of musical expression terms and artistic interpretation.

(2) Teaching Objective: Feel the rhythm

At this stage, children are still unable to understand the proportion of the duration of rhythm. Therefore, the concept of rhythm cannot be taught through indoctrination. Instead, students should be guided to directly experience rhythm.

Teaching Strategy: Integrate rhythm with whole-body movements, nursery rhymes and games.

Method 1: Body percussion

Case: Learn a simple children's rhyme called "Sit in a Row". The teacher led the children to recite and perform actions at the same time: clap their hands three times when reciting "sit in a row", and clap their legs three times when reciting "eat fruits". Internalize the natural rhythm of language through the movements of different parts of the body.

Method 2: Rhythm Prop Game

Case: Use ribbons or rhythm sticks. Play a piece of music and have children hold scarves and sway in the wind to express a continuous melody, or use rhythm sticks to tap the ground to imitate stable beats. This enables them to "see" and "feel" the different forms of music.

Rhythm and melody are intangible and invisible. Through movements of large muscle groups such as clapping hands and legs, children convert the "auditory information" of rhythm into "kinesthetic memory" and "tactile feedback". This feeling remembered by the body is far more profound and lasting than the knowledge only heard by the ears or understood by the brain. The waving veil makes the undulating lines of the melody visible to the naked eye, and the striking rhythm sticks make the rhythm of the beat concrete and perceptible. This connection between hearing, vision and kinesthesia greatly enhances children's understanding and expression of music, satisfying their nature to know the world through multiple sensory channels.

(3) Teaching Objectives: Understand the staff, identify lines and spaces at different positions, as well as note names.

Teaching Strategy: Use game-based teaching to enhance the interactivity and fun of children's learning of music theory knowledge such as the staff and note names.

Specific Methods:

First, lay a staff mat on the floor of the music classroom. Place turtle toys on the lines and goldfish toys in the spaces. The children act like big fish in the water, freely swimming and playing across the "water" (the staff). When the teacher says, "Go to the second line to eat the turtle!" the children must run to the second line to grab the turtle. When the teacher says, "Snatch the goldfish in the first space!" the children rush to the first space to "eat" the goldfish. After grabbing a turtle or goldfish toy, the children should verbally identify their position on the staff. For example: "I'm standing on the second line of the treble clef! "Next, the teacher plays a random note (e.g., middle C) on the staff during a musical segment and says, "Jump to this note's house!" The children must quickly determine whether the note is on a line or in a space and jump to the corresponding position. The use of turtles and goldfish helps children distinguish between lines and spaces.

After children have fully mastered the lines and spaces of the staff, they can be taught solfege syllables and note names. The first activity involves a name tag game to recognize solfege syllables and note names. The teacher attaches name tags with either solfege syllables or note names on the children's backs. To start the game, children with note name tags must find the child wearing the matching solfege syllable tag. After one round, the tags can be swapped. After two to three rounds, children with matching note names and solfege syllables form partner pairs. Once paired, each set of "good friends" (e.g., C and Do) must run together to the correct position on the floor staff—for instance, standing on the position for middle C (first ledger line below the treble staff)—and say together: "We are C and Do, and we live here!"

This game organically connects three initially separate learning objectives—recognizing lines and spaces, matching note names with solfege syllables, and identifying the absolute position of notes on the staff—through engaging gameplay. It actively involves children's auditory (listening to instructions), visual (reading the staff position), kinesthetic (running, jumping, crouching), tactile (picking up props, high-fiving partners), and language systems (stating their position). Multi-sensory stimulation significantly deepens memory traces and promotes neural connections, enabling children to learn with their "whole body," which aligns with their cognitive development. Moreover, the cooperative nature of the game fosters a spirit of teamwork among the children.

(4) Learning Objective: Recognize musical notes and their time values.

Teaching Strategy: Stimulate children's initiative in learning.

Method: When children are first learning about notes and their corresponding time values, the piano teacher can assign a task for them to create their own note cards. Have children make cards for half notes, quarter notes, and eighth notes, each using a different color. During the piano lesson, the teacher can ask the student to explain the note cards they made—what the name of each note is and how many beats each note should be held. After the student explains the content of the cards, the teacher can invite other children to provide feedback.

While creating the cards, children not only review knowledge from the previous lesson but also shift from passive observation or listening to actively using their hands, observing colors with their eyes, explaining verbally, and listening to peer feedback. This forms a multi-channel information processing system that integrates action, vision, language, and hearing, resulting in more effective memory retention than passive instruction. By turning music theory into colorful little drawings, children are creating their own meaningful knowledge models—this is an active process of knowledge construction. When students explain their own cards, the teacher can clearly gauge the accuracy and depth of their understanding of the theory. Letting students take on the role of "little teacher" empowers them with autonomy and responsibility for their own learning, while also satisfying their desire for expression and a sense of achievement—effectively stimulating intrinsic motivation. The peer feedback session breaks the traditional one-way "teacher-student" communication model and builds a multi-directional, collaborative learning atmosphere. Through listening, questioning, and complementing each other's ideas, students learn to appreciate others, express their own views, and engage in cooperative learning.

4. Summary

This paper summarizes the common problems such as "skill supremacy" and "mechanical training" in the current piano enlightenment education in China, and points out that the root cause lies in the neglect of the cognitive development laws of children as the main body of learning. For this reason, this paper introduces Piaget's theory of cognitive development and proposes piano teaching strategies that are adapted to the characteristics of children's cognitive development. Abandon the abstract indoctrination and instead adopt the strategies of gamification, story-telling and embodiment. The series of innovative strategies detailed in this paper, such as "timbre imitation", "rhythm body-making", "staff Explorer" and "note card making", transform abstract music theory knowledge into touchable, playable and explorable game activities for children, stimulating their inner musical

instincts and learning interests through multiple sensory channels. Meanwhile, the paper emphasizes the crucial role of social interaction and peer review in triggering cognitive conflicts and promoting thinking development. It advocates breaking away from the single one-on-one teaching model, creating a collaborative and inquiry-based learning atmosphere, and giving full play to children's subjective initiative in learning. Transform the dull piano teaching into a process of exploring, collaborating and creating the beauty of music, promoting the improvement of children's comprehensive musical literacy.

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