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Game-Based Instructional Design for Beginner Chinese: Constructing a Classroom Game Activity Database

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Abstract— *With the rapid development of international Chinese education, enhancing learner engagement and motivation in beginner-level Chinese classes has become a major focus. Based on Embodied Cognition Theory and the concept of game-based learning, this study proposes a systematic framework for constructing a "Classroom Game Activity Database" for beginner Chinese teaching. It designs 24 games covering listening, speaking, reading, and writing skills, integrating pre-class warm-up, new content presentation, review, and consolidation stages. Through modular database design and scientific game classification, this research not only improves resource accessibility for teachers but also provides practical, engaging, and goal-oriented classroom activities. The paper highlights principles of database construction, scientific approaches to game design, and application of an incentive mechanism, while introducing an "Experience-Reflection-Transfer" model for classroom integration. Findings suggest that the designed game activities effectively enhance learner motivation, improve communicative competence, and promote classroom interaction, offering innovative models and practical references for Chinese language teaching.*

Keywords— ***Beginner Chinese Teaching, Classroom Games, Embodied Cognition, Game-based Learning, Instructional Design.***

I. INTRODUCTION

1.1 Research Background and Significance

With the continuous advancement of international Chinese education, the number of beginning learners of Chinese has been steadily increasing year by year. However, at the beginner stage, learners commonly face challenges such as limited vocabulary, difficulty in understanding grammar, and lack of fluency in oral expression, which often lead to decreased motivation and insufficient classroom participation. Although traditional lecture-based teaching is efficient in terms of knowledge delivery, it has clear limitations in stimulating learners' enthusiasm and promoting communicative competence. In recent years, gamification in education has gradually become an important trend in language teaching. Its core idea is to make learning activities both challenging and engaging through task-driven designs and fun mechanisms, thereby enhancing learners' intrinsic motivation.

The Embodied Cognition Theory argues that cognition does not rely solely on brain computation but is closely related to bodily activity and situational experience. This theory offers a new perspective for language teaching: learning is not only a matter of symbol manipulation but also an interactive process involving bodily participation. Therefore, integrating the concept of embodied cognition into gamified classroom design can help activate learners' sensory experiences and enhance the authenticity of language processing and use.

Against this background, this study focuses on beginner-level Chinese teaching, exploring how to construct a systematic database of classroom game activities and design engaging games aligned with teaching objectives to improve both teaching effectiveness

and the learning experience. This research not only fills the gap in systematic design for gamified teaching in beginner Chinese classrooms but also provides replicable and scalable solutions for international Chinese language teaching practice.

1.2 Research Questions and Objectives

This study is guided by three interrelated research questions. First, it asks how a scientific, systematic, and searchable database of classroom game activities can be constructed to meet the practical needs of beginner-level Chinese teaching. Second, it explores how game activities can be designed with both entertainment value and pedagogical significance, taking into account the dual dimensions of teaching stages and language skills. Third, it investigates how such game activities can be effectively applied in beginner Chinese classrooms and how a sustainable mechanism for continuous refinement and optimization can be established.

In response to these questions, the study sets out three main objectives. The first objective is to build a database framework that clearly defines classification dimensions—including teaching stages, language skills, and game types—and specifies database fields and retrieval logic. The second objective is to design and develop a set of 24 classroom games that comprehensively cover the four core language skills of listening, speaking, reading, and writing, with explicit teaching objectives, step-by-step procedures, and motivational mechanisms. The third objective is to propose a practical model for classroom application that integrates the principles of embodied cognition theory with gamification in learning, ultimately forming a pedagogical process characterized by "experience–reflection–transfer."

II. RESEARCH DESIGN AND DEVELOPMENT OF A DATABASE FOR CLASSROOM GAME ACTIVITIES

2.1 Research Approach and Overall Framework

The core objective of this study is to construct a classroom game activity database tailored for beginner-level Chinese teaching, thereby enabling the systematic management and intelligent application of teaching resources to enhance classroom interaction and instructional efficiency. The research design follows a logical pathway consisting of the following components:

(1) Theoretical Foundation: Anchored in Embodied Cognition Theory, the study emphasizes an integrated learning model of "experience–action–cognition," while also incorporating the Task-Based Language Teaching (TBLT) approach and the PPP model (Presentation–Practice–Production) to ensure that game activities are deeply integrated with the teaching process.

(2) Needs Analysis: Drawing on questionnaire surveys of both teachers and learners, the study identifies the key pain points in the use of classroom games, namely the lack of systematic resources, difficulties in aligning games with instructional objectives, and the extended time required for lesson preparation.

(3) Database Construction: The database is designed with multidimensional classifications, including a skills dimension (listening, speaking, reading, writing), an instructional stage dimension (warm-up, presentation of new material, practice, production), and a task type dimension (task-based, competitive, collaborative, creative).

(4) Intelligent Retrieval and Incentive Mechanism: By means of keyword matching and weighted ranking, the database enables rapid filtering of game activities, while the integration of a points and badge system serves to enhance learner motivation. The overall framework is illustrated in Figure 1.

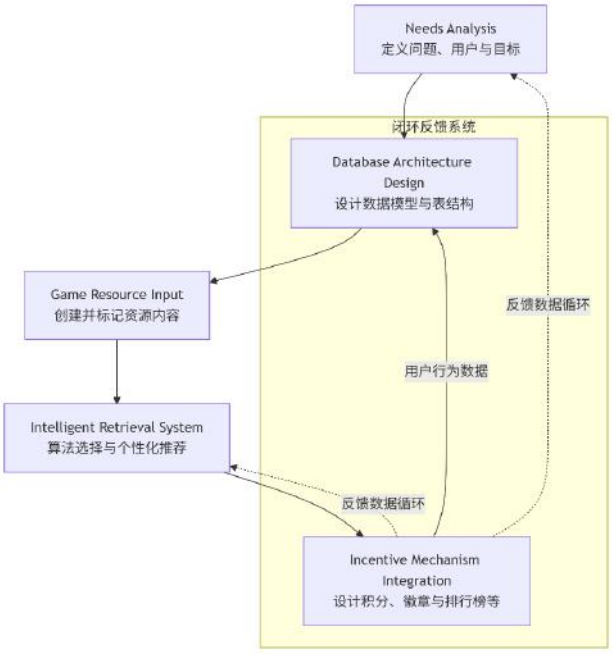

Fig.1: Framework for Game Activity Database and Incentive System

Needs Analysis → Database Architecture Design → Game Resource Input → Intelligent Retrieval System → Incentive Mechanism Integration.

2.2 Database Architecture and Field Design

To ensure resource-oriented, structured, and scalable development, this study adopts a modular database design. The database is composed of three core modules:

Resource Module: Stores essential information about classroom games (e.g., name, targeted skills, teaching stage, gameplay, required materials, etc.).

Retrieval Module: Supports multidimensional filtering based on skills, teaching stages, types, and other criteria.

Incentive Module: Records students' classroom participation data, such as points, badges, and achievements, thereby creating individual learning profiles.

In addition to the modular architecture, the system is further specified at the level of database fields. The field design ensures that essential information can be effectively stored and retrieved. Table 1 illustrates some of the core fields, along with their data types and example values:

Table 1: Game Activity Database Field Design

Field Name	Data Type	Example Value
Game ID	String	WU-L-TSK-001
Game Name	String	Listening and Drawing Game
Skill Category	String	Listening
Teaching Stage	Array	["Warm-up", "Presentation"]
Game Type	String	Task-based
Core Objective	String	Improve detailed listening comprehension
Materials	Array	["Paper", "Pen"]
Estimated Time	String	6–8 minutes
Procedure	Text	Teacher describes picture → students draw → presentation
Scoring Rules	Text	Scored by speed + accuracy
Related Badges	Array	["Detail Listening Master"]

2.3 Classification and Organization Strategy

To enhance the usability of the database, this study adopts a classification strategy that combines two primary dimensions with an additional task-type dimension. Specifically, the database organizes game activities along the dimensions of language skills (listening, speaking, reading, and writing) and instructional stages (warm-up, presentation, practice, and production), while also categorizing them by task type (task-based, competitive, collaborative, and creative). This multi-layered classification not only addresses teachers' diverse needs in instructional design but also enables the intelligent retrieval system to perform multi-condition combined filtering, thereby improving both efficiency and precision in game selection.

In terms of coverage, the database is designed to comprehensively represent the four core language skills, with six representative games assigned to each skill area, producing a total of 24 prototypical games. The details are summarized in Table 2.

Table 2: Game Coverage by Language Skill

Skill Category	Representative Games
Listening	Listening and Drawing; True-or-False Judgment; Vocabulary Bingo; Number-Word Guessing; Move on Command; Listening Puzzle
Speaking	Relay Whisper; Role Interview; Describe and Guess; Vocabulary Chain Circle; Taboo Description; Mini Scenario Theater
Reading	Match the Title; Detail Tracking; Text-Picture Connection; Reverse Reading; Keyword Search; Cloze Test
Writing	Collaborative Writing; Picture-Based Paragraph Writing; Class Newsletter; Revision and Optimization; Creative Letter Writing; Dialogue Rephrasing

2.4 Integration of Incentive Mechanisms

To further enhance learner engagement, this study embeds a points–badges–leaderboard incentive mechanism into the database. The design highlights are as follows:

(1) Points Acquisition: Learners can earn points through completing game tasks, demonstrating active participation, and engaging in effective collaboration.

(2) Badge Rewards: Specific achievements are recognized with badges, such as "Pronunciation Master" (awarded after obtaining full marks in five pronunciation exercises), "Chinese Character Hero" (awarded after successfully identifying 100 character components), and "Cultural Ambassador" (awarded after completing three cultural comparison activities).

(3) Privilege Unlocking: The acquisition of certain badges unlocks exclusive resources, such as advanced pronunciation games or customized practice templates.

Table 3: Badge Criteria and Privileges

Badge Name	Criteria for Awarding	Privileges Unlocked
Pronunciation Master	Achieve full marks in pronunciation practice five times	Access to advanced phonetic games
Chinese Character Hero	Identify 100 character components successfully	Customized character practice templates
Cultural Ambassador	Complete three cultural comparison activities	Exclusive cultural activity resources

The incentive module not only enhances the overall enjoyment of classroom activities but also encourages learners to sustain participation and maintain long-term commitment.

2.5 Summary

This chapter has constructed a systematic model of a classroom game activity database, specifying its data structure, classification strategy, retrieval mechanism, and incentive module. The database not only addresses the traditional challenges of scattered and difficult-to-manage classroom game resources but also improves the convenience and engagement of teaching applications through intelligent recommendation and motivational mechanisms. In doing so, it provides both the technical and theoretical foundation for the game design presented in Chapter Four.

III. DESIGN AND CATEGORIZATION SYSTEM FOR CLASSROOM GAME ACTIVITIES

3.1 Design Concepts and Principles

The design of classroom games is not merely a tool for entertainment but an essential component of teaching strategies. This study adheres to the following principles in game design:

Principle of Relevance: Each game must be closely aligned with the instructional objectives and serve the development of language skills.

Principle of Systematic Coverage: The games should encompass the four core skills—listening, speaking, reading, and writing—and correspond to different stages of instruction (warm-up, presentation of new content, practice, and production).

Principle of Operability: Materials should be simple, steps clearly defined, and time manageable, allowing teachers to apply the games directly in class.

Principle of Interactivity and Motivation: Group collaboration, point rewards, and competition mechanisms should be integrated to stimulate students' engagement and enthusiasm.

Principle of Cognitive Support: Game design should incorporate Bloom's taxonomy of cognitive objectives, addressing not only the mastery of linguistic knowledge but also its application and creative use.

3.2 Game Classification Framework

To ensure systematic management, classroom games in this study are categorized into four major types, each containing six representative games, resulting in a total of 24 activities. The classification framework is shown in Table 4.

Table 4: Game Classification Framework

Skill Category	Number of Games	Instructional Stages	Typical Task Types
Listening	6	Warm-up / Presentation / Practice	Task-based / Competitive / Collaborative
Speaking	6	Warm-up / Presentation / Production	Creative / Task-based / Collaborative
Reading	6	Presentation / Practice	Strategic / Task-based / Competitive
Writing	6	Practice / Production	Creative / Task-based / Project-based

To ensure both diversity of classroom activities and the systematic achievement of learning objectives, the following sections provide detailed descriptions of six representative games for each skill type, including instructional objectives, required materials, teaching procedures, and scoring rules.

3.3 Listening Skill Game Design

This category of games is designed to develop students' auditory discrimination, information-capturing, and collaborative comprehension skills, while also incorporating physical actions to embody the concept of embodied cognition.

3.3.1 Game 1: Drawing by Listening

Instructional Stage: Warm-up / Presentation

Type: Task-based

Core Objective: To train students' listening comprehension of spatial relations, numbers, and object features.

Materials: Blank paper, colored pens

Procedure:

The teacher describes a scene (e.g., "There is a big tree beside a house, and in front of the house, a red car is parked.").

Students listen and draw the corresponding scene on paper.

Students present their drawings, followed by teacher feedback and detail checking.

Scoring Rules:

Completeness of details: 1 point for each correct element

Accuracy of spatial relations: 2 points

Bonus point for coloring

3.3.2 Game 2: True or False?

Instructional Stage: Review

Type: Competitive

Core Objective: To improve comprehension of both main ideas and details.

Materials: Short story text, True/False cards

Procedure:

The teacher reads a short story aloud.

A set of judgment sentences is presented; students raise cards (True/False).

Points are awarded, and the correct answers are announced.

Design Highlights:

A time limit can be added to increase excitement.

Group competition can be introduced to foster teamwork.

3.3.3 Game 3: Vocabulary Bingo

Instructional Stage: Warm-up / Review

Type: Competitive

Core Objective: To review vocabulary and reinforce word recognition through listening.

Materials: Bingo cards (9–16 words), markers/tokens

Procedure:

Each student receives a Bingo card with vocabulary items.

The teacher randomly calls out words; students mark the corresponding items on their cards.

The first to complete a line shouts "Bingo!" and wins.

Variants:

Increase difficulty: Teacher reads word meanings, and students find the corresponding terms.

Integrate character recognition: Teacher reads pinyin or meanings, and students circle the correct Chinese characters.

3.3.4 Game 4: Guess the Word by Number

Instructional Stage: Presentation / Review

Type: Creative

Core Objective: To cultivate reasoning ability and keyword-based listening strategies.

Procedure:

The teacher provides hints such as the number of letters or strokes and the semantic category (e.g., "This is a six-letter profession word related to healthcare.").

Students discuss in groups and propose possible answers.

IV. CONCLUSION

Grounded in Embodied Cognition Theory and oriented toward the instructional needs of beginner-level Chinese classrooms, this study proposes an optimization scheme for teaching through classroom game activities. It further develops a database architecture, establishes a game classification system, and designs representative game activities. The research process not only emphasizes comprehensive coverage of language skills but also stresses the rational integration of instructional stages with engaging and interactive elements.

The core conclusions are as follows:

Systematic Game Database: A structured database was proposed that integrates the four core skills—listening, speaking, reading, and writing—while aligning them with instructional stages and activity types, thereby improving the precision of resource retrieval.

Design of 24 Core Classroom Games: Each game is specified with clear instructional objectives, required materials, and operational procedures, ensuring that teachers can readily implement them in practice.

Introduction of Incentive Mechanisms: By incorporating points, badges, and leaderboards, the system fosters autonomous learner participation, strengthens classroom interaction, and enhances motivation.

Application of the Experience–Reflection–Transfer Model: Games are elevated beyond their entertainment function to become an effective pathway for facilitating deep learning.

The practical significance of the study lies in several aspects. For teachers, it offers standardized and

modular gamified teaching solutions that reduce preparation workload while increasing classroom interactivity and enjoyment. For students, games serve as effective learning tools that enhance contextualized language use and sustain learning engagement. For the field of international Chinese education, this research provides both theoretical foundations and practical models for pedagogical innovation.

Looking ahead, the study may be further advanced in three directions:

Technological Implementation: Developing an application platform for the database to enable intelligent retrieval and personalized recommendation.

Instructional Validation: Conducting large-scale empirical studies to evaluate and optimize the effectiveness of the designed games.

Cross-Cultural Adaptability: Exploring differentiated strategies for game design across diverse cultural contexts.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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