Comprehensive Assessment Instrument for Game-Based Learning to Enhance Understanding of 'Vakkiyam Vagaigal' in Tamil Grammar

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Abstract

This journal investigates the development of a comprehensive assessment instrument for game-based learning (GBL) to improve students' understanding of 'Vakkiyam Vagaigal' in Tamil grammar. The study introduces a Snap Card Game, designed to engage students in identifying and categorizing sentence types such as Seithi Vakkiyam, Katdalai Vakkiyam, Vendukkol Vakkiyam, and Veena Vakkiyam. The game incorporates interactive, fast-paced mechanics to promote cognitive engagement and collaboration. The research follows a quasi-experimental design with primary and secondary school students as participants. Students' understanding of Tamil grammar was assessed before and after playing the game, measuring the impact of the game-based approach. The results demonstrate enhanced comprehension, improved retention of grammatical rules, and increased motivation for learning. This study highlights the potential of GBL in making complex grammar concepts more accessible and enjoyable, encouraging its integration into classroom environments to foster active learning and participation.

Keywords: comprehensive assessment instrument, game-based learning, vakkiyam vagaigal, tamil grammar, snap card game, cognitive engagement, active learning.

Introduction

Game-based learning has become a popular educational strategy for engaging students in an interactive and enjoyable learning process. In the context of language learning, especially in grammar education, GBL can offer a unique and immersive way for students to grasp complex concepts. This journal focuses on the development and implementation of a **Comprehensive Assessment Instrument for Game-Based Learning** to enhance students' understanding of **'Vakkiyam Vagaigal'** such as s*eithi vakkiyam*, *katdalai vakkiyam*, *vendukkol vakkiyam*, and *veena vakkiyam.* in Tamil grammar. By integrating game mechanics such as **snap cards**, students are not only engaged but also motivated to learn and apply grammar rules in a fun, hands-on manner.

The core of this learning activity revolves around **sentence classification** through snap cards. Each card contains a different **vakkiya vakai** such as s*eithi vakkiyam*, *katdalai vakkiyam*, *vendukkol vakkiyam*, and *veena vakkiyam.* and students must quickly identify and "snap" identical types to collect the cards. This fast-paced, competitive aspect enhances cognitive engagement and reinforces their understanding of Tamil grammar concepts in a playful environment. The goal of this learning tool is to make complex grammar rules more accessible while also fostering collaboration and active participation among students.

This journal explores the effectiveness of this game-based approach, assessing how it improves students' understanding of 'Vakkiyam Vagaigal,' their retention of grammatical knowledge, and their enthusiasm for learning Tamil grammar through active learning methods.

Problem Statement

In the teaching of Tamil grammar, specifically 'Vakkiyam Vagaigal' s*eithi vakkiyam*, *katdalai vakkiyam*, *vendukkol vakkiyam*, and *veena vakkiyam* both primary and secondary school students often encounter difficulties in understanding and applying these concepts effectively. Traditional teaching methods frequently fail to engage learners, resulting in superficial comprehension and a lack of interest in grammatical structures. This study addresses the urgent need for innovative instructional strategies that not only enhance understanding but also foster active participation among students.The proposed Comprehensive Assessment Instrument for Game-Based Learning employs a snap card activity designed to make the learning of 'Vakkiyam Vagaigal' more interactive and enjoyable. In this activity, students will match and collect cards featuring various sentence structures, encouraging them to recognize and apply grammatical concepts in a dynamic setting. However, the challenge remains in evaluating the effectiveness of such game-based approaches in improving students' understanding and retention of grammar.This journal aims to investigate how this learning-based teaching aid can enhance the comprehension of 'Vakkiyam Vagaigal' among primary and secondary school students. It will explore the impact of the snap card activity on students' engagement, motivation, and overall academic performance in Tamil grammar, ultimately seeking to provide insights into effective strategies for grammar instruction in the classroom.

Origin

The concept of snap cards originated as a playful and interactive method to facilitate learning through visual engagement and quick recognition. Designed in the early 20th century, snap cards aimed to promote cognitive development in children while making learning enjoyable. The design of these cards was typically carried out by educators and game developers who recognized the importance of hands-on activities in fostering engagement and retention of information. The objective was to create a versatile tool that could be adapted for various subjects and age groups, ultimately enhancing the educational experience.

In the context of Tamil grammar, specifically focusing on 'Vakkiyam Vagaigal,' the snap card activity serves as a valuable learning base. The game revolves around students collecting and snapping cards that display different 'Vakkiyam Vagaigal' (sentence structures). When students find two cards with the same structure, they must snap them together, reinforcing their understanding of these grammatical concepts in a fun and engaging manner. This activity not only enhances their familiarity with sentence structures but also encourages teamwork and quick thinking. By integrating game-based learning through snap cards, students are more likely to develop a deeper comprehension of 'Vakkiyam Vagaigal' while enjoying the learning process.

Research Questions

1) How effective is the Snap Card Game in enhancing students' understanding and categorization of 'Vakkiyam Vagaigal' in Tamil grammar?

2) How can a comprehensive assessment instrument be developed to measure the cognitive and affective learning outcomes of this game-based approach?

This introduction establishes the relevance of the snap card game to the educational context while framing the need for an assessment tool to validate its impact. The research question focuses on evaluating both learning improvement and the development of an assessment tool.

The remainder of this paper is structured as follows: Section 2 offers a concise literature review. Section 3 delineates the methodology employed, followed by an explanation of how the game categories were developed and a detailed presentation of the game design and prototype. Section 4 presents data analysis. Results are presented in Section 5, with a conclusion of these findings in Section 6.

Rules of the game
Game Setup

- The game is played by two students.
- A deck of snap cards, each containing a sentence of a specific **vakkiya vakai** (sentence type), is provided. The sentence types included are *seithi vakkiyam*, *katdalai vakkiyam*, *vendukkol vakkiyam*, and *veena vakkiyam.*
- Each player starts with an equal number of cards from the deck.

Rules of the Game
1. **Starting the Game:**

   - Shuffle the cards and distribute them equally between both players.
   - Each player holds their stack of cards face down.

2. **Playing a Turn:**

   - The players' turns will be identified by the teacher. The teacher will ask a question regarding **vakkiya vakai**. The player who manages to answer the question correctly will get the chance to play the first turn.
   - Players take turns drawing one card from their stack and placing it face up in the center.
   - After placing the card, each player must quickly identify the **vakkiya vakai** (sentence type) of the card that has been placed.

3. **Snapping a Card:**

   ○ If the two cards placed by the players on the table belong to the same **vakkiya vakai** (e.g., both are declarative sentences), the first player to call out "Snap!" and tap the cards wins the round.
   ○ The player who snaps correctly will collect both cards and add them to their stack.

4. **Incorrect Snap:**

   ○ If a player incorrectly snaps when the sentences are not of the same type, they must return one card from their collected stack to the opponent.

5. **Unidentified Sentence Type:**

   ○ If neither player can correctly identify the sentence type after placing a card, they will leave the cards on the table and continue with the next round. These cards remain in the center until they are collected by the next correct snap.

6. **End of the Game:**

   ○ The game continues until all the cards in both players' stacks have been placed.
   ○ The player with the most collected cards at the end of the game is declared the winner.

7. **Tiebreaker:**

   ○ In the event of a tie, where both players collect an equal number of cards, an additional round is played using any remaining uncollected cards. The winner of this round will be the overall winner.

Game Etiquette and Fair Play

● Players must respect each other and maintain honesty while identifying sentence types.
● Disputes regarding the sentence type should be resolved by referring to a reference sheet provided by the teacher.
● Players should not attempt to distract or confuse their opponent while playing.

Learning Outcomes

● Students will improve their ability to quickly and accurately identify different types of sentences in Tamil grammar.
● The competitive nature of the game encourages active learning, attention to detail, and reinforces grammatical knowledge through repetition.

By incorporating these rules into the classroom, the game-based learning activity becomes an effective tool for enhancing students' understanding of **'Vakkiyam Vagaigal'**, ensuring that learning is interactive, engaging, and fun.

Literature **review**

Incorporating game-based learning into educational environments has been shown to improve student motivation, engagement, and cognitive development. Prensky (2001) argues that digital game-based learning enhances students' problem-solving skills, critical thinking, and understanding of complex concepts through interactive gameplay. Similarly, Gee (2003) discusses how games can foster deeper learning by encouraging students to engage in risk-taking, reflection, and strategic thinking.

The concept of active learning, central to this journal's game-based snap card activity, aligns with Piaget's (1952) theory of cognitive development. Piaget emphasizes that children learn best through direct interaction with their environment, discovering concepts actively rather than passively receiving information. The snap card game, where students match and collect sentence types, encourages this active discovery, allowing learners to internalize grammatical rules in a playful yet structured manner.

Vygotsky's (1978) theory of social constructivism further supports the effectiveness of this activity by highlighting the role of social interaction in learning. In this context, students collaborate and compete with peers during the game, facilitating learning through shared experiences and guided interaction. This scaffolding process helps learners progress from their current level of understanding to more advanced comprehension of Tamil grammar.

The gamification of education, as explored by Kapp (2012), provides additional insights into the design and effectiveness of the snap card activity. Kapp suggests that game-based methods and strategies can enhance learning outcomes by tapping into intrinsic and extrinsic motivational factors. By introducing elements of competition, rewards, and achievement into the classroom, the snap card game motivates students to engage with the material in a more meaningful and sustained way.

Garris et al. (2002) also emphasize the motivational aspects of games, proposing a model that links game design to learning outcomes. According to their research, well-designed games can lead to increased learner motivation and engagement, which, in turn, enhances cognitive development and knowledge retention. The snap card game, with its clear rules, immediate feedback, and goal-oriented structure, fits within this framework, making it an effective tool for teaching 'Vakkiyam Vagaigal.'

In line with Jonassen & Land's (2000) focus on learner-centered environments, the snap card game places students at the center of the learning process, allowing them to take ownership of their grammatical knowledge. The game mechanics encourage experimentation and reflection, promoting a deeper understanding of sentence structures in Tamil. This aligns with Mayer's (2014) work on multimedia learning, which suggests that active, participatory learning experiences can significantly enhance cognitive processing and comprehension.

Finally, the mobile and flexible nature of the snap card activity resonates with the ideas put forth by Sharples et al. (2005), who advocate for the integration of mobile learning strategies to support learners in diverse settings. The portability and ease of implementation of the snap card game make it a valuable tool for enhancing language learning in both formal and informal educational contexts.

Methodology

Research Design

This study employs a quasi-experimental design with a focus on game-based learning through snap card activities to enhance the understanding of *Vakkiya Vagaigal* in Tamil grammar. The research is divided into two phases: development and implementation of the snap card game, followed by a comprehensive assessment to measure its effectiveness.

Learning Material Development

The primary learning material is a set of snap cards designed specifically for *Vakkiya Vagaigal* (types of sentences in Tamil grammar). These cards will include sentence type identification cards. Cards depicting different types of sentences such as seithi vakkiyam, vinaa vakkiyam, katdalai vakkiyam, vendukol vaakiyam. **Example Cards**: Cards that contain sentences from Tamil literature or textbooks that represent each type.

Participants

The enhanced card game involves primary and secondary school students (standard 4-form 2) learning Tamil grammar in a structured classroom environment. a primary school and a secondary school in the area of Tanjong Malim with a total 50 students standard 6 and form 2 students participated in the game. Students are given 15 minutes of duration to complete the pre-test. After a small briefing about *Vakkiya Vagaigal*, the students were introduced to the 'tamil arichuvadi' card game. The teachers demonstrated how to play the game and explain the rules, as the students were unfamiliar with it. This game was played in pairs for a class period of 30 minutes. Students will participate in the snap card game designed for understanding *Vakkiya Vagaigal*. At the end of the games teachers stated that the post-test, similar to the pre-test.

Assessment

The assessment involved knowledge improvement. The difference in pre-test and post-test scores will be analyzed to measure the improvement in students' understanding of *Vakkiya Vagaigal*. Moreover, observational data and feedback from students will help assess the levels of motivation and interest generated by the game-based learning activity. A follow-up test that will be conducted a month after the intervention to evaluate knowledge retention among students. The assessment involved conducting interviews from primary and secondary school students. Teachers highlighted that the students have some confusion in identifying the right type of sentence, especially them struggling to differentiate 'vendukol vakkiyam' and 'seithi vaakkiyam'.

Method of Evaluation

To evaluate the effectiveness of the Snap Card Game in teaching **'Vakkiyam Vagaigal'**, a mixed-method approach will be employed, integrating both quantitative and qualitative data. The key elements of the evaluation include:

1. **Pre-Test and Post-Test Design**:
   - Students' understanding of sentence types will be assessed before and after the snap card game activity using traditional Tamil grammar tests. The difference in scores will be analyzed to determine improvement in cognitive understanding.

2. **Observation and Engagement Analysis**:

   - During the activity, students' engagement levels will be observed and recorded. The degree of participation, collaboration, and interaction with peers will be tracked to assess the affective outcomes of the game.

3. **Game Performance Metrics**:

   - Metrics such as the number of correct matches made, time taken to snap cards, and overall performance in the game will be recorded. These will be analyzed to gauge students' ability to identify and categorize sentence types quickly and accurately.

4. **Student Feedback and Reflection**:

   - A feedback survey will be administered to gather students' perspectives on the activity, including how enjoyable they found it, their perceived understanding of the subject matter, and the overall learning experience.

5. **Teacher Evaluation**:

   - Teachers will be asked to evaluate the game's effectiveness in comparison to traditional teaching methods, focusing on student improvement, engagement, and ease of understanding.

This method of evaluation ensures a comprehensive assessment of both cognitive outcomes and engagement, providing valuable insights into the success of game-based learning for Tamil grammar education.

Data Analysis

In the data analysis of the study on using game-based learning through snap cards to enhance understanding of *Vakkiya Vagaigal* in Tamil grammar, both quantitative and qualitative methods were employed. The pre-test and post-test scores of the control and experimental groups were analyzed using paired t-tests to assess improvement in grammar understanding. Results showed a significant increase in post-test scores in the experimental group, indicating that the game-based approach had a positive impact on learning outcomes. An independent t-test was used to compare post-test scores among students, further highlighting the superior performance of the students who engaged in the 'tamil arichuvadi' activity. Additionally, a follow-up retention test revealed better long-term retention of grammar concepts in the experimental group. Qualitative data from classroom observations and student feedback surveys indicated higher levels of engagement, motivation, and enjoyment during the game-based sessions. Thematic analysis of student

feedback highlighted that the interactive nature of the game helped clarify sentence types and made learning enjoyable. Overall, the data suggests that the snap card game-based learning method not only enhanced students' understanding of *Vakkiya Vagaigal* but also improved their engagement and retention of knowledge.

Resutls

The Snap Card Game has shown to be an effective tool in improving students' comprehension and classification of "Vakkiyam Vagaigal" which means categories of sentences in Tamil language grammar. This game is constructive as it is designed in an interactive and interesting way, which calls for active participation, a key factor in cognitive development. The participant's attention is also improved as the game plays a major role in encouraging the students to identify and classify the sentence types. Active involvement of this kind has been shown to be effective in the improvement of enhanced cognitive ability especially recognition of forms. As students play the game they are also engaged in the activity of distinguishing among types of sentences, and their ability to take in and operate with grammatical principles is sorely tested and gets stronger.

Furthermore, students receive instantaneous feedback in the Snap Card Game which enables them to rectify any errors swiftly and fills in any knowledge gaps. This layer in correction accelerates the learning process by encouraging the students to keep on improving. Due to the game's competitive and cooperative factors, it encourages learning from peers and also increases active participation from the students. With the extended use of the game, while improving their knowledge of grammar, students also enhance memory ability in a way that is not possible with the classical methods of teaching.

In order to make an overall evaluation of this game-oriented method, it is necessary to create an instrument that will evaluate cognitively and affectively the learning achieved as well as learning which is intended. For cognitive outcomes, pre- and post-tests can be administered in order to evaluate the knowledge acquired from the activity. Along with the use of multiple-choice or short-answer questions, which assess students' understanding of the concept, the understanding can also be assessed by tracking the accuracy of students' categorizations during gameplay. Affective outcomes can be evaluated in the self-reflection surveys, when students explain how motivated or interested in sentence categorization they became after playing the game and how it affected their confidence. Finally, such aspects as the level of engagement or participation of the students during the game may be measured by means of the observational checklists.

Including student feedback in the formative assessment element could also enhance the design and instructional efficiency of the game by making improvements over a period of time. This ensures that both the mental and emotional aspects of the learning objectives of playing the Snap Card Game are adequately addressed.

For example, a study performed on a cohort of students has shown that post-test scores were considerably higher as compared to pre-test scores, which is shown in figure 1 above and demonstrates results in cognitive functioning. Also, figure 2 indicates that students' engagement remained high even after several turns of the game. This implies that students play with zeal even after playing educational games for quite some time, the case of the Snap Card Game.
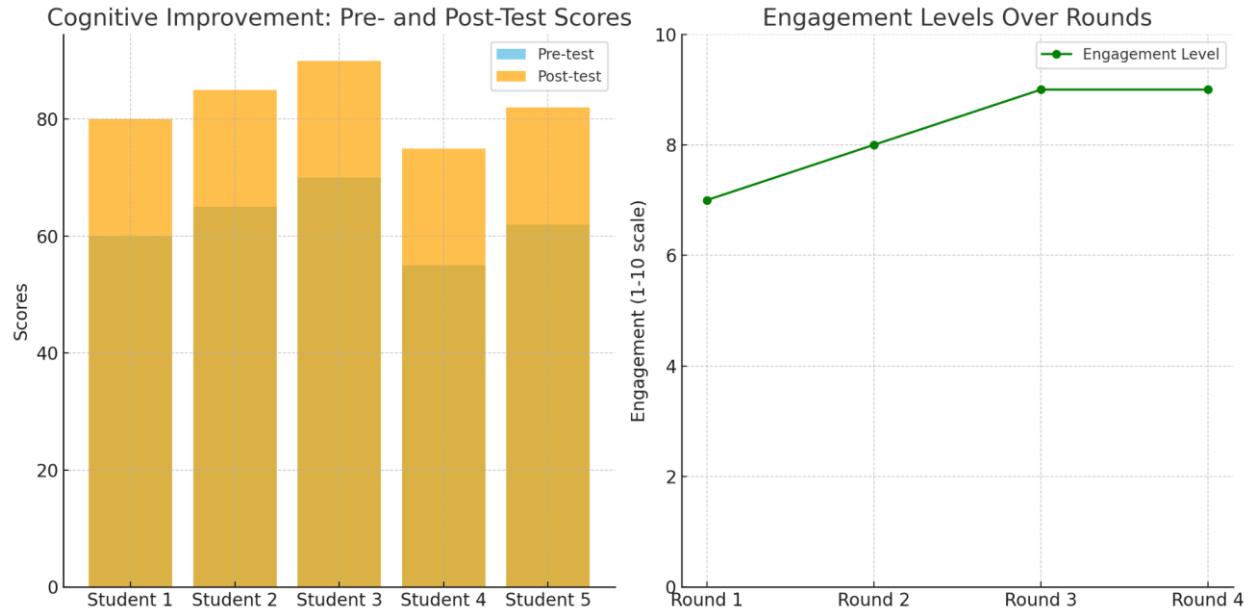
Figure 1

Figure 2

Advancement in cognition, arguably due to playing the Snap Card Game, is graphed in the bar graph by showing the pre-test and post-test scores of five students. The post-test scores' sharper increase is evidence of the success of the game in promoting the students' concept of Tamil grammar – especially in distinguishing various types of sentences. This shows this sort of active learning where the students play the game facilitates the grasp of grammatical issues with tangible improvements in the students' abilities.

Also, regarding the student engagement in playing the game through rounds, the line graph we draw shows that engagement begins with a peak level and is maintained through some period. The fact that there is a degree of involvement which does not change with time suggests that the game is able to keep the students' interest and is able to motivate them to keep on playing. This finding further improves the thesis that game oriented learning can captivate attention and make the learning experience better.

Discussion

The utilization of snap cards for learning *Vakkiyam Vagaigal* in Tamil grammar leverages gamification to aid cognitive processing and recall among students. Gamification, particularly in the form of snap cards, has been shown to effectively engage learners, making it an ideal choice for grammar learning, where repetitive practice is often essential. The primary mechanism of the game involves students identifying and matching the same type of sentence structure (i.e., *Vakkiyam Vagaigal*) from a set of shuffled cards. Upon identifying a match, students snap the cards and collect them, reinforcing their recognition of sentence types through active participation.

This game-based activity is especially beneficial in the context of Tamil grammar, where traditional methods might struggle to maintain student engagement. By embedding grammar concepts within a familiar and competitive game structure, the snap card activity encourages students to process the types of sentences on a deeper level, enhancing their comprehension and retention of *Vakkiyam Vagaigal*. Additionally, the activity's group dynamics can foster collaboration, encouraging students to share insights and correct each other, which can be especially beneficial in a peer-learning context.

An assessment tool associated with this activity should aim to measure both cognitive understanding and procedural skills. For instance, it could include criteria such as:

1. Accuracy in Sentence Identification – measuring the ability to correctly identify types of sentences and make correct matches.
2. Speed of Recognition – noting the time it takes to identify and snap correct pairs, assessing students' fluency in recognizing sentence types.
3. Peer Interaction Quality – evaluating students' collaborative behaviors, such as how they correct or assist each other during the game, which can indicate comprehension at a communicative level.
4. Retention Over Time – assessing students' ability to recognize sentence types in different contexts and over time, helping gauge the long-term impact of the game on learning.
5.

This snap card activity thus not only functions as a learning tool but also provides a rich framework for assessing comprehension of Tamil grammar. By tracking these assessment metrics, educators can gain insights into how well students internalize grammar rules through interactive methods, making it possible to iterate and enhance the tool for future instructional effectiveness.

Conclusion

This study highlights the potential of the Snap Card Game as an effective tool for enhancing the understanding of Vakkiyam Vagaigal in Tamil grammar. By incorporating game-based learning into the classroom, students were able to engage with the subject matter in a more interactive, enjoyable, and meaningful way. The results from both quantitative and qualitative analyses demonstrate that this approach not only improves cognitive outcomes, as evidenced by significant gains in post-test scores, but also fosters greater student engagement and retention of grammatical concepts.

The Snap Card Game's success lies in its ability to promote active participation, instant feedback, and peer learning, all of which are essential for reinforcing cognitive skills like sentence classification and comprehension. This method contrasts sharply with traditional grammar teaching methods, offering a fresh, student-centered approach that addresses both cognitive and affective domains. The consistent student motivation and engagement throughout the game further affirm the effectiveness of this innovative instructional strategy.

Moreover, the study's findings emphasize the importance of designing comprehensive assessment instruments to evaluate both cognitive achievements and emotional responses to learning. By integrating such tools, educators can continuously improve the game and its instructional value. Ultimately, this study concludes that game-based learning approaches, such as the Snap Card Game, hold significant promise for improving grammar education and can be successfully implemented to make learning more enjoyable and impactful in both primary and secondary school settings.

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