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# Improving Place Value Understanding through Game-Based Learning with Candy Media among Elementary School Students

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**Abstrak**

Learning place value still faces challenges because the abstract nature of the concept is often difficult for students to understand; therefore, a learning model that provides concrete and enjoyable learning experiences is needed. This study aims to describe the implementation of a Game-Based Learning model supported by candy-based media in teaching place value in mathematics at MI Az-Zahro Panunggalan. The novelty of this research lies in the use of concrete media in the form of candy in the Game Based Learning model to help elementary school students understand the concept of place value more concretely and interactively. This study uses a qualitative approach with a case study type. The research subjects consist of one classroom teacher and lower-grade students who participate in mathematics learning on the topic of place value. Data collection techniques were conducted through observation, interviews, and documentation, while data validity was obtained through source and technique triangulation. Data analysis used the Miles and Huberman model, which includes data reduction, data presentation, and conclusion drawing. The research results indicate that the application of Game Based Learning aided by candy media can increase students' active involvement in learning, help students understand the concepts of ones, tens, and hundreds more concretely, and improve students' accuracy in arranging numerical values and completing exercises. In addition, students showed higher enthusiasm, and teachers gave positive responses to the use of concrete media in mathematics learning. This research provides a practical contribution as an alternative innovative learning strategy for elementary school teachers, as well as enriching the study on the application of Game Based Learning assisted by concrete media in improving the understanding of basic mathematical concepts.

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## INTRODUCTION

Mathematics learning is one of the important components in basic education because it plays a role in shaping students' logical, analytical, systematic, and critical thinking abilities(Sachdeva & Eggen, 2021; Tamaulina, 2025; Zuhriyah, 2025). Through mathematics learning, students not only learn about numbers and arithmetic operations but are also trained to solve problems in a structured manner and develop rational thinking skills in daily life(Carless,

2022; Gilmore et al., 2024; Torres-Peña et al., 2025). Nevertheless, the implementation of mathematics learning in elementary schools still faces various obstacles, particularly related to the low involvement of students in the learning process. In practice, mathematics learning is still often carried out with a conventional teacher-centered approach, such as lectures and monotonous exercises, so that students act more as passive recipients of information(Eronen & Kärnä, 2018; Stephan, 2020). These conditions cause the learning atmosphere to become less engaging, students' motivation to learn decreases, and students' understanding of the taught material does not develop optimally. This situation becomes even more complex when the material being taught is abstract, whereas elementary school students are still at the stage of concrete operational development, which requires direct learning experiences(Eronen & Kärnä, 2018; Lestari et al., 2026). The mismatch between the characteristics of the material and the teaching approach ultimately creates a gap between the goals of mathematics learning and the learning outcomes achieved by students. Therefore, it is necessary to have educational innovations that can create active, enjoyable learning experiences that are in line with students' cognitive development stages so that the goals of mathematics learning can be maximally achieved.

One of the basic concepts in mathematics learning at the elementary school level that has a very important role is the concept of place value(Chambris, 2018; Sar\i & Aydo\ugdu, 2020). This concept serves as the initial foundation for students to understand the structure of numbers and becomes the basis for learning various arithmetic operations such as addition, subtraction, multiplication, and division. A good understanding of place value will help students recognize the position of digits within a number so that they can perform numerical operations correctly(Cheung & Ansari, 2021; Dahshan & Galanti, 2024; Saida, 2026). However, in reality, many elementary school students still experience difficulties in understanding the concept of place value, especially in distinguishing units, tens, and hundreds. These difficulties generally occur because the material is still presented abstractly through number symbols without the support of concrete and contextual learning media(Asril & Purwanta, 2025; Coles & Sinclair, 2019; Sumartin & Suparno, 2025). As a result, students experience difficulties in visualizing the relationship between number symbols and the values they represent. This condition impacts students' low ability to arrange numbers, determine the value of digits, and solve basic math problems accurately. If these difficulties are not immediately addressed, students will experience obstacles in understanding advanced math material that requires a strong understanding of basic numeracy. Therefore, a learning strategy is needed that can bridge students' understanding of place value concepts through more concrete and meaningful learning experiences.

One of the learning approaches considered capable of increasing student engagement in understanding mathematical concepts is the Game Based Learning model. This learning model

utilizes elements of games as a learning tool so that students can learn in a more interactive, enjoyable, and challenging atmosphere. In its implementation, Game Based Learning not only functions to increase students' learning motivation but can also encourage active student involvement in every stage of learning. When students engage in educational games, they gain a more meaningful learning experience because the concepts they learn are directly linked to activities that capture their attention. In addition to using the appropriate learning model, the presence of concrete media is also very important in helping elementary school students understand abstract material. Concrete media allows students to see, touch, and manipulate objects directly so that the concepts being learned become easier to understand. In the topic of place value, candy media can be used as a concrete aid to represent units, tens, and hundreds so that students can understand the relationships between place values through real experiences. The combination of Game Based Learning and concrete media such as candy is expected to be able to create mathematics learning that is more interesting, effective, and in accordance with the developmental characteristics of elementary school students. With this approach, students not only learn cognitively but also engage emotionally and socially in the learning process.

Various previous studies have shown that the implementation of Game Based Learning can increase students' learning motivation and mathematics learning outcomes. However, most of these studies have focused more on the use of digital media or technology-based games as the main means in the learning process. In fact, in the context of elementary schools, especially in madrasah ibtidaiyah, the use of non digital concrete media is still very much needed because it aligns with the stage of students' thinking development, which is still concretely operational. Until now, research that examines the implementation of Game Based Learning assisted by simple concrete media, such as candies, in learning place value is still relatively limited. In addition, there are not many studies that specifically examine the effectiveness of combining game-based learning models with simple concrete media in mathematics learning in Madrasah Ibtidaiyah. This condition indicates the existence of a research gap that needs to be filled through a more in-depth study on the use of non digital concrete media in Game Based Learning. The novelty of this research lies in the use of candy as a concrete tool in play activities to help students understand the concept of place value more concretely and enjoyably. This approach not only introduces innovation in mathematics learning strategies but also provides a simple media alternative that is easy for teachers to implement in elementary schools. Thus, this research is expected to contribute new insights to the development of a more contextual, creative mathematics learning model that aligns with the needs of elementary school students in the madrasa environment.

This condition indicates the existence of a research gap that needs to be filled through a more in depth study on the use of non-digital concrete media in Game Based Learning. The novelty of this research lies in the use of candy as a concrete tool in play activities to help students

understand the concept of place value more concretely and enjoyably. This approach not only introduces innovation in mathematics learning strategies but also provides a simple media alternative that is easy for teachers to implement in elementary schools. Thus, this research is expected to contribute new insights to the development of a more contextual, creative mathematics learning model that aligns with the needs of elementary school students in the madrasa environment. Therefore, the implementation of the Game Based Learning model assisted by candy media is considered relevant to be applied as an alternative solution in enhancing students' understanding of place value material. This study aims to analyze the implementation of the Game Based Learning model assisted by candy media in teaching place value, to identify student involvement during the learning process, and to describe the contribution of concrete media in helping the understanding of basic mathematical concepts. The results of this study are expected to provide practical benefits for teachers in designing more innovative mathematics learning, as well as provide theoretical contributions to the development of game-based learning models with concrete media at the elementary education level. Thus, this study is expected to become a reference in developing effective, enjoyable mathematics learning strategies that align with the learning needs of elementary school students.

**METHOD**

This research uses a qualitative approach with a case study design to obtain an in-depth understanding of the implementation of the Game Based Learning model assisted by candy media in mathematics learning on the topic of place value (Abdussamad & Sik, 2021; Nasution, 2023). A qualitative approach was chosen because this study focuses on revealing the learning process naturally based on real situations occurring in the classroom. Meanwhile, a case study design was used because this research examines intensively a specific case, namely the implementation of a game-based learning model with the aid of concrete media in one class at MI Az-Zahro Panunggalan. The selection of this design aligns with the research objectives, which not only describe the application of the learning model but also analyze the interaction between teachers and students during the learning process. Through the case study, the researcher can obtain a comprehensive picture of the learning dynamics, student responses, and the effectiveness of using concrete media in aiding the understanding of place value concepts. This study was conducted at MI Az-Zahro Panunggalan in the even semester of the 2025/2026 academic year, precisely from February to March 2026. The selection of the research location was based on the results of an initial observation which showed that students were still experiencing difficulties in understanding the concept of place value and mathematics learning was still dominated by conventional methods.

The research subjects consisted of one lower-grade mathematics teacher and 23 second-grade students of MI Az-Zahro Panunggalan who participated in learning the place value material.

The selection of subjects was carried out using purposive sampling, which is by determining participants who are directly involved in the learning process that is the focus of the study. The teacher was chosen because they play a role as the implementer of the Game Based Learning model, while the students were chosen because they are active participants in the application of candy media in the place value material. The characteristics of the students in this study are elementary school students at the concrete operational stage, thus requiring real learning media to understand abstract mathematical concepts. The determination of second-grade students was based on the suitability of the place value material with the learning curriculum at that level. By directly involving teachers and students, researchers can obtain more in-depth data regarding the learning process as well as students' responses to the applied learning model. In addition, the purposive selection of subjects allows the data obtained to be more relevant to the research objectives.

The research procedure was carried out systematically through three stages, namely the planning, implementation, and evaluation stages. In the planning stage, the researcher conducted initial observations to identify problems in mathematics learning on the topic of place value, prepared research instruments, and coordinated with the classroom teacher regarding the implementation of learning. The implementation stage was carried out by observing the application of a Game Based Learning model assisted by candy media in mathematics learning activities in the classroom. During this process, the researcher noted the teacher's activities in managing learning, students' involvement in the game, and students' responses to the use of concrete media. After the learning activities were completed, the evaluation stage was conducted through interviews with teachers and students to obtain information about their experiences during the learning process. In addition, the researchers also collected supporting documents such as teaching modules, student worksheets, and photos of learning activities to complement the research data. The implementation of the research procedures in stages aims to ensure that the data obtained can represent the learning process in a complete and systematic manner.

The data collection techniques in this study were carried out through observation, interviews, and documentation(Majid, 2017). Observation was used to obtain data regarding the implementation of learning by using an observation sheet containing indicators of teacher activity, student participation, and the use of candy media in place value learning. Interviews were conducted in a semi-structured manner using an interview guide so that the researchers could explore information in depth but still remain directed according to the research objectives. Interviews with teachers focused on their experience in applying the learning model, while interviews with students were directed at their responses and understanding during the learning process. Documentation was carried out by collecting photos of learning activities, teaching materials, student work results, and field notes as supporting evidence of research results. These

three data collection techniques were used in an integrated manner to obtain complete, in-depth, and mutually complementary data.

Data analysis was conducted using the Miles and Huberman model, which includes data reduction, data display, and conclusion drawing.(WIjaya, 2019) In the data reduction stage, the researchers selected, focused, and simplified the data obtained from observations, interviews, and documentation that were relevant to the research objectives. The reduced data were then categorized into several themes, such as teacher activities, student involvement, understanding of the place value concept, and student responses to learning media. For example, interview data showing students' enthusiasm in game activities were coded under the category "student involvement," while data regarding the ease of understanding the place value concept were included in the "concept understanding" category. The next stage was the presentation of data in the form of a descriptive narrative arranged systematically to facilitate the interpretation process. Based on the presentation of the data, the researcher then drew conclusions regarding the effectiveness of applying the Game Based Learning model assisted by candy media in learning place value. The analysis process was carried out continuously throughout the research to ensure that the results obtained truly corresponded to the field data.

The validity of the data in this study was maintained through technique triangulation, source triangulation, member checks, and the preparation of an audit trail(Mekarisce, 2020). Technique triangulation was carried out by comparing data from observations, interviews, and documentation to ensure the consistency of the information obtained. Source triangulation was conducted by comparing data obtained from teachers and students regarding the same learning process. In addition, member checks were performed by confirming the interview results with the respondents so that the data obtained matched the experiences they conveyed. The researcher also prepared an audit trail in the form of detailed notes on the process of data collection and analysis to maintain research transparency. These steps were taken to increase the credibility and validity of the research findings so that the results of the study can be trusted.

## RESULT AND DISCUSSION

### Result

#### 1. The Implementation Process of Game-Based Learning Assisted by Candy Media

The implementation of mathematics learning on the topic of place value at MI Az-Zahro Panunggalan was carried out by applying the Game Based Learning model assisted by candy media. The learning activity began with an introductory stage aimed at building students' readiness to learn. The teacher linked the material to be learned with the learning experiences that students had previously had. Simple questions about numbers and place value were posed to explore students' initial understanding. This activity made students start to recall the basic concepts they had learned before. The teacher then communicated the

learning objectives so that students knew the direction of the activities that would be carried out. The classroom atmosphere appeared quite conducive because students showed attention to the teacher's explanation. The candy media shown at the beginning of the lesson also aroused curiosity among the students. Based on the observation results, most students focused on the teacher's explanation and showed enthusiasm when the candy media was introduced. One teacher stated in the interview, "*students looked more enthusiastic from the beginning because the media used was interesting and familiar to them*."

The core learning activity begins with an explanation of the game rules that will be carried out during the learning process. The teacher divides the students into several small groups consisting of a few people. The grouping is intended so that students can work together and help each other during the learning activities. Each group receives a number of candies that will be used as a medium to understand the concept of place value. The teacher provides a simple example of how to group candies to show ones, tens, and hundreds values. This example helps students see the relationship between the number of objects and numerical values. Students pay close attention with great interest because the medium used feels close to their lives. The use of real objects makes it easier for students to visualize mathematical concepts that were previously considered abstract. Observation data showed that students in each group were able to follow the instructions and began grouping the candies correctly after the teacher's demonstration. The teacher explained that "*using candy as a medium makes students easier to understand place value because they can directly see and count the objects"*.

Game activities become a main part of the learning process. Students are asked to arrange certain numbers using the candies that have been distributed to each group. Each group discusses to determine the number of candies that represent a certain place value. Interaction among group members appears to be quite active as they try to arrange the numbers according to the teacher's instructions. The discussion process shows good cooperation among the students. The teacher moves around the groups to provide guidance if there are difficulties in understanding the assigned tasks. This activity makes students not only receive information passively but also engage directly in the learning process. Hands-on learning experience provides students with the opportunity to understand concepts more concretely.

The classroom atmosphere during the game activity appeared more dynamic compared to regular lessons. Students showed enthusiastic expressions when arranging candies to form certain numbers. Some students were seen trying various ways to ensure that the number of candies they arranged matched the intended place value. Interaction between the teacher and students took place actively through brief questions and answers about the

concept of place value. The teacher reinforced correct answers and guided students who were still experiencing difficulties. Learning activities involving games made students feel more relaxed in following the math lesson. This condition helped create a more enjoyable learning atmosphere. Based on classroom observations, students were more engaged and interacted more frequently with both peers and the teacher during the activity. The teacher noted that "*students became more active in asking and answering questions compared to conventional lessons*."

Exercise questions are given to students after the game activities have been completed. The questions provided are related to the concept of place value that has been learned through games using candy as a medium. Most students are able to complete the exercises quite well. The students' work shows an improvement in understanding the concept of place value. Mistakes that frequently occurred before have begun to decrease after students participated in the learning activities. The experience of manipulating concrete objects helps students remember the concept more clearly. The teacher provides feedback on the students' work so that they can correct the mistakes that still occur.

The closing activity was carried out by inviting students to reflect on their learning experiences. The teacher asked several students to reiterate the place value concepts they had learned. The answers given by the students showed that they had understood the relationship between the number of objects and numerical values. A brief discussion was also conducted to find out the students' impressions of the learning activities that had taken place. Many students expressed that learning mathematics through games felt more engaging. The teacher reinforced the material that had been learned to strengthen the students' understanding. The learning session ended with motivation to encourage students to remain enthusiastic about studying mathematics in the next meeting.

**2. Student Activities and Participation in Learning**

Student activeness during the learning process showed a fairly clear change after the use of the Game Based Learning model assisted by candy media. Mathematics learning, which usually takes place in a lecture pattern, makes some students tend to be passive. A different situation is seen when learning activities are packaged in the form of a game. Student interest appears as soon as the teacher introduces the learning media that will be used. Curiosity is seen from students' attention to the explanation on how to play the game. The classroom condition becomes livelier because students are waiting for the opportunity to try the game that has been explained. This change in atmosphere shows that a creative learning approach is able to attract students' attention. Based on observation results, students appeared more enthusiastic and attentive when the teacher introduced the candy media compared to

previous conventional lessons. The teacher explained, "*students became more interested in participating in the lesson because the media was attractive and made learning feel like playing*."

Discussion activities in groups provide space for students to be actively involved in learning activities. Each group member tries to give opinions regarding the number of candies that should be arranged to form a certain number. The exchange of ideas occurs when students try to find the most appropriate way to complete the task. The conversation that takes place among group members shows that students are building their understanding together. The teacher observes the discussion and provides guidance if there are errors in the students' thinking process. The interaction formed within the group helps students understand the concept of place value better. Collaborative learning like this provides a more meaningful learning experience.

Student involvement is also seen when the teacher asks several groups to explain their work in front of the class. The opportunity to present the results of the discussion makes students try to convey their explanations as best as possible. Other classmates pay attention to the explanation while matching it with the results of their own group work. This presentation activity trains students' courage in speaking in front of others. The teacher gives praise to groups that are able to explain well. Positive reinforcement like this makes students feel appreciated for the effort they put in. This experience encourages students to be more active in learning activities. Based on classroom observations, more students were willing to present their work in front of the class and showed greater confidence in explaining their answers. The principal noted that "*students looked more confident and brave when presenting the results of their group work compared to ordinary classroom sessions*."

Student participation is also seen through their responses to questions posed by the teacher. Some students who are usually quiet begin to dare to raise their hands to give answers. This courage arises because the classroom atmosphere feels more relaxed and not tense. The teacher gives opportunities to various students to express their answers. This approach makes students feel that every opinion they express has value. Small discussions that occur after an answer is given help students understand the concept being discussed. Question-and-answer activities become one way to ensure that students follow the learning process well.

Students' attention during the learning process also showed a considerable improvement. Students' focus was visible when they listened to the teacher's instructions regarding the rules of the game. Each group tried to understand these instructions in order to complete the game correctly. Students' concentration remained steady because the learning activities involved physical activity and social interaction. This situation is different from learning that relies solely on verbal explanations from the teacher. The concrete media used

made it easier for students to concentrate on the material being studied. Active learning experiences have a positive impact on student engagement. The observation results showed that students maintained their focus throughout the learning activity and remained engaged until the end of the lesson. The principal stated that "*the use of concrete and interactive media helped students stay focused longer and created a more active classroom atmosphere*."

Figure 1 Problem-based learning

Learning activities that involve games provide space for students to express themselves in the learning process. They not only act as recipients of information but also as active participants in learning activities. This activeness helps students understand mathematical concepts through direct experience. The interactions that occur during group activities strengthen social relationships among students. The classroom atmosphere becomes more dynamic and full of learning enthusiasm. Teachers also find it easier to motivate students because they are already engaged in learning activities. This condition shows that the Game Based Learning approach is able to increase student participation in mathematics learning.

**3. Students' Understanding of the Concept of Place Value**

Students' understanding of the concept of place value becomes one of the main focuses in this study. Place value material often causes difficulties for elementary school students because the concept is abstract. The use of concrete media becomes the chosen strategy to help students understand the concept. Candy is used as a representation of real objects that can be directly manipulated by students. Activities of arranging candy into certain groups help students see the relationship between the number of objects and numerical value. This type of learning process provides a different learning experience compared to the lecture method that is usually used. Manipulative activities carried out by students allow them to understand the concept through direct experience.

Observations during the learning process showed changes in the way students understood the concept of place value. At the beginning of the learning activities, some students still showed confusion when asked to determine the values of units, tens, and hundreds. The mistakes that occurred were usually related to incorrect grouping of numbers. Using candy as a game helped students see how one group of objects can represent a certain value. Interaction with real objects made the concept of numbers easier to understand. One student stated that using candy made the material easier to understand. In a brief interview, one student said, 'When using candy, I can directly see which is the units and which is the tens, so it's easier to understand.'

Changes in students' understanding are evident when they are asked to arrange numbers based on certain place values. Most students are able to determine the number of candies according to the teacher's instructions. Accuracy in arranging groups of candies indicates that students are beginning to understand the relationship between the quantity of objects and the numerical value. This activity helps students gradually build mathematical concepts. The teacher also revealed that this approach helps students understand the material more quickly. In an interview conducted by the researcher, the class teacher stated, “Children usually find it difficult to understand place value if it is only explained on the blackboard, but when using real objects such as candies, they understand more quickly.” This statement shows that the use of concrete media has a positive impact on the learning process.

The practice questions provided after the game activities serve as another indicator in assessing students' level of understanding. The questions are related to determining the place value of certain numbers. Many students were able to answer the questions correctly after participating in learning activities using candy. The students' work showed that errors that frequently occurred before began to decrease. Some students were also able to explain their thinking process when determining the place value of a number. This indicates that students are not only memorizing but truly understanding the concepts being learned. The learning process involving direct experience helps students build a deeper understanding.

Observations of the student discussion process also provide an insight into the development of their understanding. Conversations among group members often contain explanations about how to determine the place value of a number. Some students try to help their friends who do not yet understand the concept by giving examples using candy. One student even explained to a friend that ten pieces of candy can be combined into one ten. This situation shows that students are beginning to understand the concept of place value through interactions with their peers. The teacher takes advantage of this opportunity to reinforce students' understanding through additional explanations. Learning activities that involve collaboration like this help strengthen conceptual understanding.

The reflection conducted at the end of the lesson showed that most students had a better understanding of the concept of place value. When asked to explain the material that had been learned, students were able to mention the relationship between units, tens, and hundreds. Some students also expressed that learning using candy felt more enjoyable compared to regular lessons. One student said in an interview, “Learning with candy is more fun, so I am no longer confused when determining place value.” This statement shows that the learning experience through games has a positive impact on students' understanding. An enjoyable learning experience also helps students remember the material better.

**4. Student Responses to Game-Based Learning Assisted by Candy**

Student responses to learning using the Game Based Learning model assisted by candy media show a positive tendency. The classroom atmosphere, which is different from usual, makes students feel more interested in attending mathematics lessons. When candy media is introduced in the learning activities, many students show expressions of curiosity and enthusiasm. This interest arises because the learning is packaged in the form of an enjoyable game. The activity of playing while learning provides a different experience compared to learning that only focuses on teacher explanations. This condition makes students more prepared to participate in the learning activities designed by the teacher.

Interviews with several students provided an overview of their impressions of the learning activities. Many students stated that learning mathematics became more interesting when using candy as a medium. One student mentioned that the game activities prevented them from feeling bored during the lesson. In the interview, the student said, “Usually, mathematics is difficult and sometimes boring, but when using games, learning becomes more enjoyable.” This statement shows that the game-based approach is able to increase students' interest in learning. The enjoyment that arises during learning makes students more active in participating in the learning activities.

A similar view was also expressed by the classroom teacher involved in the learning activities. The teacher stated that the game-based learning model provides a new atmosphere in classroom learning activities. According to the teacher, using games makes it easier for students to be engaged in learning activities. In an interview with the researcher, the teacher explained that 'When learning is made like a game, students are more active and find it easier to understand the material.' The teacher also observed that students are more enthusiastic about following lessons compared to learning that uses the lecture method.

Positive student responses are also evident from their enthusiasm during the game activities. Students appeared excited when asked to arrange candies to form certain numbers. Some groups even showed happiness when they successfully completed the task correctly. The teacher gave appreciation to the groups that managed to arrange the numbers accurately.

Simple rewards such as praise made students feel valued for their efforts. This situation helped create a pleasant learning atmosphere and supported the learning process.

Students' attention to lesson material also appears to increase during the learning activities. Students' focus is evident when they listen to the teacher's instructions regarding the rules of the game. Each group tries to understand these instructions in order to complete the game correctly. The teacher observes that students are easier to manage when the learning activity involves playing activities. In an interview, the teacher stated that using games makes the class more lively. This statement shows that a creative learning approach can increase students' attention to the lesson material.

Students' responses to this learning provide an illustration that the Game Based Learning approach has great potential in improving the quality of mathematics learning. The use of simple media can create a more enjoyable and meaningful learning atmosphere. Students' involvement in game activities makes them more active in understanding the material being learned. Some students also expressed the hope that this type of learning could be conducted again for other materials. Teachers assessed that this approach could be an alternative effective learning strategy. An enjoyable learning experience helps students build a positive attitude towards the subject of mathematics.

**Discussion**

The main findings of this study indicate that the implementation of Game-Based Learning aided by candy media has a positive impact on improving students' understanding of mathematical concepts in place value material. Students no longer rely solely on verbal explanations from the teacher, but can directly connect abstract concepts with concrete representations through candy media. This process helps students understand that place value consists of units, tens, and hundreds, which can be visualized in the form of real objects. Thus, learning becomes more meaningful because students do not just memorize concepts, but truly build understanding through direct experience. These findings show that concrete media play an important role in bridging students' difficulties in understanding abstract mathematical concepts.

The second finding shows a significant increase in student participation and activity during the learning process. Before the implementation of this model, math learning tended to be one-way, so many students were passive and only received information from the teacher. However, after Game-Based Learning was applied, students became more active in discussing, collaborating in groups, and expressing their opinions. Student interaction appeared livelier because they exchanged ideas in arranging place values using candy media. In addition, students were also more courageous in answering teacher questions and presenting the results of their discussions in front of the class. This indicates that the game-based learning model is able to create a wider space for student participation in the learning process.

The third finding relates to the change in classroom atmosphere, which became more active, enjoyable, and non-stressful. Learning, which is usually formal and teacher-centered, became more interactive and engaging when presented in the form of games. Students appeared more enthusiastic from the beginning of the lesson because the media used captured their attention and were relatable to their daily lives. The classroom atmosphere became more dynamic as students were directly involved in game activities and group discussions. This condition created a more comfortable learning environment, so students did not feel pressured in participating in mathematics lessons. With this positive atmosphere, students found it easier to concentrate and follow the learning process until the end.

The fourth finding shows that the use of candy media in learning contributes to improving concept understanding and reducing students' mistakes in solving place value problems. This is evident from the exercise results, which show that most students were able to answer more accurately after participating in game-based learning activities. Mistakes that were previously common, especially in distinguishing units, tens, and hundreds, decreased quite significantly. This condition occurs because students have gained direct learning experience through manipulation of concrete objects, making the concepts easier to remember and understand. In other words, concrete learning experiences help strengthen students' memory and understanding of mathematical concepts more effectively.

The fifth finding shows that, overall, the implementation of Game-Based Learning assisted with candy media not only improves students' cognitive aspects but also affective aspects such as motivation, self-confidence, and interest in learning. Students demonstrate a more positive attitude towards learning mathematics because the learning process is packaged in an enjoyable and non-boring way. They feel more motivated to learn because they are directly involved in interactive and collaborative activities. In addition, students' self-confidence also increases because they are given the opportunity to participate actively without fear of making mistakes. Thus, this study confirms that game-based learning supported by concrete media can create mathematics learning that is more effective, meaningful, and enjoyable for elementary school students.

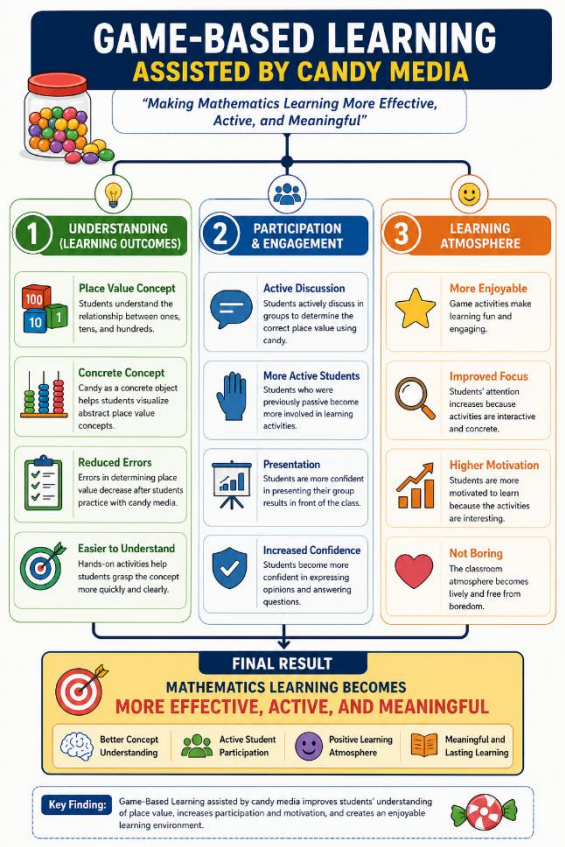


Figure 2 Game Based Leraning Concept

## CONCLUSION

The application of the Game Based Learning model assisted by candy media on the topic of place value at MI Az-Zahro Panunggalan is able to create a mathematics learning process that is more interesting, active, and easy for students to understand. The use of candy as a concrete aid provides direct learning experience, making it easier for students to grasp place value concepts such as units, tens, and hundreds. Learning activities packaged in the form of games encourage students' active involvement in group discussions, answering questions, and presenting their work in front of the class. This indicates an increase in student participation and activity during the learning process. In addition, students' ability to understand the concept of place value has also improved, as seen from their accuracy in arranging numbers and completing practice problems. Students' responses to the learning also show a positive attitude because they feel happier, more motivated, and not easily bored while participating in the learning.

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