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# Measuring Movement within Cultural Heritage: An Innovation Workshop on Physical Education Assessment through Traditional Games at MTs SA An-Nur Bogor

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## ARTICLE INFORMATION

Accepted by the Editor: 00 January 00  
Final Revision: February 00, 00  
Published Online: March 00, 00

## KEYWORDS

physical education, assessment, traditional games, movement skills, authentic assessment, community service

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## ABSTRACT

Physical education learning requires assessment practices that can capture students' movement abilities as well as their participation and behavior during physical activities. This community service activity aimed to introduce an innovative approach to PJOK assessment through traditional games at MTs SA An-Nur Bogor. The activity was implemented through six stages: socialization and opening, theoretical material delivery, introduction and training in traditional games, application of learning assessment, evaluation and reflection, and preparation of an assessment guide and documentation. The activities involved teachers and students in direct learning experiences using traditional games such as gobak sodor, bentengan, and engklek. Assessment was conducted through direct observation of movement skills, participation, cooperation, communication, strategy, discipline, and sportsmanship during gameplay. The activity showed that traditional games provided teachers with opportunities to observe students' abilities in more authentic game situations while encouraging active participation and social interaction among students. The activities also introduced students to traditional games as part of local cultural practices. The integration of traditional games into PJOK assessment therefore provided an approach that connected movement assessment with students' social and cultural experiences.

## INTRODUCTION

Physical Education, Sports, and Health (PJOK) play a broader role than simply providing opportunities for students to engage in physical activity. PJOK is designed to develop movement skills while supporting students' knowledge, attitudes, fitness, character, and social skills (Mulyana et al., 2024). Structured physical activities can improve motor skills, fitness, and health, while learning through games and group activities can foster discipline, responsibility, cooperation, and sportsmanship (Rahmawati et al., 2024).

The development of movement skills is an important part of PJOK because students gain direct experience through various forms of physical activity. Structured learning can improve fundamental movement skills such as balance, agility, coordination, and body control. Rahmadani et al. (2025) found that regular gymnastics activities can improve students' fundamental movement skills, fitness, and health. Parwata (2021) explains that movement learning involves receiving stimuli, processing information, and producing motor responses through the nervous and muscular systems.

Achieving these abilities requires an assessment process that can describe students' learning development. PJOK assessment should not focus only on final outcomes but should also provide information about the learning process, including students' knowledge, attitudes, and skills. Research on PJOK teachers in elementary schools in Kertek District

found that assessments of attitudes, knowledge, and skills were implemented at a good level, although the quality of implementation varied across the different aspects (Saputro & Raharjo, 2023). Mulyani & Annas (2023) found that PJOK assessment was not yet optimal because teachers had not developed assessment instruments and still relied on simple assessment practices. Similar conditions were found in the implementation of the Merdeka Curriculum, where Fadriana et al. (2024) reported that practical sports lessons relied on post-tests without pre-tests, making it difficult to capture changes in students' abilities throughout the learning process.

These limitations become particularly important when students' movement abilities are assessed only through final results or simple observations. Such practices may overlook students' experiences during physical activities, their interactions with peers, decision-making abilities, and strategies used during movement. The characteristics of PJOK allow assessment to take place alongside actual movement activities, creating an opportunity to use activities that are familiar within students' social and cultural environment.

Traditional games offer this opportunity because they combine physical activity with social interaction, cooperation, agility, and strategy. Traditional games have developed through community practices and have been passed down across generations, making them a form of cultural heritage that can be reintroduced to students through educational activities (Muliadi & Asyari, 2024). Prasetya & Sarmini (2023) found that traditional games such as tug-of-war, egrang, and hula hoop incorporate values of courage, cooperation, trust, agility, balance, caring, and hard work.

The movement elements found in traditional games can also support PJOK learning. Various games involve locomotor, non-locomotor, and manipulative movements, allowing students to develop physical abilities through enjoyable activities. Monis et al. (2026) found that the traditional game Boy can develop fundamental movement skills while increasing students' participation and enthusiasm in physical education. Farida et al. (2025) also found that traditional games such as engklek, gobak sodor, and jump rope can improve gross motor development among elementary school children.

Traditional games also provide opportunities for students to interact with others. Group-based activities can encourage communication, role distribution, cooperation, and adherence to rules. Lumbantobing and Safitri (2024) found that traditional games can improve students' social interaction and increase their interest in learning activities. In games such as gobak sodor and bentengan, students are required to cooperate, develop strategies, make decisions, and follow game rules, while teachers can modify the rules according to students' abilities (Elfarita et al., 2025).

These findings show that traditional games have been widely associated with the development of motor skills, physical activity, social interaction, and character. However, their use as part of the PJOK assessment process remains an area that can be further developed. Traditional games can provide teachers with opportunities to observe students' movement abilities while they are actively engaged in meaningful activities. Assessment can therefore capture not only movement performance but also participation, cooperation, strategy, and reflection.

This need led to the implementation of the workshop "Measuring Movement Through Culture: An Innovative PJOK Assessment Workshop Using Traditional Games at MTs SA An-Nur Bogor." The workshop was designed to introduce and practice an assessment approach that uses traditional games as a setting for observing students' movement abilities. The games were not treated merely as recreational activities but as learning activities through which teachers could assess movement skills, participation, cooperation, game strategies, and student reflection. The workshop involved direct experience through game practice, assessment activities, and reflection, allowing teachers and students to experience the assessment process as part of the learning activity. The activity also aimed to develop a PJOK assessment model or guide based on traditional games that could support teachers in implementing more authentic and varied assessment practices while incorporating local cultural values into PJOK learning.

## SITUATION ANALYSIS

MTs SA An-Nur Bogor is a partner school with a need to develop innovations in Physical Education, Sports, and Health (PJOK) learning, particularly in the area of assessment that is more contextual and connected to local culture. Based on the conditions identified during the community service activity, PJOK assessment still tends to focus on final outcomes and has not fully utilized approaches that capture students' learning experiences as a whole. As a result, the assessment process provides limited opportunities for students to understand and reflect on their movement abilities throughout learning activities.

This need is also related to limited innovation in assessment practices. PJOK teachers need alternative assessment methods that are practical to implement while connecting the learning process with students' movement experiences. Teachers are the primary partners

in this activity because they are directly involved in designing and implementing assessments at school. Strengthening teachers' ability to develop and apply more authentic assessment practices is important to ensure that the introduced approach can be integrated into regular learning activities.

Students are the primary targets of the program because they directly experience the learning process. At the junior high school level, students' participation in movement activities can provide opportunities to recognize their physical abilities while developing social interaction and attitudes during learning. Through games, students not only perform movements but also participate in cooperation, follow rules, make decisions, and reflect on their experiences.

The school has adequate facilities to support physical activities, including an open field that can be used for various traditional games. This condition supports the use of traditional games as part of PJOK learning and assessment activities. Traditional games can be selected because they are relatively familiar to students and can be carried out with simple equipment. Teachers can also adapt game rules according to students' abilities so that the activities can be adjusted to learning needs.

These conditions indicate a need for an assessment model that connects movement activities with the assessment process directly. Traditional games provide a relevant option because they combine movement activities with opportunities for teachers to observe students' skills, participation, cooperation, and strategies. This integration became the basis for the workshop "Measuring Movement Through Culture: An Innovative PJOK Assessment Workshop Using Traditional Games at MTs SA An-Nur Bogor." The workshop was designed through instructional sessions, traditional game practice, assessment activities, and group reflection, providing teachers with direct experience in developing game-based assessment practices

## IMPLEMENTATION METHOD

The community service activity was conducted at MTs SA An-Nur Bogor over two days in April 2026. The participants consisted of Physical Education, Sports, and Health (PJOK) teachers as the primary partners, students as the target participants, and students from the Physical Education Study Program at Universitas Pamulang as facilitators. The activity used a participatory, reflective, and experiential learning approach to engage participants in understanding, practicing, and evaluating movement activities.

The activity was carried out through six stages: socialization and opening, theoretical material presentation, introduction and practice of traditional games, implementation of learning assessment, evaluation and group reflection, and module development and documentation. The sequence was designed to connect an understanding of learning assessment with the practice of traditional games and their application in assessing students' movement abilities. The stages of the activity are presented in Table 1

**Table 1. Realization of Problem-Solving Activities**

| Stage | Activity                                       | Description                                                                                                                                                 |
|-------|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | Socialization and Opening                      | Introduction to the activity, its objectives, and the importance of innovative PJOK assessment based on traditional games for students and teachers         |
| 2     | Theoretical Material Presentation              | Presentation of movement learning assessment concepts, authentic assessment principles, and the role of traditional games in PJOK learning                  |
| 3     | Introduction and Practice of Traditional Games | Practice of various traditional games relevant to movement learning, guided by lecturers and students and adapted to participants' ability levels           |
| 4     | Implementation of Learning Assessment          | Students participated in traditional games while being assessed based on movement skills and participation using simple assessment instruments              |
| 5     | Evaluation and Group Reflection                | Group discussions and feedback related to participants' experiences. Teachers were guided to interpret assessment results as a basis for improving learning |
| 6     | Module Development and Documentation           | Development of a traditional game-based learning assessment guide and documentation of the activity as a basis for continued implementation at the school   |

The first stage began with socialization and an opening session to introduce the activity, its objectives, and the importance of innovative PJOK assessment through traditional games. The second stage involved presenting materials on movement learning assessment, authentic assessment principles, and the use of traditional games in PJOK learning. The third stage consisted of introducing and practicing traditional games relevant to movement learning. The activities were guided by lecturers and students and adapted to the participants' abilities.

The fourth stage focused on implementing assessment during the game activities. Students participated in traditional games while being assessed based on their movement skills and participation using simple assessment instruments. The assessment was conducted alongside the activities, allowing teachers to observe students' abilities while performing movements in actual game situations.

The fifth stage involved evaluation and group reflection through discussions and feedback on participants' experiences during the activity. Teachers were also guided to interpret the assessment results as a basis for improving learning. The final stage involved developing a module and documenting the activity in the form of a traditional game-based learning assessment guide that could support further implementation at the school.

The success of the activity was measured through direct observation, assessment sheets, group discussions, and participant reflection. The observed aspects included movement skills, participation, cooperation, communication, game strategies, discipline, and sportsmanship. For teachers, the assessment focuses on their understanding of assessment concepts, ability to determine assessment indicators, and ability to apply assessment instruments during the games.

The level of achievement was assessed descriptively based on participant involvement and observed changes throughout the activity. Changes in attitudes were identified through discipline, cooperation, sportsmanship, and participation. The social and cultural aspects were observed through communication, cooperation, adherence to game rules, and participants' involvement in traditional games as part of their local cultural experience. The economic aspect was assessed based on the accessibility of the activity, particularly the use of existing school facilities and simple equipment that did not require substantial costs.

## RESULTS AND DISCUSSION

### 1. Improvement in Teachers' Understanding and Competence

The workshop results showed a change in teachers' understanding of PJOK learning assessment. Before the activity, assessment was still largely understood as a process for obtaining final results through skill tests or simple observations. After receiving the materials, participating in discussions, and engaging in game-based practice, teachers began to understand that assessment can be conducted throughout the learning process through activities that allow students to demonstrate their movement abilities directly. This understanding supports the development of assessment practices that consider not only final outcomes but also students' learning processes.

Teachers' understanding of *assessment for learning* was strengthened through an introduction to assessment as an integral part of the learning process. This approach allows teachers to obtain information about students' progress and use it to provide feedback during learning activities (Tolgfors et al., 2022). Slingerland et al. (2024) also found that formative assessment can help teachers obtain information about students' learning development, although its implementation requires careful planning and teachers' ability to design appropriate assessment activities.

This change in understanding was reflected during the mentoring activities, when teachers began identifying learning outcomes, determining assessment indicators, selecting appropriate game activities, and developing observation rubrics. These abilities indicate that teachers not only received theoretical information but also began connecting learning objectives with activities that could be used to observe students' performance. *Authentic assessment* supports this process by assessing students through tasks that resemble real-life activities. In PJOK, authentic assessment can cover cognitive, affective, and psychomotor abilities demonstrated during physical activities (Syafuruddin et al., 2023). Ramli et al. (2025) also emphasized that the implementation of authentic assessment instruments in PJOK is influenced by teacher readiness, available resources, communication, and school support.

The use of traditional games gave teachers direct experience in applying assessment through game activities. While students were playing, teachers could observe movement skills as well as how students understood situations, made decisions, cooperated, communicated, and adjusted their movements. This type of assessment is consistent with *games-based assessment*, which allows students' abilities to be observed through behaviors demonstrated during play. Wilkie et al. (2023) found that a *games-based assessment* instrument can be used to assess *physical literacy* through observations of students' behaviors during games and has adequate validity and reliability. This experience showed that teachers' assessment competence involves more than assigning scores. It also includes the ability to determine which aspects should be observed and select appropriate situations in which students can demonstrate their abilities. Game-based assessment provides information that is closer to actual performance than assessments that require students to perform a single

technique in isolation. Zhang et al. (2025) explained that assessments based on isolated skill tests have limitations because game performance also involves perceptual and cognitive abilities.

At the end of the activity, teachers gained experience in connecting learning outcomes, assessment indicators, game activities, and assessment instruments. These results indicate that the workshop provided teachers with additional understanding and practical experience in developing PJOK assessment through traditional games. The change was reflected in teachers' ability to design assessments that can be conducted during movement activities rather than only after the activities have been completed.



**Figure 1.** Documentation of the Workshop Implementation: (a) Opening and Activity Handover; (b) Delivery of Workshop Materials

## 2. Application of Traditional Games as an Assessment Medium in Physical Education

The application of traditional games in the community service activity positioned gameplay as part of the PJOK assessment process. Students participated in games with specific rules, objectives, movement patterns, and interactions, while teachers observed the abilities demonstrated throughout the activities. This approach allowed assessment to take place while students were engaged in movement activities, so the observed abilities were not limited to the mastery of a particular technique but also included how students applied those abilities during gameplay. This approach is consistent with *game-based assessment*, which uses game situations to obtain information about students' abilities. Morley et al. (2021), through the *Movement Oriented Games Based Assessment (MOGBA)*, demonstrated that game activities can be used to observe and assess children's movement skills through tasks adapted to their needs and abilities.

Using games as an assessment medium gives teachers opportunities to obtain information about students' abilities as they emerge during physical activities. Game situations require students to respond to their surroundings, adjust their movements, observe the positions of other players, and determine appropriate actions based on the objectives of the game. These abilities may not be fully captured when students are only asked to perform a single technique repeatedly. Bijl et al. (2024) explained that game-based assessment can provide a more authentic environment and task for measuring competence because students' behaviors during gameplay can serve as assessment information.

At MTs SA An-Nur Bogor, the assessment was implemented through traditional games such as gobak sodor, bentengan, and engklek. These games were selected because they allow students to perform various movements while interacting with other participants. Teachers conducted observations using predetermined indicators during the games. The observed aspects included movement skills, participation, cooperation, communication, game strategies, discipline, and sportsmanship. The observations were conducted while students were playing, allowing teachers to assess their performance based on behaviors that actually emerged during the activities.

Gobak sodor requires students to move quickly, maintain their positions, monitor opponents' movements, and determine appropriate moments to move. Bentengan requires students to cooperate with their teammates, develop strategies, make decisions, and respond to opponents' actions. In engklek, teachers can observe balance, coordination, movement accuracy,

and the ability to follow game rules. These characteristics provide varied situations for observing students' abilities across multiple aspects.

The use of traditional games as an assessment medium also integrates movement skills with other abilities that support students' performance. Students are not only required to perform movements but also to understand situations, choose appropriate actions, communicate with peers, and adjust their movements to changes during gameplay. Zhang et al. (2025) explained that game-skill assessment cannot rely solely on isolated technical performance because gameplay also involves perceptual and cognitive abilities. Assessment through game situations can provide information that is closer to how students use their skills under actual playing conditions.

The implementation showed that traditional games can create an assessment situation that is closely integrated with students' learning activities. Students remained engaged in gameplay while teachers had opportunities to observe the abilities targeted in the learning objectives. The process also broadened the range of assessment because a single game activity could reveal several indicators at the same time. Teachers could observe movement skills as students performed physical activities, social aspects as they worked with teammates, and attitudes as they followed rules and demonstrated sportsmanship.

Traditional games also offer value beyond activities that focus only on physical performance. These games carry rules and patterns of interaction that have developed within local communities. Muliadi & Asyari (2024) showed that traditional games involve physical activities as well as social values such as cooperation. Elfarita et al. (2025) also found that gobak sodor and bentengan involve strategy, cooperation, communication, courage, and decision-making. These elements can be incorporated into assessment indicators observed during gameplay.

This application shows that traditional games do not need to be used only as additional activities to make PJOK learning more engaging. Games can be designed as assessment situations that allow teachers to obtain direct information about students' abilities. Teachers can determine the aspects to be observed, select appropriate games, establish assessment indicators, and record students' performance during the activities. This approach creates a clearer connection between learning objectives, movement activities, and assessment.

The findings indicate that using traditional games as an assessment medium can provide an assessment experience that is closely connected to students' movement activities. Students demonstrate their abilities through actual actions during gameplay, while teachers obtain information about their performance based on the activities they carry out. Traditional games therefore serve not only as physical activities but also as opportunities for teachers to identify students' movement abilities and behaviors through authentic game situations.

### **3. Changes in Attitudes, Social Interaction, and Cultural Aspects**

The implementation of traditional games during the activity provided students with a learning experience that involved movement, attitudes, and social interaction. Games such as gobak sodor, bentengan, and engklek were carried out through activities that required students to follow rules, perform assigned roles, communicate with peers, and adjust their actions to the situation of the game. These conditions allowed students' behaviors to be observed directly during the activity.

In terms of attitudes, students' participation in the games demonstrated behaviors related to discipline, responsibility, and sportsmanship. Students were required to follow the rules, carry out their roles, and accept the outcomes achieved by their groups. These activities provided teachers with opportunities to observe students' attitudes through their behavior during the games. The assessment was not limited to students' ability to complete movement activities but also considered how they followed the rules and treated other participants throughout the game.

Social interaction was an integral part of the group games. Students needed to communicate in order to determine actions, develop strategies, and coordinate their roles with other group members. This process allowed cooperation and communication to emerge naturally during gameplay. Lumbantobing & Safitri (2024) found that traditional games can improve students' social interaction and encourage their participation in learning activities. Playing together also gave students opportunities to respond to one another, express their ideas, and adjust their actions according to the needs of the group.

Prasetya & Sarmini (2023) showed that traditional games contain values such as courage, cooperation, trust, care, and perseverance. These values can develop because games place students in situations that require the involvement and

contribution of every player. Cooperation develops when students need to organize roles and support their group members, while trust emerges when each player carries out their responsibilities. Courage and perseverance can also be demonstrated when students attempt to overcome challenges during the game. This experience allows social values to be learned not only as concepts but also through actions performed during gameplay.

The same characteristics can be seen in the gobak sodor and bentengan games implemented during the activity. Elfarita et al. (2025) showed that these games involve strategy, cooperation, communication, courage, and decision-making. These elements emerge because players need to consider the actions of both their teammates and opponents. In gobak sodor, students must observe the movements of the defenders and determine the right moment to move, while in bentengan, students need to organize roles between players who defend and those who attempt to reach the game's objective. These situations encourage students to communicate, consider different choices, respond to changes in the game, and adjust their actions according to the group's strategy. Such activities provide opportunities for social skills and positive attitudes to develop through direct play experiences.

Muliadi & Asyari (2024) showed that traditional games contain social values that develop through interaction among players. These values emerge when students participate in activities that require them to communicate, cooperate, follow rules, and adjust their actions to other group members. Students are not simply performing an activity together; they are also learning to understand their roles and the interests of others so that the game can proceed effectively. This experience allows cooperation, responsibility, care, and respect for others to emerge through actions during gameplay. In the activity at MTs SA An-Nur Bogor, these characteristics were reflected in group games that gave students opportunities to interact, perform their roles, and work together toward a shared goal.

The use of traditional games also provided students with cultural experiences. The games introduced during the activity are forms of play that have developed within communities and been passed down across generations. When these games are brought into the school environment, students are not only engaged in physical activities but also introduced to forms of play that contain rules, patterns of interaction, and social values connected to community life. Muliadi and Asyari (2024) showed that traditional games can become part of an educational experience that connects play activities with social and cultural values.

This cultural experience was developed through students' direct participation in the games. Students did not simply receive explanations about traditional games but also followed the rules, interacted with their peers, and experienced the structure of the games firsthand. This approach provides a more concrete experience of traditional games as part of community culture. Activities in schools can also create opportunities for traditional games to remain part of educational experiences, allowing cultural learning to take place through activities that are familiar and engaging for students.

The relationship between games, attitudes, and culture can be seen in the way students participate in the activities together. Game rules encourage students to act according to agreed expectations, while shared objectives encourage cooperation and communication. At the same time, traditional games represent forms of activity rooted in community culture. These three aspects can emerge within the same activity, allowing teachers to observe students' behavior while they engage in physical activity and interact with others.

The results of the activity indicate that the use of traditional games provided a learning experience that incorporated attitudes, social interaction, and cultural awareness alongside movement activities. Students' participation in following rules, cooperating, communicating, making decisions, and demonstrating sportsmanship became observable parts of the game experience. At the same time, students had opportunities to learn about and participate in traditional games as part of PJOK activities.

## CONCLUSIONS AND RECOMMENDATIONS

The community service activity "Measuring Movement within Cultural Heritage: An Innovation Workshop on PJOK Assessment through Traditional Games at MTs SA An-Nur Bogor" demonstrated that traditional games can be integrated into Physical Education learning as an assessment activity while also supporting students' movement, attitudes, social interaction, and cultural experiences. The activity provided teachers with opportunities to understand and apply more authentic assessment practices through direct observation of students during physical activities.

The use of traditional games created assessment situations that allowed teachers to observe students' movement skills together with their participation, cooperation, communication, decision-making, discipline, and sportsmanship. The activities also encouraged students to interact and work together while following the rules of the games. At the same time, the introduction of traditional games provided students with direct experience of local cultural practices and their associated social values.

The results indicate that integrating traditional games into PJOK assessment can make the assessment process more closely connected to students' actual learning experiences. The activity also shows that traditional games can support physical education not only through movement activities but also through the development of social values and cultural awareness. Future activities are recommended to refine the assessment instruments used in traditional game-based PJOK, adapt the games to students' abilities and learning objectives, and expand their implementation to provide more varied and systematic assessments of students' movement skills, social interaction, attitudes, and cultural awareness.

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