

## **The Analysis of Multiple Intelligences of Students Through *Project Based Learning* Class Activities**

Siti Habibah<sup>1</sup>, Aceng Haetami<sup>2</sup>, Sumarni Rumfot<sup>3</sup>, Muhammad Ridhwan<sup>4</sup>, Mas'ud Muhammadiyah<sup>5</sup>

<sup>1</sup>Universitas Islam An-nur Lampung, Jl. Pesantren No.01, Kec. Jati Agung, Kabupaten Lampung Selatan, Lampung

<sup>2</sup>Universitas Halu Oleo, Kampus Hijau Bumi Tridharma, Kec. Kambu, Kota Kendari, Sulawesi Tenggara

<sup>3</sup>Universitas Pattimura, Jl. Ir. M. Putuhena, Kampus Poka, Ambon - Maluku

<sup>4</sup>Universitas Serambi Mekkah, Jl. Unmuha, Batoh, Kec. Lueng Bata, Kota Banda Aceh, Aceh

<sup>5</sup>Universitas Bosowa, Jl. Urip Sumoharjo No.Km.4, Sinrijala, Kec. Panakkukang, Kota Makassar, Sulawesi Selatan  
sitihabibah1696@gmail.com

### **Abstract**

This study's goal was to examine how the project-based learning paradigm affected various components of intelligence and the effectiveness of students' multiple intelligences. The research sample consisted of 30 XI students. Descriptive research methodology is employed. Interviews, observation, and questionnaires were the tools employed. The findings demonstrated that all facets of the kids' multiple intelligences, including logical-mathematical, visual-spatial, linguistic, body-kinesthetic, musical, intrapersonal, and naturalist intelligence, were present. The category for interpersonal quotient is quite good. The majority of student intelligence falls into the good group, specifically in the areas of logical-mathematical, linguistic, bodily-kinesthetic, intrapersonal, and naturalist intelligence. Pupils' musical intelligence is subpar, but their visual-spatial intelligence is pretty strong.

**Keywords:** Multiple Intelligences, Project Based, Students.

### **Abstrak**

Tujuan penelitian ini adalah untuk mengkaji bagaimana paradigma project-based learning mempengaruhi berbagai komponen kecerdasan dan keefektifan kecerdasan majemuk siswa. Sampel penelitian terdiri dari 30 siswa kelas XI. Metodologi penelitian deskriptif digunakan. Wawancara, observasi, dan kuesioner adalah alat yang digunakan. Temuan menunjukkan bahwa semua aspek kecerdasan ganda anak-anak, termasuk kecerdasan logis-matematis, visual-spasial, linguistik, kinestetik tubuh, musikal, intrapersonal, dan naturalis, ada. Kategori kecerdasan interpersonal cukup baik. Mayoritas kecerdasan siswa termasuk dalam kelompok baik, khususnya pada bidang kecerdasan logis-matematis, linguistik, kinestetik-jasmani, intrapersonal, dan naturalis. Kecerdasan musikal murid di bawah standar, tetapi kecerdasan visual-spasial mereka cukup kuat.

**Kata Kunci:** Kecerdasan Majemuk, Berbasis Proyek, Siswa.

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Corresponding author: Siti Habibah

Email Address: [sitihabibah1696@gmail.com](mailto:sitihabibah1696@gmail.com) (Jl. Pesantren No.01, Jati Agung, Lampung Selatan, Lampung)

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## **INTRODUCTION**

Indonesian education is still of poor quality. The findings of study carried out by the Organization for Economic Co-operation and Development (OECD), a global research organization, demonstrate this. The Program for International Student Assessment (PISA) in 2006–2007 is its flagship initiative, which obtained the result that Indonesia obtained the third lowest position out of the five countries that were in the lowest position with a score of 360.16 out of an average score of 484.84 for the quality of mathematical competence. The quality of reading competence obtained a score of 381.59 from an average score of 480.22, occupying the second-lowest position of the five countries that are in the lowest position. As for scientific competence, Indonesia obtained a score of

395.04 out of an average score of 487.77, which is in the third-lowest position of the five countries with the lowest position. As well as for the total score of all competencies, Indonesia obtained a score of 374.55 out of an average score of 484.51, which is in the second-lowest position of the five countries with the lowest position (Chatib, 2011, p. 25). In 2012, the year of the PISA results, Indonesia was in the bottom two of the 65 participating countries with a science score of 382 out of the OECD average score of 501 (OECD PISA Result, 2012, p. 5). This indicates that Indonesian students' competency quality is still inadequate and has not been grown to its full potential during the learning process (Luturmas et al., 2022).

Basically, humans have various intelligences that are in them, but not all of these intelligences can develop so that they become superior to themselves (Bas & Beyhan, 2010). One type of intelligence that is currently developing is multiple intelligences, or multiple intelligences developed by Gardner (Wahab et al., 2022). This theory says that "there is no one who is stupid or smart; there is only someone who stands out in one or several types of intelligence (Chatib, 2011; Haetami et al., 2020). Each individual can have more than one intelligence (Kemal et al., 2023). This intelligence is composed of naturalist, linguistic, body-kinesthetic, musical, visual-spatial, logical-mathematical, and kinesthetic intelligence. It also incorporates kinesthetic and musical intelligence. However, the problem is that teachers' understanding of aspects of multiple intelligences is still low (Salehan et al., 2022). This was reinforced by the results of an interview conducted with a chemistry teacher, who said that the teacher did not know about aspects of multiple intelligences (Addiin et al., 2014; Setyowati et al., 2019).

The selection of appropriate learning models to facilitate students' multiple intelligences needs to be considered. According to previous researcher on 50 fifth-grade elementary school students in Turkey, it shown that, in terms of students' learning attitudes and motivation, project-based learning and the integration of different intelligences outperformed standard teaching techniques (Muhammadiyah et al., 2022). In addition, similar research is supported by previous researcher and shows that the evaluation results in classes that apply multiple intelligences are superior to those using traditional learning in terms of students' ability to work on design projects (Muhammadiyah et al., 2023; Susiloningsih et al., 2023). Based on this research, it can be used as a reference for selecting project-based learning as a learning model for analyzing students' multiple intelligences (Armstrong, 2003).

## **METHOD**

Descriptive research was the method of investigation adopted in this study. All students made up the study's population. Nonetheless, the class XI sample that was collected. Questionnaires and observation sheets were employed in this study's data collection methods. Teachers of chemistry and psychology were the non-test instrument examiners in this study.

## **RESULT AND DISCUSSION**

According to the study's findings, a questionnaire used to assess mathematical logic intelligence yielded a percentage of 80% in the "good" group. The findings of the observations, which received a percentage of 61% in the positive category, support this. When the project-based learning model is applied to colloidal material, the two types of instruments used to obtain the data yield outcomes that are not significantly different and fall into the same group. The findings of earlier research, which showed that the project-based learning model application in terms of cognitive learning achievement got an average score of 70.7, with information on 32% of students completing it, support this. Another study conducted by previous researcher found that learning outcomes with the multiple intelligences approach were higher than conventional teaching models. The research results obtained for the aspect of visual-spatial intelligence through a questionnaire showed a percentage of 59% in a fairly good category. This is supported by the observation results of obtaining a percentage of 80% in the good category. Both percentages of the emergence of these intelligences showed higher results in the observations compared to the questionnaire.

The results of the two types of instruments used were 69% in the good category for the questionnaire instrument, supported by the percentage of occurrence in the observation results, which was 53% in the sufficient category. The highest presentation of emergence was in exhibition activities. Each group presented their product and asked each visitor to rate the product that had been made. In these activities, each student can maximize their linguistic intelligence, especially students who are able to use language to influence others (rhetoric) and provide information (explain). The most dominant results of observations of linguistic intelligence occurred in the activities of asking questions that would be made at the first meeting and asking visitors to give value to the products that were made. This activity can bring up linguistic intelligence because it stimulates students' linguistic abilities, especially rhetorical abilities, namely using language to influence others.

The results of the two types of instruments used were: 79% in the good category for the questionnaire instrument; These results are supported by observational data, which obtained a percentage of 83% in the very good category for the activities of making colloidal products and preparing products for exhibition activities at the second meeting. Because they may use their entire body to convey thoughts and emotions and their hands to make or change things, these activities can help kids develop their body-kinesthetic intelligence. These findings are consistent with prior study, which found that 94% of students who completed a project-based learning model and 6% who did not have positive psychomotor learning outcomes. This indicates that employing the project-based learning approach can enhance students' learning in the psychomotor domains, which is consistent with the proportion of students who demonstrate body-kinesthetic intelligence when the same approach is used.

According to the research, 37% of respondents to the particular questionnaire tool were unfavorable. Yet, based on the findings of observations, it achieved a percentage of 76.67% in the

good category in the activities of producing products and documenting the production of products. Judging from the colloid material learning activities using the project-based learning model, there are activities to make videos during the process of making products. During the process of making the video and until the final video is made, it can stimulate students' musical intelligence. In addition, students' musical intelligence can also be explored from the results of questionnaires that ask about students' habits during the learning process, such as those who often unknowingly sing television jingles.

The research results from the type of questionnaire instrument obtained a percentage of 84% in the very good category and are supported by the results of observations with an acquisition result of 65.33% in the good category. This is the same as the research of previous researcher, which obtained affective learning outcomes of 6% for students who had very good affective learning achievement, 85% of students were good, and 9% of students were not good. Additionally, findings from additional research show that the experimental group and the control group differ significantly from one another. In learning activities using project-based learning, interpersonal intelligence can appear at the project planning stage, where there is a lot of discussion activity. In addition, interpersonal intelligence can emerge at the stage of project creation as well as through guided inquiry. The findings from the two different types of questionnaires employed in the research indicate that students generally fall into the good group for interpersonal intelligence.

The percentage of the research findings in the good category for the type of questionnaire instrument was 79%. These results are also supported by the results of observations, with an acquisition of 67.50% in the good category in LKS discussion activities with group members. The research results from the type of questionnaire instrument obtained a percentage of 73% in the good category. The acquisition of the questionnaire results was also supported by the results of observations on student activities, namely seeking alternative information for carrying out work procedures in making projects with a percentage of 63.30% in the good category.

## **CONCLUSION**

In the questionnaire instrument, interpersonal intelligence receives the largest percentage gain, while in the observation instrument, body-kinesthetic intelligence is placed in the very good group. Five of the remaining eight factors linguistic intelligence, body-kinesthetic intelligence, intrapersonal intelligence, and naturalist intelligence are in the positive range. According to my observations, six of the eight dimensions of intelligence mathematical logic intelligence, visual-spatial intelligence, interpersonal intelligence, intrapersonal intelligence, musical intelligence, and naturalist intelligence are in the good group. The questionnaire's results revealed a pretty good score for the visual-spatial intelligence component. While linguistic intelligence scores pretty well on the observational tool, musical intelligence scores poorly and receives the lowest percentage of all the intelligence categories on the questionnaire tool.

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