Analysis of Psychomotor Assessment Techniques in the K13 Integrated Thematic Book

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Abstract .his study aims to analyze psychomotor assessment techniques used in the integrated thematic book for sixth grade on theme 5, entrepreneurship. This content analysis research used a descriptive qualitative approach. The research data was in the form of the distribution of psychomotor assessments categorized based on the assessment technique employed. Data validity utilized increased persistence and triangulation of sources. Data sources were obtained from teachers' and students' books, with data collection techniques using document studies. In addition, the data analysis technique employed an interactive analytical model from Miles and Huberman, consisting of four stages: data collection, data reduction, data presentation, and drawing conclusions. The results showed that the distribution of psychomotor assessment techniques on performance assessment was 56.67%, product assessment was 16.67%, project assessment was 36.67%, self-assessment was 6.67%, written assessment was 16.67%, and portfolio assessment was 0%. Thus, it can be concluded that performance assessment is the most widely used because it provides more opportunities for teachers to analyze students' abilities as a whole, especially in skills. Then, there is no psychomotor assessment in the form of a portfolio assessment in books, but the teacher can use each student's assignment results as portfolio material.

Keywords: Keyword Psychomotor Assessment, Integrated Thematic Book, Elementary School

1 Introduction

The 2013 curriculum applies authentic assessments as a form of learning assessment. Authentic assessment is a significantly meaningful assessment of student learning outcomes, consisting of cognitive, affective, and psychomotor aspects [1]. Learning is not a single task in memorizing information but rather an interactive

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process to perfect one's understanding and skills [2]. Each individual must possess skills to improve the quality of human resources [3]. When students' motor skills develop, students will be able to control themselves to perform well-coordinated body movements [4]. Therefore, it is important to carry out psychomotor assessments to train the motoric development of elementary school students, which will later be used in everyday life.

However, the psychomotor assessment implementation is still often neglected [5]. In this case, the success of developing cognitive aspects is considered sufficient for the completeness of student learning outcomes, thus ignoring the psychomotor aspects as feedback on students' success in mastering the material provided [6]. Students who are dominant in cognitive aspects are also not necessarily skilled in psychomotor aspects [7]. For the psychomotor assessment implementation related to the instructions given by the teacher to students, a study stated that the assignment of instructions must be clear so that students can understand the intent of the task given by the teacher because it is related to the memory capacity of students [8]. The assessment implementation carried out by the teacher begins with an assessment plan. In addition, planning psychomotor assessments carried out by teachers can make learning more effective because there are ways to achieve the learning objectives [9]. Nevertheless, psychomotor assessment is limited to the teacher's involvement in seeing students doing the work directly [10].

According to Ryan (1980), psychomotor assessment can be done in three ways: direct observation during the learning process, after the learning process, and sometimes after the learning process [11]. The psychomotor assessment also needs to be carried out routinely or continuously. It is in accordance with the statement from Nurjanah (2021) that an assessment will be meaningful when a teacher does not only conduct an assessment once but several times to monitor student learning progress in a structured and continuous manner while at the same time seeing the extent to which the learning objectives are achieved. Psychomotor assessment is also carried out using a variety of techniques. Based on the technical guidebook for assessment in elementary schools, psychomotor assessment can be carried out with several techniques, namely performance, product, project, and portfolio [13]. According to Asrul et al. (2015), assessment of skills aspects can be performed with authentic assessments, comprising performance assessments, self-assessments, projects, portfolios, and written tests. Meanwhile, according to Widiyanto (2018), skills assessment techniques include practical tests, projects, and portfolios. Based on the opinions of these experts, it can be concluded that psychomotor assessment in learning can be conducted through several techniques, including performance assessment, product assessment, project assessment, self-assessment, written test assessment, and portfolio assessment. Here, as the assessment implementer, the teacher must also be careful in choosing the assessment technique [16].

On the other hand, the presence of textbooks is one of the characteristics of the 2013 curriculum, which is presented in the form of an integrated thematic textbook for teachers and students [17]. Textbooks are the main teaching materials used in learning [18]. Integrated thematic books are also the minimum standard in implementing learning in the 2013 curriculum [19]. The book was published by the Ministry of Education and Culture through the Curriculum and Books Center and compiled on a national scale, meaning that the book was compiled based on the general condition of students in Indonesia [20]. In addition, textbooks have an essential role in learning activities, but each teacher has a different way of teaching [21]. Therefore, the book is free to use and developed as needed for its assessment.

Further, psychomotor assessment needs to be adjusted to the characteristics of students according to their age because the psychomotor aspect always cooperates with other developmental aspects in doing something [22]. Based on age, elementary school students are divided into two: the lower grade in grades 1 to 3 and the upper grade in grades 4 to 6 [23]. According to S.C Munandar (1985), one of the characteristics of the upper-grade elementary school period is that students' attention has begun to focus on everyday practical life [24]. In addition, the sixth grade is the highest in elementary school, where physical and motor development is expected to be more refined and coordinated. To refine these skills, students continue to do various physical

activities [25]. Physical activity is needed to develop body stability and movement and train coordination to perfect various skills due to the thought process. Psychomotor aspects in sixth grade will later be used in more complex matters.

In this case, the sixth-grade integrated thematic book has already contained abstract themes because the highest grades in elementary schools are led to the stage of formal operational thinking. One theme studied is theme 5, entrepreneurship. Learning in theme 5, entrepreneurship, invites students to be creative and innovative. With creative learning, students will try to find differences in perceptions, concepts, and perspectives, so they can use different ways to solve problems [26]. On the other hand, the ultimate goal of learning is to create students with the knowledge and skills to solve a problem they will face later in society [27]. In this theme, students learn about entrepreneurship with skills that can be used in everyday life to develop students' psychomotor aspects through psychomotor assessments in integrated thematic books. Therefore, this theme is suitable for analyzing the psychomotor assessment.

Before, Novianto and Mustadi had researched the analysis of assessments in integrated thematic books in 2015. The results showed that the assessments in integrated thematic books were in accordance with authentic assessments and consisted of three aspects: attitudes, knowledge, and skills. In addition, the skills assessment in the book only used three techniques: performance assessment, product assessment, and project assessment. In this regard, the difference with this research is that this study only focuses on psychomotor assessment and is expected to include more assessment techniques used in integrated thematic books. Therefore, this study aims to analyze the psychomotor assessment techniques in the integrated thematic book for sixth grade on theme 5, entrepreneurship. Accordingly, this research is crucial to be carried out as consideration for teachers in developing psychomotor assessments. The research results are also expected to be useful for the book development team as evaluation material in the next revised edition, and for other researchers, it is hoped that they can carry out further research on the development of psychomotor assessments.

2 Research Method

This content analysis research used a descriptive qualitative approach. Content analysis is a technique used in analyzing text to find out the content of communication by paying attention to the context, such as book analysis (Ahmad, 2018; Krippendorff, 1993; Nasella, Sutarjo, & Wardana, 2019). The research object was a psychomotor assessment technique. The subject was the integrated thematic book for the sixth grade on theme 5, entrepreneurship. The data in this study were the distribution of psychomotor assessment techniques in integrated thematic books. Using a document analysis sheet, the data collection technique employed was a document study of two sources. The source was the subject, consisting of a teacher's book and a student's book, which were compared. The data validity technique utilized source triangulation and increased persistence. Source triangulation means getting data from different sources with the same technique (Sugiyono, 2020). Furthermore, increased persistence was carried out, which means carrying out careful and detailed observations on an ongoing basis on prominent factors (Moleong, 2019). The data analysis technique employed an interactive analysis model comprising four stages: data collection, data reduction, data presentation, and drawing conclusions (Miles & Huberman, 2014). The data obtained were categorized according to the assessment technique used and were presented using the following formula:

$$\text{Percentage} = \frac{\text{Number of assessments in certain categories}}{\text{Total assessment}} \text{ x } 100\%$$

3 Result and Discussion

The integrated thematic book for sixth grade on theme 5, entrepreneurship, contained seven lesson content related to the theme of entrepreneurship, including Indonesian, Civics, Mathematics, PJOK (Physical Education, Sports, and Health), SBdP (Arts and Cultures and Crafts), Science, and Social Studies. Each sub-theme consisted of six lessons, and each lesson had three lesson content packaged with the theme of entrepreneurship to facilitate a meaningful learning experience. There were three assessments in each lesson according to the number of lesson content, so the total assessment in the integrated thematic book for sixth grade on theme 5, entrepreneurship, was 54 assessments. The assessments in integrated thematic books were presented in the form of learning activities. The learning activities consisted of Let's Discuss, Let's Read, Let's Write, Let's Observe, Let's Try, Let's Practice, Let's Sing, Let's Reflect, and Cooperation with Parents.

From 54 assessments in the integrated thematic book for sixth grade on theme 5, entrepreneurship was reduced to 30 assessments, which were assessments of psychomotor aspects. The number was 55.56% of psychomotor assessments of the total assessments in the book. The psychomotor assessment was carried out using a variety of techniques. These techniques included performance assessment, product assessment, project assessment, self-assessment, written assessment, and portfolio assessment. The percentage of each category of psychomotor assessment technique is presented in the following table:

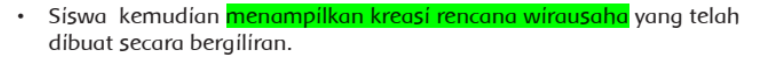
Table 1. Distribution of Psychomotor Assessment Techniques

No.	Sub-theme	Assessment technique					
		Performance	Product	Project	Self	Written	Portfolio
1.	Sub-theme 1	6	3	-	-	2	-
2.	Sub-theme 2	5	1	1	2	1	-
3.	Sub-theme 3	6	1	-	-	2	-
Total		17	5	1	2	5	0
Percentage		56.67%	16.67%	3.33%	6.67%	16.67%	0%

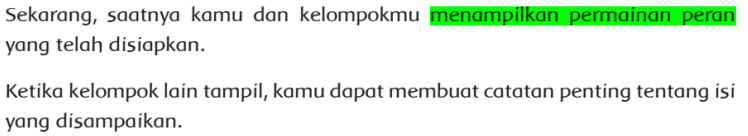
Based on Table 1, a discussion of psychomotor assessment techniques used in integrated thematic books for sixth grade on theme 5, entrepreneurship, can be described as follows:

3.1 Performance Assessment

Performance assessment was the most widely used psychomotor assessment technique with 56.67%. It was because the performance assessment could observe students directly in displaying a skill. Following Hosnan's (2016) study, performance assessment provides more opportunities for teachers to analyze students' abilities as a whole, especially regarding skills. Performance assessment is also based on direct observation of student activities in demonstrating a competency [28]–[30]. The following is an example of a performance assessment in an integrated thematic book for sixth grade on theme 5, entrepreneurship



a) Teacher's Book



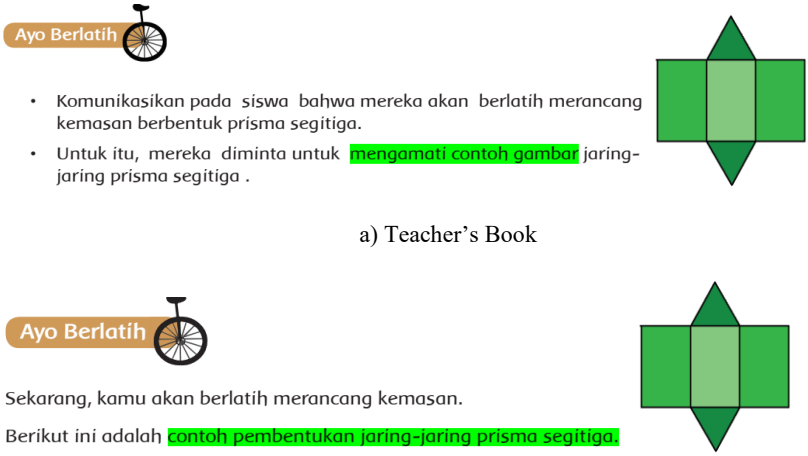
b) Student's Book

Fig. 1. Example of Performnce Psychomotor

Based on Figure 1, sub-theme 3, learning 6, page 164 in the teacher's book, and page 185 in the student's book are examples of performance assessments in civic education lesson content. Students played a role in creating an entrepreneurial plan prepared in groups. In accordance with the research results from Marni (2019), civics learning using the role-playing method is student-centered learning so that it can develop students' affective and psychomotor skills.

3.2 Product Assessment

The product assessment obtained a distribution percentage of 16.67% of the total psychomotor assessment in the integrated thematic book for sixth grade on theme 5, entrepreneurship. Product assessment is an evaluation of students' skills in displaying a product, including the manufacturing process and its quality [30], [32], [33]. The following is an example of a product assessment in the integrated thematic book for sixth grade on theme 5, entrepreneurship



a) Teacher's Book

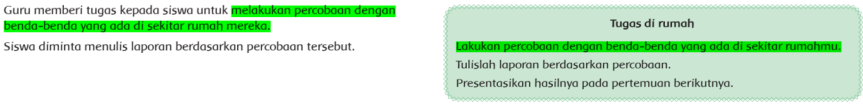
b) Student's Book

Fig. 2. Example of Product Assessment

Based on Figure 2, sub-theme 2, learning 4, page 95 of the teacher's book, and page 100 of the student's book are examples of product assessments in mathematics lesson content. Assessment of mathematics learning is not only limited to knowledge but also related to affective and psychomotor assessment [34]. In this case, students were asked to construct a triangular prism by imitating a grid image in the student's book

3.3 Project Assessment

The project assessment obtained a distribution percentage of 3.33% of the total psychomotor assessment in the integrated thematic book for sixth grade on theme 5, entrepreneurship. Project assessment evaluates student assignments, including planning, data collection, data processing, and project results within a certain period [35]–[37]. Thus, implementing project assessments took a long time, for example, making plant growth observations. The following is an example of a project assessment contained in the integrated thematic book for sixth grade on theme 5, entrepreneurship:



a) Teacher's Book b) Student's Book

Fig. 3. Example of Project Assessment

Based on Figure 3, sub-theme 2, learning 1, page 64 in the teacher's book and 73 in the student's book are examples of project assessment on science lesson content. Students were asked to do their experiments at home on magnetic and non-magnetic objects without the help of instructions. The previous meeting had done this experiment at school. Then, it was done again at home to develop students' curiosity. It is in line with Marjono's (1996) opinion, stating that science learning must be prioritized to develop students' curiosity and critical thinking about a problem [38]. This activity could not be directly assessed because it was a project assessment. The assessment was then carried out at the next meeting by asking students to present reports on their experimental results in groups.

3.4 Self-Assessment

The self-assessment got a distribution percentage of 6.67% of the total psychomotor assessment in the integrated thematic book for sixth grade on theme 5, entrepreneurship. Self-assessment is an evaluation involving students assessing themselves reflectively in the context of competency achievement aimed at improving performance [35], [39], [40]. In this case, students have the right to the process of self-assessment. The following is an example of a self-assessment in an integrated thematic book for sixth grade on theme 5, entrepreneurship:

No	Indikator	Ya	Tidak	Catatan
1	Saya dapat melakukan langkah tiga dengan baik.			
2	Saya dapat melakukan langkah ganti dengan baik.			
3	Saya dapat melakukan langkah pantul dengan baik.			
4	Saya dapat melakukan langkah silang lingkar dengan baik.			

a) Teacher's Book

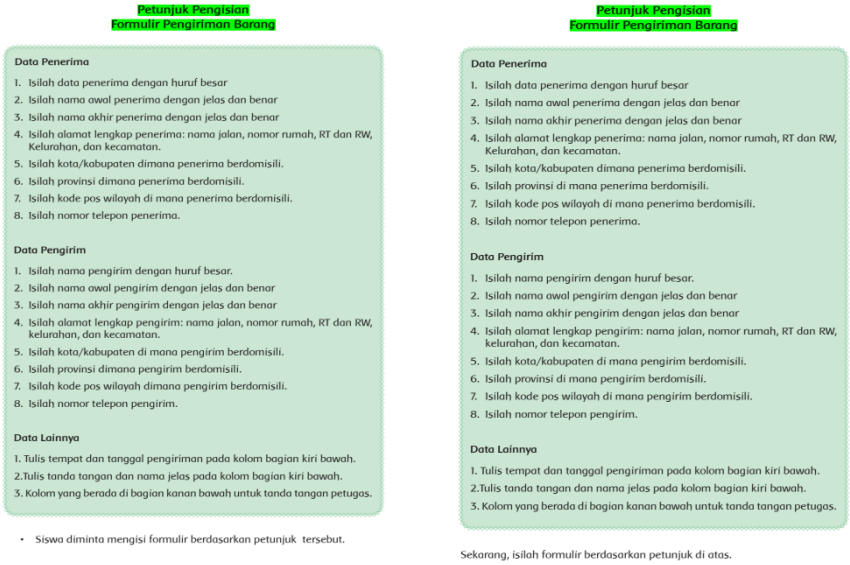
b) Student's Book

Fig. 4. Example of Self Assessment

Based on Figure 4, sub-theme 2, learning 3, pages 84 in the teacher's book and 89 in the student's book are examples of self-assessment on the content of physical education, sports, and health lessons. The practice of rhythmic gymnastics followed the movements exemplified by the teacher and the examples of pictures in the student books. Students were asked to continue the rhythmic gymnastics footwork from the previous meeting, consisting of step three, switch step, bounce, and cross step. Rhythmic gymnastics is a rhythmical physical activity or body movement [41]. Self-assessment made students reflect on themselves about the movement skills mastered.

3.5 Written Assessment

The written assessment obtained a distribution percentage of 16.67% of the total psychomotor assessment in the integrated thematic book for sixth grade on theme 5, entrepreneurship. The written test is an assessment technique that requires students to rely on writing skills [42]–[44]. Students do not always respond with writing in answering questions but can also be in other forms, such as marking, coloring, drawing, and others [45]. Thus, the written test for psychomotor assessment is not to hone reasoning or memory but to practice skills. The following is an example of a written assessment in an integrated thematic book for sixth grade on theme 5, entrepreneurship:



Petunjuk Pengisian
Formulir Pengiriman Barang

Data Penerima

1. Isilah data penerima dengan huruf besar
2. Isilah nama awal penerima dengan jelas dan benar
3. Isilah nama akhir penerima dengan jelas dan benar
4. Isilah alamat lengkap penerima: nama jalan, nomor rumah, RT dan RW, Kelurahan, dan kecamatan.
5. Isilah kota/kabupaten dimana penerima berdomisili.
6. Isilah provinsi dimana penerima berdomisili.
7. Isilah kode pos wilayah di mana penerima berdomisili.
8. Isilah nomor telepon penerima.

Data Pengirim

1. Isilah nama pengirim dengan huruf besar.
2. Isilah nama awal pengirim dengan jelas dan benar
3. Isilah nama akhir pengirim dengan jelas dan benar
4. Isilah alamat lengkap pengirim: nama jalan, nomor rumah, RT dan RW, kelurahan, dan kecamatan.
5. Isilah kota/kabupaten di mana pengirim berdomisili.
6. Isilah provinsi dimana pengirim berdomisili.
7. Isilah kode pos wilayah dimana pengirim berdomisili.
8. Isilah nomor telepon pengirim.

Data Lainnya

1. Tulis tempat dan tanggal pengiriman pada kolom bagian kiri bawah.
2. Tulis tanda tangan dan nama jelas pada kolom bagian kiri bawah.
3. Kolom yang berada di bagian kanan bawah untuk tanda tangan petugas.

- Siswa diminta mengisi formulir berdasarkan petunjuk tersebut.

Petunjuk Pengisian
Formulir Pengiriman Barang

Data Penerima

1. Isilah data penerima dengan huruf besar
2. Isilah nama awal penerima dengan jelas dan benar
3. Isilah nama akhir penerima dengan jelas dan benar
4. Isilah alamat lengkap penerima: nama jalan, nomor rumah, RT dan RW, Kelurahan, dan kecamatan.
5. Isilah kota/kabupaten dimana penerima berdomisili.
6. Isilah provinsi di mana penerima berdomisili.
7. Isilah kode pos wilayah di mana penerima berdomisili.
8. Isilah nomor telepon penerima.

Data Pengirim

1. Isilah nama pengirim dengan huruf besar.
2. Isilah nama awal pengirim dengan jelas dan benar
3. Isilah nama akhir pengirim dengan jelas dan benar
4. Isilah alamat lengkap pengirim: nama jalan, nomor rumah, RT dan RW, kelurahan, dan kecamatan.
5. Isilah kota/kabupaten di mana pengirim berdomisili.
6. Isilah provinsi di mana pengirim berdomisili.
7. Isilah kode pos wilayah di mana pengirim berdomisili.
8. Isilah nomor telepon pengirim.

Data Lainnya

1. Tulis tempat dan tanggal pengiriman pada kolom bagian kiri bawah.
2. Tulis tanda tangan dan nama jelas pada kolom bagian kiri bawah.
3. Kolom yang berada di bagian kanan bawah untuk tanda tangan petugas.

Sekarang, isilah formulir berdasarkan petunjuk di atas.

a) Teacher's Book b) Student's Book

Figure 5. Example of a Written Assessment

Based on Figure 5, sub-theme 3, learning 3, page 146 in the teacher's book and 157 in the student's book are examples of written assessments of the content of Indonesian

lessons. Students were asked to practice filling out a delivery form based on written instructions consisting of 19 steps. This assessment can train students in students writing skills in the language. Writing skills are language competencies that express ideas in a meaningful written form used to communicate indirectly [46]. Writing as a language skill needs to be trained in accordance with learning objectives and can really support the achievement of the expected writing ability targets so that it can provide real benefits for students in everyday life [38].

3.6 Portfolio Assessment

Portfolio assessment was the least used psychomotor assessment technique with a percentage of 0%. It indicates no psychomotor assessment in the sixth-grade integrated thematic book on theme 5, entrepreneurship, using portfolio techniques. It is because portfolio assessment uses evidence of student learning outcomes determined by the teacher or by students and teachers together [47]. A portfolio is also a collection of student work that can be used as an assessment to show students' efforts, progress, and learning outcomes [48]–[50]. Therefore, teachers are free to use student assignments as portfolio material, but in the integrated thematic book for sixth grade on theme 5, entrepreneurship, it was not written for teachers to make certain assignments as portfolio material.

4 Conclusion

This study examines the distribution of psychomotor assessment based on Anderson and Krathwohl's taxonomy in the integrated thematic book for sixth grade on theme 5, entrepreneurship. Based on the study results, it can be concluded that the psychomotor assessment in the integrated thematic book for sixth grade on theme 5, entrepreneurship, mostly used performance techniques, obtaining 56.67%. It is because the performance assessment provides more opportunities for teachers to analyze students' abilities as a whole, especially in the aspect of skills. Meanwhile, a portfolio was the least used assessment technique, attaining 0%. It means no psychomotor assessment in the book used a portfolio assessment, but the teacher is free to use the results of each student's assignment as portfolio material.

Moreover, this research has two implications, theoretical and practical. The theoretical implication of the results of this study is that it can add insight and knowledge about psychomotor assessment and be used as a reference and relevance for further research. Meanwhile, the practical implication is that it can be used as a material for consideration by schools and/or teachers in developing psychomotor assessments and learning activities facilitating students' psychomotor development. In addition, it can also be used as evaluation material by the book development team in the next revised edition.

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