



Development of HOTS-Based Teaching Materials, Multiple Intelligence, and Baimbai Wood Characters for River-Bank Elementary Schools

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Abstract: This study aims to develop teaching materials based on HOTS, multiple intelligence, and the character of Baimbai pedaling for riverside elementary schools. This study used the research and product development method of teaching materials with the Borg & Gall design, which consisted of 10 steps. The sample comprises 72 elementary school students, six principals, and 10 class teachers. The sampling technique used purposive random sampling. The research instrument is a validity test questionnaire and tests. Data analysis used qualitative data analysis and independent sample t-test. Based on the results of assessments from SD teaching materials experts, media experts, SD design experts, and character education experts, a score of > 92 was obtained, indicating that the teaching materials were feasible to use. Based on the results of the effectiveness test conducted on 46 students and analyzed using an independent sample t-test, the t-count value was higher than the t-table (2.231 > 1.576), and the significance value was less than 0.05 (0.002 < 0.005). The increase occurred in the medium category with a value of N-Gain = 0.39.

Abstrak: Penelitian ini bertujuan mengembangkan bahan ajar berbasis HOTS, multiple intelligence dan karakter kayuh baimbai untuk sekolah dasar pinggiran sungai. Penelitian ini menggunakan metode penelitian dan pengembangan produk bahan ajar dengan desain Borg & Gall yang terdiri dari 10 langkah. Sampel adalah 72 siswa SD, 6 Kepala Sekolah dan 10 guru kelas. Teknik pengambilan sampel menggunakan purposed random sampling. Instrumen penelitian adalah angket uji validitas dan tes. Analisis data menggunakan analisis data kualitatif dan independent sample t-test. Berdasarkan hasil penilaian dari ahli materi ajar SD, ahli media, ahli desain SD, dan ahli pendidikan karakter telah diperoleh nilai > 92 yang menunjukkan bahan ajar sangat layak untuk digunakan. Berdasarkan hasil uji keefektifan yang dilakukan kepada 46 siswa dan dianalisis menggunakan independent sample t test, diperoleh nilai t-hitung lebih tinggi dari t-table (2.231 > 1.576) serta nilai signifikansi lebih kecil dari 0.05 (0.002 < 0.005). Peningkatan yang terjadi dalam kategori medium dengan nilai N-Gain = 0.39.

A. Introduction

Basic skills are the biggest challenge for Human Resources. They need to be prepared at this time to face various future challenges. Multiple skills that must be possessed by HR today include the ability to process information, think critically, communicate and work together (Noorhapizah et al., 2019; Nuringsih et al., 2019; Agusta et al., 2021). In addition, according to what was said by (Le et al., 2018; Reeves, 2019) there are six basic competencies that students must master in facing future challenges, namely higher-order thinking skills, creativity, communication, collaboration, compassion, and computational logic, all of which are part of higher order thinking skills/HOTS (Agusta, 2018; Alhaddad et al., 2015; Agusta et al., 2021; Tendrita et al., 2016)

Future generations urgently need these skills to participate in developing the potential of the wetlands in South Kalimantan so that they don't just stop in the hands of researchers and academics but can be passed on to future generations. South Kalimantan is of top concern to scholars and practitioners. This research will provide a complete reference on developing the Baimbai paddling character starting from elementary school. To meet these needs, teaching materials are one of the solutions to inserting the expected skills. Teaching materials have a relevant function that can be used as a reference for teachers in directing all learning process activities as well as a competency substance that should be taught/trained to students (Fadiana et al., 2019)

The need to develop teaching materials to support learning in the 5.0 revolution era states that elementary school teachers in Banjarmasin still have difficulties in developing students' higher-order thinking skills (HOTS) because there are no teaching materials that refer directly to the development of skills and multiple intelligences of students in South Kalimantan. also has not developed optimally because the teacher has never had teaching materials that lead to the development of multiple intelligences as well as the development of the Baimbai paddling character for students. This fact was also strengthened based on the final results of observations from the same research team in the previous year, 23 to 29 November 2021 it was found that three schools in Banjarmasin had implemented simplified lesson plans but had not paid attention to the achievement of HOTS skills in students, the researchers also conducted interviews with several teachers in the city of Banjarmasin 225 teachers stated that they had never found and had elementary school teaching materials by raising the contents of a book about the local wisdom of the people of South Kalimantan, still in the same interview, the researcher also asked about the implementation of innovative learning models that could be implemented during the pandemic or not but returned from 225 teachers 195 teachers said they were not fully able to provide teaching using innovative teaching materials that could develop students' skills towards 6C. (Agusta & Noorhapizah, 2019; Noorhapizah et al., 2021)

Based on this, it is necessary to support learning to be able to bring up these skills through the development of teaching materials. To meet these needs, a learning activity based on higher-order thinking skills was created, which can help the next generation to be able to

think rationally to be able to solve all challenges and develop alternative solutions to solve the various challenges they face. Because if this is allowed to continue, it will have a low impact on students' abilities in communication, collaboration, lack of discipline, not timely, and unable to make decisions independently, even what has a bad impact is that students' intelligence is not honed to the maximum of students those who are left behind will be even more left behind. Furthermore, our students will need help to compete in the digital era and the low ability of Indonesian children's human resources. Reflecting on the skills that must be developed at this time, the learning process must also lead to the formation of skills relevant to the era of the industrial revolution 5.0. Apart from focusing on developing HOTS skills, the actual learning process must also pay attention to the development of students' multiple intelligences and the character of the Baimbai paddling.

Based on the results of previous research in South Kalimantan, the city of Banjarmasin in particular, shows that the development of the learning process based on the abilities of students' multiple intelligences is very rare, this is evident in early 2022, offering 90% of the two schools in Banjarmasin city which are located on the banks of the river still showing students learning only based on directions from the teacher alone without developing the intelligence possessed by each student (Noorhapizah et al., 2021). The development of multiple intelligences is not only produced in teaching but can be accustomed to through the development of teaching materials that present various concepts of learning methods that students can follow according to their respective intelligence. In this study, the team will develop a learning process through teaching material packaged in various ways of learning that interest each student with the same material concept. Besides that, the essence of the development of teaching materials is complemented by multiple innovations in the learning process that teachers can implement based on the local wisdom of Baimbai paddles in riverside communities. Kayuh baimbai is a banjar term taken from a habit of the riverside community, which has the same meaning as the character of cooperation and cooperation. The essence of the Banjar people, who have been attached since ancient times, has been embedded in students in the City of Banjarmasin, which is expected to be able to shape the personality and character of the next generation.

B. Method

The research method used is research and development (R & D), or what is known as research and development in the field of education, with the model proposed by Borg & Gall (Gall et al., 2003). These stages are (1) research and information gathering; (2) planning; (3) development of the initial form of the product; (4) field trials; (5) major product improvements; (6) main field test; (7) revision of operational products; (8) operational field tests; (9) final product improvement; (10) dissemination and implementation. The sample comprised 72 elementary school students, six principals, and 10 class teachers. The illustrations come from 4 (four) elementary schools in Banjarmasin, South Kalimantan, Indonesia, located on the river's banks.

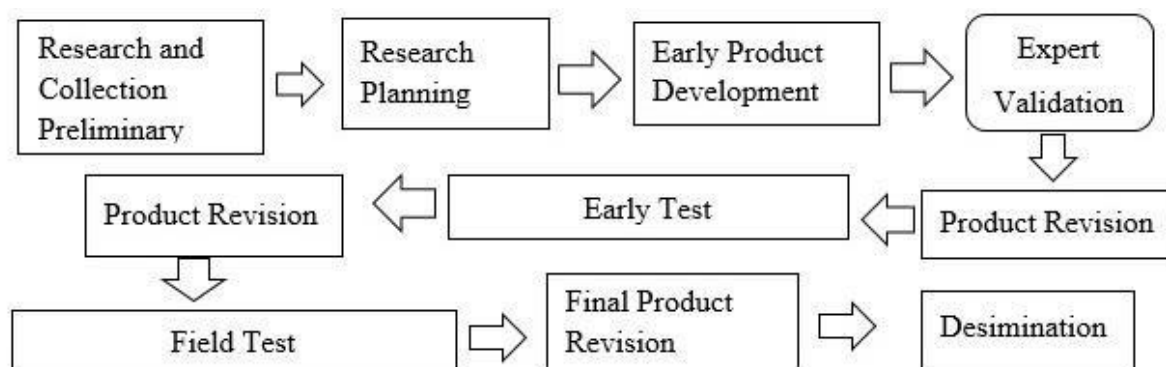


Figure 1. Research Flow

The sampling technique used purposive random sampling, considering geographical conditions and natural landscapes in schools, considering the characteristics of teaching materials for riverside students. The research instruments are questionnaires, interview guides, and tests. The data analysis used is qualitative and quantitative. They use interactive analysis, including data collection, condensation, display, and conclusion (Miles et al., 2014). As for quantitative data analysis using independent sample t-tests. The research indicator is when the results of the effectiveness test of teaching materials have a significant consequence of the independent sample t-test less than 0.05 so that teaching materials are effective in increasing the skills needed in the era of the industrial revolution 5.0 and multiple intelligence in grade IV elementary school students according to the material components learning, media, design, skills development and development of multiple intelligences.

C. Result and Discussion

Research on the Development of Revolution 5.0 Skills-Based Teaching Materials, Multiple Intelligence with the baimbai paddle character for riverside elementary schools was carried out from March to October 2022. This research produced teaching material products for grade IV students with the theme "The Beauty of Diversity". Data collection activities were based on interviews with teachers and several elementary school principals. This activity was carried out to strengthen the results obtained through questionnaires to school principals, class teachers, and grade 4 students regarding whether teachers/students had previously obtained innovative teaching materials based on multiple intelligences and local wisdom with the Baimbai paddle character. So the result is that until now, they have yet to learn how to form teaching materials based on multiple intelligences and local wisdom. The development of teaching materials based on various skills is carried out with numerous stages of previous analysis, which is carried out on how to make teaching materials, how to package them into one complete teaching material unit, and how to observe their development in students, and how to evaluate it. Coupled with the lack of knowledge regarding the third achievement

indicator as material for developing learning strategies through teaching materials. The conclusion of the results of interviews with teachers and several school principals ".....really need teaching materials that have multiple intelligence content and the character of Baimbai pedals to make it easier to introduce regional wealth to students, related to the current need for human resources needed in the development of multiple intelligences" (G1, August 2, 2022)

Furthermore, interviews were conducted with school principals about the importance of teaching materials that contain the local wisdom of the community as well as welcome the modern era. The following is a snippet of the interview results: "... I really support the culture of the Baimbai paddle being raised and made into teaching material. First the character of the Banjar people needs to be preserved. Secondly, if the local culture is one of the ways to improve 4C capabilities, why not" (Ks1, 6 August 2022). The results of these interviews show that education stakeholders are very supportive of efforts to elevate local culture to compete globally.

The questionnaires were distributed to know the perceptions of school principals, teachers, and students towards developing HOTS-based teaching materials for multiple intelligences or multiple intelligences and the character of the Baimbai paddle. There are three statement indicators contained in the questionnaire for school principals and teachers, namely: principals and teachers' perceptions of student activity in inculcating multiple Intelligence skills and Industry 5.0 skills, which consist of critical and analytical thinking skills; the teacher's perception of lessons that contain essential and analytical thinking skills and the teacher's perception of textbooks that have critical and analytical thinking skills. This indicator is described in 25 questions. For the student questionnaire, there are three statement indicators, namely students' perceptions of revolution skills 5.0 and multiple intelligences; students' perceptions of skill-laden learning (4C Creativity, critical thinking, collaboration, and communication) and student perceptions of textbooks loaded with skills (4C Creativity, critical thinking, collaboration, and communication) and multiple intelligences. This indicator is translated into 25 questions. The results obtained from the conversion of all perception questionnaires distributed are as follows:

Table 1. Teacher and Student Questionnaire Results

Number	Questionnaire	Score Intervals	Value	Category
1	Teachers	29	B	good
2	Students'	450	B	good

Based on the table above, it can be observed that the score obtained from the teacher's questionnaire is 28. After being converted, it turns out that the predicate is Good Enough. The results of the student questionnaire get a score of 450 with a Fairly Good predicate. The activity stage in teaching materials begins with preparation. This stage contains instructions for using books, and at the beginning of each lesson, it includes the learning objectives to be achieved, which are illustrated in the theme net containing KD for each indicator of performing one complete task. The following is an example of the preparation stage:



Figure 2. Preparation of Instructions for Using the Book

The next activity is an activity that contains revolution skills 5.0 (4C / Creativity skills, critical thinking, collaboration, and communication). In this activity, students are invited to observe and absorb information in a text equipped with various data and realities in everyday life.

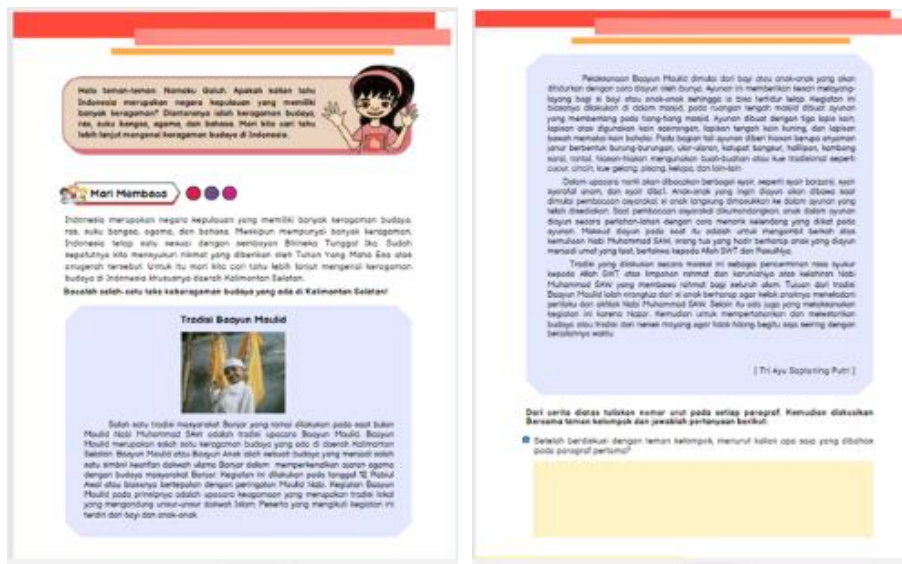


Figure 3. Examples of activities that contain skill 5.0

One of the pages of the book will present various unique facts related to local wisdom, which are appointed as material for student literacy in the form of activities or experiences in daily life in the Banjar community, such as the customs of the beayun maulid event, where students are asked to explore the facts contained in the reading material as well as dig up available information as a form of problem-solving analysis. Critical thinking skills are needed by students when they are asked to dig up the truth of the facts of events, analyze

interpretations, and evaluate and apply evidence as a basis for training students in making decisions.

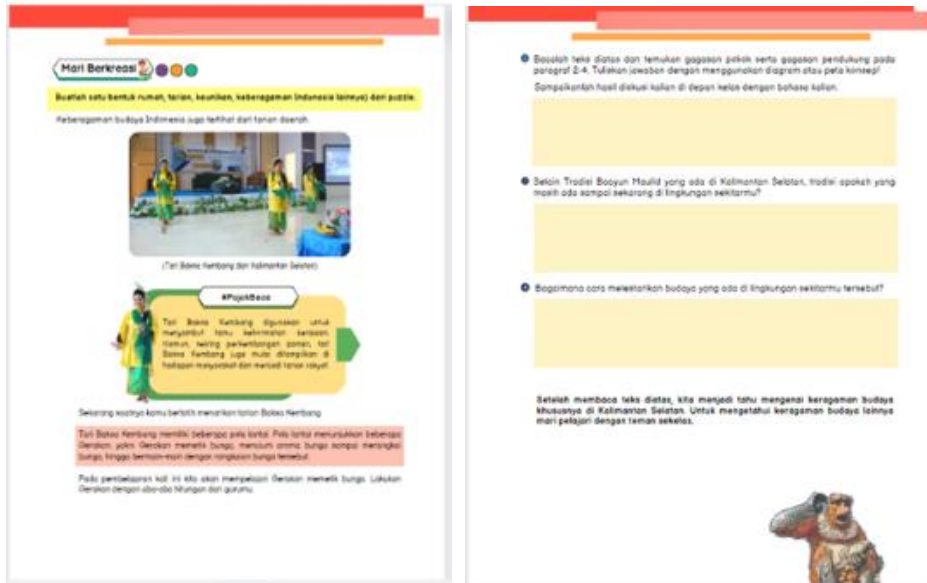


Figure 4. Examples of Analytical Thinking Activities

In practice, students are asked to provide several ideas for the ideas they have found based on the discourse they have read and express them in a concept or idea, both written and orally.

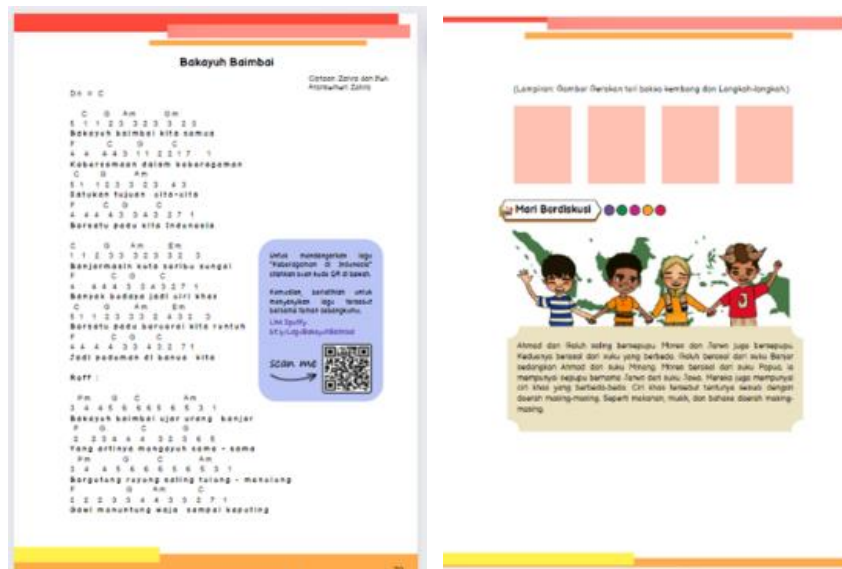


Figure 5. Examples of Activities Containing Media and Multiple Intelligences



Figure 6.
Examples of activities that contain multiple intelligences and are based on Kayuh Baimbai

Before the product was tested, the textbook product was first evaluated and validated by material experts, media experts, and book design experts. Validation is carried out to determine the feasibility of teaching materials. Teaching materials can be tried out if they have been declared feasible by experts. The results of the material expert's assessment are converted in the following table:

Table 2. Recapitulation of Model Innovation Expert Validation Results

Number	Expert	Score	Percentage	Category
1	Learning Model	4,87	90%	Worthy
2	Skill development	5,93	94,46%	Very Worthy
3	Learning tools	4,39	85%	Worthy
	Average	4,83	91,48%	Very Worthy

The validation results from the three experts obtained an average percentage of 86.48%, which was feasible and usable. Even so, the validator provides comments and suggestions to revise several sections before being used in learning. Improvements were made by describing in more detail the syntax of the blended learning model, which consists of eight syntaxes, namely the SMART Model (Solve the Problem, Mind Mapping Concept, Analysis, Redesign Project, Technology). This shows that the expert responded positively by answering with a minimum score of 4 in the range of 1-5 on all the proposed assessment items.

After the product prototype is declared feasible, the initial field trials are carried out. The initial try-out was carried out in grade 4 of Benua Anyar 9 Public Elementary School and Pantai Hambawang Elementary School for two weeks with 18 students as subjects. Initial field trials were conducted to obtain empirical evidence of the feasibility of a thematic textbook

filled with riverside local wisdom in a rowing character, HOTS-based, and multiple intelligences. In these initial field trials, implementation was assisted by observers. Observers help in terms of documentation of learning activities. The value taken in the initial field test is a test of critical and analytical thinking skills at the beginning and end of learning. The initial trial results were carried out using the one-group pretest post-test design, then calculated using an independent sample t-test. The calculated results show that the posttest score is higher than the present ($68.71 < 72.64$), and the t-count results are higher than the t-table ($4.672 > 2.643$) with a significance value of 0.004 (< 0.005). If viewed from the effects of calculating quantitative data, teaching materials have been effective, but some notes during observation activities and input from class teachers. The feedback related to typos, some words that students did not understand, and the use of local language, which should have been written in italics.

After revision, field trials were then carried out. The main field trials were carried out in class IV of Benua Anyar 9 Public Elementary School and Pantai Hambawang State Elementary School for two weeks with 19 students as test subjects. The main field trials aim to implement the revised product after the initial field trials and determine the effectiveness of thematic textbooks filled with local wisdom through tests of critical and analytical thinking skills. The results were in the form of pretest and posttest scores from 19 students. This was done because the field trial used a one-group pretest-posttest design. The questions given are in the form of multiple choice and essay. The pretest was carried out before students used thematic textbooks containing local wisdom. At the same time, the posttest is carried out after completing the main field trials. The following is data on students' critical and analytical thinking skills tests in the main field trials before and after participating in learning using thematic textbooks containing local wisdom that develop critical and analytical thinking skills.

Discussion

Based on the data from field trials, the calculated results show that the posttest score is higher than the present ($67.22 < 81, 64$), and the t-count results are higher than the t-table ($4.321 > 2.435$) with a significance value of 0.003 (< 0.005). The teaching materials are effective if we look at the results of calculating quantitative data. If we look at the N-Gain results, we get a result of 4.67, which indicates a very high category. Teachers and students can receive teaching materials well so that, at this stage, no revisions are made.

The next step is operational field trials conducted at SDN Benua Anyar 9 and SDN Pantai Hambawang. As an experimental class (KE), SDN Benua Anyar 9 with 19 students as test subjects. The control class (KK) is SDN Pantai Hambawang, with 18 students as test subjects. Field operational trials were carried out for eight meetings. The purpose of the area functional trial was to implement the revised product from the previous attempt and to determine the effectiveness of the HOTS, Multiple Intelligences, and the Baimbai paddling-based textbooks. Data on operational field trials included the results of students' HOTS skills

through the administration of teacher response questionnaires and student response questionnaires.

Analysis of field operational trial data was conducted to determine the developed textbooks' effectiveness in improving Baimbai paddling character and students' HOTS skills. Students' Hots skills implemented through tests of critical and analytical thinking skills are said to be good if students can master the competencies specified in the learning objectives. One indicator of competence mastery is the score obtained by students compared to the minimum completeness criteria (KKM). Individuals are said to be complete if they get a minimum learning outcome score of 65, while classically learning is said to be done if at least 75% of the total number of students have completed their studies or received a minimum score of 65.

The achievement of student learning outcomes can be seen from the assessment results in the form of initial/pretest critical thinking, analytical skills test data, and posttest/posttest essential skills of thinking tests. Pretest data is data obtained to determine students' initial abilities. The data obtained are in the form of test results in the experimental and control classes. In the practical course, the pretest was carried out before carrying out HOTS-based learning activities using the developed textbooks, while in the control class, the pretest was carried out before carrying out the usual critical and analytical thinking learning activities. Posttest data is obtained after students carry out vital and analytical thinking learning activities, using thematic textbooks containing local wisdom and those who do not use or use books that teachers in the class commonly use.

The total number of students for the experimental class (KE) was 19, while students for the control class (KK) were 18. The learning process for critical and analytical thinking in the experimental class used thematic textbooks filled with local wisdom that developed the character of Baimbai paddle, while the teacher used the learning process. The following explains student learning outcomes in the experimental and control classes in field trials.

Data on learning outcomes in the experimental class were taken from 19 grade IV students at SDN Banua Anyar 9 Banjarmasin City. Data were obtained from critical and analytical thinking skills tests conducted on students before learning activities (pretest) and vital and analytical thinking skills tests conducted on students after carrying out teaching activities (posttest) using thematic textbooks containing local wisdom to develop skills. Critical and analytical thinking. The following is the operational test calculation result data.

Based on the effectiveness test table, the results obtained were that the average value of the experimental class was higher than the control class ($81.65 > 67.87$), the t-count value was higher than the t-table ($2.231 > 1.576$), and the significance was lower than 0.005 ($0.002 < 0.005$). The conclusion of the arithmetic results is an effective teaching material for improving 4C competence.

The character of rowing baimbai means rowing together, needs to be echoed again in modern life as a philosophy of life and noble character (Hartini et al., 2017). Education, as one of the efforts to shape the essence of the nation, is expected to be able to implement the principle of thinking locally and acting globally. The philosophy of Kayuh Baimbai as the

spirit of local ancestral thought based on research results can be used as a reference for learning in the 21st century. The study results also describe how the four 21st-century competencies, which include communication, collaboration, critical thinking skills, and creativity, have improved significantly through teaching materials based on the Baimbai paddle character.

Communication or communication is a communication pattern involving elements of language between humans, individuals and individuals, and between individuals and groups. Language is one of the main components in improving communication skills. In learning activities, communication occurs interactively so that both communicants and communicators can optimally convey and receive messages (Nuringsih et al., 2019). In elementary school students, the development of good language skills certainly starts from the mother tongue, which generally uses the local language in the city of Banjarmasin. Baimbai rowing-based teaching materials stimulate students to work together to solve a problem, indirectly increasing communication between students and other students and with groups. Significant communication skills occur optimally so that after the use of teaching materials, it can be observed that communication competence increases significantly (Maduriana & Seniwati, 2015)

Collaboration is work done in a group of two or more people. This is consistent with the following description. "Collaborative is an adjective that implies working in a group of two or more to achieve a common goal while respecting each individual's contribution to the whole" (Roberts, 2012). Collaborative learning can take place at all levels of education with optimal learning scenarios by teachers (Septikasari et al., 2018). Cooperative learning in elementary schools forms the character of cooperation and cooperation (Mujahidah, 2015). The characteristics of collaboration and good pedaling in advanced teaching materials provide opportunities for students to work in groups. Group work can effectively improve collaboration competence significantly. This is because group learning that is carried out in class directly allows students to exchange ideas, be creative, accept other people's deficiencies, and learn to understand the character of other people (Avianti & Yonata, 2015)

Critical thinking is a clear and directed way of thinking to solve problems. (Bowers, 2006). Critical thinking is also the ability to think deeply and find relevant information for oneself rather than receiving something from others (Fisher et al., 2011). The characters of rowing baimbai and multiple intelligences in the development of teaching materials refer to the development of students' thinking patterns to think critically and deeply through various skills such as math skills, language, and singing so that they can develop multiple student skills through one learning activity (Hartini et al., 2017). In problem-solving, students can practice high-order thinking skills or High Order Thinking Skills through practice questions made using HOTS-based instruments. Various activity designs, such as solving problems through simple cases, can stimulate students to think about HOTS through contextual activities.

Creativity is an idea that is new, useful, and understood by the public (Sharma & Sharma, 2018). Student creativity is important in preparing superior human resources for the

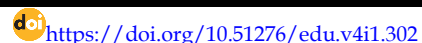
future. In the era of disruption and society 5.0, creative human resources who can create new ideas are excellent and most needed in the world of work. In elementary school students, increasing creativity can be done through various methods, one of which is assignments that require students to be free to be creative and create products according to their interests and talents. In the teaching materials developed, the embodiment of multiple intelligences can foster students to be creative according to their abilities and interests so that the creative spirit can grow well in each student (Berlianti et al., 2019; Sharma & Sharma, 2018).

D. Conclusion

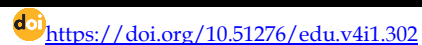
Based on the research and development of teaching materials carried out, it can be concluded that thematic books based on local wisdom can improve the skills needed in the era of the industrial revolution 5.0 and multiple intelligence in grade IV elementary school students according to the components of learning materials, media, design, skills development and the development of multiple intelligences. The results of this study indicate that the action of teaching materials based on HOTS, multiple intelligence, and the character of Baimbai paddling for riverside elementary schools is appropriate for use in grade IV SD based on the results of assessments from SD teaching materials experts, media experts, SD design experts, and character education experts. a value of > 92 is obtained which indicates that the teaching material is very feasible to use. Based on the results of the effectiveness test conducted on 46 students and analyzed using an independent sample t-test, the t-count value was higher than the t-table ($2.231 > 1.576$), and the significance value was less than 0.05 ($0.002 < 0.005$). The test results show that teaching materials are effective in improving 21st-century skills. The increase that occurs is in the medium category with a value of N-Gain = 0.39.

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