The validity of lesson plan with scientific approach: Building curiosity and responsibility character

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Abstract. The instilling of national character value may be achieved through learning. Therefore, this study aims to create a Lesson Plan, which integrates the characters of curiosity and responsibility with a scientific approach and to determine product validity. Research and Development (R&D) was used as a model for conducting this study. The Research and Development used Borg and Gall model. Furthermore, the characteristics of the developed lesson Plan were evident in the syntax/learning steps, which were organized according to curiosity indicators and responsibility characters. This study involved 2 expert validators and 1 school practitioner. The instrument used was a learning plan validation sheet. The results showed that the Lesson Plan with a scientific approach may be used to develop the character of curiosity and responsibility for students in junior high school. This can be seen from the validity of three aspects which is the format (100%), language (98,33%) and content (97,47%) which are very good qualification. It can be concluded that the lesson plan developed is valid and able to building curiosity and responsibility character student.

1. Introduction

Currently, the public is more concerned about the problems associated with characters [1], which bears witness to scientific progress, creates new problems, which require serious effort to be solved [2]. In most cases, problems caused by the application and utilization of technology in everyday life are often not related to scientific technicalities but moral contents [3]. Therefore, these problems need to be overcome in order to avoid adverse effects on human life [4]. Subsequently, the improvement of intellectual, mental, and spiritual qualities should be balanced with paying attention to the existing values in society [5].

Relevant forms of education are being formulated and developed in the 21st century due to the different problems associated with characters [6]. There have been changes such as a paradigm shift into 3 aspects of learning outcomes including knowledge, skills, and attitudes. However, the most important thing is how to develop the character that is currently depreciating [7].

To overcome the problem, the government, in this case, the Ministry of Education and Culture, has implemented a policy of strengthening through education [8]. It is an educational movement to strengthen character by the process of forming, transforming, transmitting, and developing the students'
potential. This is achieved by harmonizing ethics and spirituality as well as character-building activities through education [9].

There are several deficiencies in implementing moral and character education. Therefore, various innovations have been integrated into all subjects [10] in order to instill national character through learning in schools [11]. This integration is the loading of values into the subject substance and the implementation facilitates the practice through character education in every learning activity [12].

Character education is defined as a serious effort to understand, form, foster ethical values, both for oneself and all society on a large scale [13,14]. In the context of its implementation, character education may be interpreted as the process of guiding students. Through this, students become fully developed into human beings in the dimensions of heart, mind, body, feeling, and intention [15].

Character education is also very important to be conducted since it influences the Noble morals of students, and this finding was based on a study conducted by Komara [16]. Similarly, the finding was also consistent with the study of Fauzi, where it was stated that character becomes a pattern, both in thoughts, attitudes, and actions, which are strongly attached to a person [17].

Furthermore, character education integrated with science learning is a smart solution to produce students with superior personalities, noble morals, and respect for Indonesian values [18,19]. The importance of science learning has consequences in developing science as a medium for forming different personalities [4]. In this case, students can be invited to study and learn the values in science that are useful in social life [20].

A previous study showed that the students' character experienced a change from the criteria "starting to be looked at" to "starting to develop" [13,21]. Furthermore, it may be integrated into science learning. Character is very important and needs to be developed since it determines individual and social morals [22]. However, good character education has to be formed and developed deliberately [23].

However, the importance of developing the students' character has been stated in the Presidential Regulation of Indonesia No. 87 of 2017 concerning the strengthening of character education article 1. It was reported as a movement under the responsibility of education units. Furthermore, it primarily aims to strengthen the students' character through the accession of heart, feeling, thought and physic as well as involvement and cooperation between educational units, families, and communities as part of the National Movement for Mental Revolution (GNRM) [8,24]. The character of curiosity aroused the desire to be involved in investigative activities that will be used to process knowledge [25]. Similar to responsibility, this character instills some discipline attitude into students in order to abide by school rules and work on assignments given by the teacher [26].

This study proposes the insertion of character in the learning process through curiosity and responsibility as an alternative to building a nation. These two characters facilitate the learning process of students by providing an opportunity to develop their potential [27]. Furthermore, the broad opportunities to explore student's abilities in learning should be provided even though they are still guided by the teacher [28]. The solution offered is to use a scientific approach in the learning process. This approach cannot be separated from the method since it is often used to analyze problems and obtain a scientific solution. Learning with this approach builds knowledge through logical thinking processes and methods [28,29].

Learning objectives with a scientific approach are based on the following advantages: 1) increasing intellectual abilities, especially students 'higher-order thinking skills'; 2) forming students' abilities to systematically solve a problem, 3) creating conditions that make the students feel learning is a necessity, 4) obtaining high learning outcomes, 5) train students in communicating ideas, especially in scientific writing, and 6) developing their character [30].

Technically, following the Minister of Education and Culture regulation no. 103 of 2014, the scientific approach on the learning process consists of five activities, namely observing, asking questions, collecting information, associating, and communicating. However, the teacher plays a central role as a planner, implementer, and evaluator to achieve these objectives [24]. They are obliged to plan and conduct a quality learning process, as well as assess and evaluate learning outcomes [31].
Subsequently, teachers need to prepare a lesson plan to enhance the realization of conducive learning. The lesson plan is a teaching aid that helps to facilitate learning and achievement of expected goals [32]. The results of this study showed that there are barriers to creating lesson plans with character as there are no clear guidelines for inserting clues for students [33]. These obstacles, especially in making learning plans with 5M steps (observing, asking, collecting information, associating, and communicating) contain the characters, which should be built. Meanwhile, Anso presents eleven principles to run character education effectively, namely: developing ethical values, defining character comprehensively, creating a school community, providing opportunities for students to take moral action, creating meaningful curricula, promoting motivation, and involving staff in community learning [34]. Therefore, this study aims to develop a lesson plan with a scientific approach to build the curiosity and responsibility character and also to determine product validity.

2. Method

This is a developmental study using Research and development (R & D) model proposed by Borg & Gall [35]. This type of study does not test theories but effectively develop products used in schools (gay, nd.). The model was chosen because the procedures and steps in Borg & Gall are more systematic and in line with the expected objectives, including researching, developing, and validating learning products in the form of a Lesson Plan. This was aimed at building the students’ character at the junior high school in Banjarmasin City.

Additionally, the lesson Plan describes the procedure and organization of learning to achieve a basic competency set out in content standards. The Borg & Gall development model consists of ten stages, namely (1) research and information collection, (2) planning, (3) initial product development, (4) preliminary field testing, (5) product revision, (6) main field trials, (7) operational product revisions, (8) operational field trials, (9) final product revisions, and (10) dissemination and implementation. The development model used is limited to the fifth stage, which is the main product revision of ten stages [36].

The procedure for product research and development in the form of a lesson plan consists of only five stages which are adjusted to limited time. The first stage is research and information collection, followed by planning, initial product development, preliminary field testing, and product revision (Figure 1.)

![Figure 1. The modification of research and development cycle by Borg & Gall on the fifth stage (1983: 775)](image-url)
This study was conducted at Public State Junior High School 13 Banjarmasin, in Indonesia. The research and information collection stage shows that the school used the 2013 curriculum, which was revised in 2017. The lesson plan created by the teacher is adequate but did not show the expected character indicators in the learning steps. Meanwhile, the planning stage is conducted by finding the appropriate lesson plan format, studying the indicators of the curiosity and responsibility in the activities of implementing learning (syntax) and the basic skills to be developed. The product development phase begins with the creation of a draft plan with a scientific approach and the inclusion of curiosity and responsibility indicators in the learning steps, which are reflected in the preliminary, core, and closing activities. Furthermore, this was followed by a preliminary field test with 12 students and product revision.

The indicators of curiosity character included students:
1.1 Asking of the things not understood through learning activities.
1.2 Reading sources outside of textbooks about air pollution.
1.3 Discussing natural phenomena or recent vents through group discussion activities.
1.4 Asking questions related to air pollution but outside the classroom discussion.

While the indicators of students' responsibility character are as follows:
2.1 Actively participating in conducted activities.
2.2 Respecting their peers in discussion activities.
2.3 Effectively working together to conduct joint discussions/assignments.
2.4 Taking the roles of leadership concerning learning activities.
2.5 Daring to express their opinions on learning activities.

This study used the validation sheet on the lesson plan and the teacher's response. Furthermore, two techniques were used in processing the data, including descriptive qualitative and quantitative approach a) this approach is used to process data from the results of experts, learning tools in the form of comments and suggestions for improvements contained in the validation instrument. In this research, it involved 2 expert validators and 1 school practitioner. Data analysis is used as a reference for improving or revising the product. b) Also, it is used to analyze the data obtained in the form of percentage analysis [37], which presents data as the frequency on the response of the trial subjects to the product analyzed using the percentage formula to determine the validity criteria of the developed tools [38]. The data collected in the validation questionnaire is qualitative because each statement point is divided into very bad, bad, good, and very good categories. Initially, the data is converted into quantitative forms according to the weighted score, and this conversion is done using the following formula.

\[
P = \frac{\sum\text{overall scor of survey responses}}{n \times \text{total of respondents}} \times 100\% \tag{1}
\]

Description:
P = the assessment percentage
n = the number of all questionnaire items

The data of the assessment results on the learning tools developed were analyzed descriptively, determining the feasibility criteria and product revisions [16] as shown in Table 1.

| Achievement Level (%) | Qualification | Description       |
|-----------------------|---------------|-------------------|
| 81-100                | Very Good     | No Revision/ valid|
| 61-80                 | Good          | No Revision/ valid|
| 41-60                 | Adequate      | Revision/Invalid  |
| 21-40                 | Bad           | Revision/Invalid  |
| 0-20                  | Very Bad      | Revision/Invalid  |
3. Result and Discussion

3.1 Lesson Plan with Scientific Approach is characterized by curiosity and responsibility.

3.1.1 Format selection

The Lesson Plan format used is based on the Minister of Education and Culture Regulation No. 22 of 2016 concerning Basic and Secondary Education Process Standards. The lesson plan is a face-to-face learning activity scheduled for one or more meetings. Furthermore, it is developed from the syllabus to direct the learning activities of students and achieve Basic Competence (BC). Every teacher in an education unit is expected to prepare a complete and systematic lesson plan to enhance interactive, inspirational, fun, challenging, and efficient learning. Also, the lesson plan motivates students to participate actively and provides sufficient space for initiative, independence, and creativity following their talents, interests, physical and psychological development. A Lesson Plan is prepared based on Basic Competencies or sub-themes which are conducted in one or more meetings.

This lesson plan component consists of a) School identity, namely the name of the educational unit, b). subject identity or theme/sub-theme, c). class/semester, d). the subject matter, e). time allocation following the need for achieving BC and learning load by considering the total hours of lessons available in the syllabus, f). Learning objectives formulated based on BC using operational verbs observed and measured, which include attitudes, knowledge, and skills, g). basic competencies and competency achievement indicators, h). learning materials containing relevant facts, concepts, principles, and procedures, and written in the form of items based on the formulation of competency achievement indicators, i). Learning methods used by educators to create an atmosphere that allows students to achieve basic competency adjusted to their characteristics, j). learning media in the form of teaching aids to deliver subject matter, k). learning resources in the form of books, printed and electronic media, natural surroundings, or other relevant sources, l). the steps conducted through the preliminary, core, and closing stages, and m). assessment of outcomes.

Furthermore, the Minister of Education and Culture Regulation Number 22 of 2016 also states that lesson plan needs to be prepared according to the individual differences, participation, student-centered learning, the development of a reading culture, the provision of feedback and follow-up to lesson plan, emphasis on linkage and integration between BC materials and activities. It should also be prepared based on integrated thematic learning, and the application of information and communication technology in a systematic, and effective manner [39].

The character to be built is included in the realm of attitude both in preliminary, core, and closing activities [33]. In line with the characteristics of attitude, the expected character indicator in this study shows curiosity and responsibility, starting from the affection process of receiving, executing, appreciating, and living to practice. The activities are designed in such a way that the students are always motivated to perform them. They are usually performed in 5M steps, and are marked with numbers by remembering the scientific approach:

| Table 2. Learning steps in preliminary activities |
|-----------------------------------------------|
| Learning Activities | Student Activities |
| The teacher checks the attendance and readiness of students by asking "is anyone absent today?" and "are you ready to follow the lesson?" | Students answer teacher questions (2.1) |
| The teacher invites students to pray | Students pray (2.1) |

Description:
2.1 Students participate actively in following the direction of activities (responsibility)

Preliminary activities include preparing students psychologically and physically to participate in the learning process, provide motivation, ask questions on the material to be studied, and explain the learning objectives.
### Table 3. Learning steps in core activities

| Learning Activities                                                                 | Student Activities                                                                 |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| The teacher links the previous lesson to the lesson on soil pollution               | Students try to remember previous lessons. (2.5) (observing), (asking)              |
| The teacher gives apperception and motivation by showing 2 pictures about the       | Students answer the teacher's questions:                                           |
| conditions in several slum areas, where the soil is not fertile and even plants     | “Picture 1 the soil is damaged and infertile Ma'am, picture 2 is clean and the soil  |
| cannot grow and vice versa: "What do you think about the 2 pictures?"               | is fertile”; “Because many people littering which results in land pollution”.      |
| "Why is the land in picture 1 damaged and infertile?"                               | (2.1), (2.5)                                                                        |
| The teacher conveys the learning objectives to be achieved.                         | Students pay attention.                                                             |
| The teacher asks students to read about soil pollution teaching materials.           | Students read soil pollution teaching materials. (1.2), (1.3), (2.1)                |
| The teacher divides students into 5 groups.                                         | Students form groups according to teacher instructions. (2.1)                      |
| ✔ The teacher distributes Student Worksheets 5 to each group.                       | ✔ Students carry out activities in student worksheet 5 by discussing with their     |
|                                                                                     | respective groups. (1.1), (1.2), (1.3), (2.1), (2.2), (2.3), (2.4), (2.5)           |
| ✔ The teacher asks students to collect data or information by recording their       | ✔ Students collect data or information and their group discussion. (associating)     |
| observation and discussion results on student worksheet 5.                          |                                                                                     |
| The teacher guides students in their respective groups to be able to analyze the    | Students analyze the data or information obtained (1.1), (1.2), (1.3), (2.1),      |
| data or information obtained in the group                                           | (2.2), (2.3), (2.4), (2.5)                                                        |
| The teacher allows one of the students to represent the group to present their     | (communicating) Students present their observations and group discussion results.   |
| observation and discussion results. The teacher provides the opportunity for other  | Students from other groups provide responses. (1.1), (1.4), (2.1), (2.2), (2.5)    |
| groups to respond.                                                                  |                                                                                     |
| The teacher explains the knowledge discussed, by using the explanations of          | Students listen to the explanation of the teacher. (1.1), (1.4), (2.1), (2.2), (2.5) |
| previous students as the basis for the discussion.                                  |                                                                                     |
| The teacher provides opportunities for students to ask questions.                  | Students ask questions.                                                             |

Description:
Curiosity character indicator
Students,
1.1 Daring to ask when there are things that are not understood through learning activities
1.2 Reading sources other than textbooks on air pollution.
1.3 Reading or discussing natural phenomena that have recently occurred through group discussion activities.
1.4 Daring to ask questions related to air pollution but outside the classroom discussion.

Responsibility character indicator
Students,
2.1 Participating actively in following the direction of activities.
2.2 Respecting peers in discussion activities.
2.3 Working together effectively in completing discussions/joint assignments.
2.4 Taking leadership roles related to learning activities.
2.5 Daring to express their opinions in learning activities

In the core activities, almost all indicators of curiosity and responsibility characters are raised by referring to the scientific learning syntax without focusing on knowledge and skills.

Table 4. Learning steps in the closing activity

| Learning Activities | Student Activities |
|--------------------|--------------------|
| The teacher asks students to conclude learning | ✔ Students conclude learning. (2.1), (2.5) |
| The teacher closes the lesson by delivering character messages that match the learning topic | ✔ Students listen to character messages. (2.1) ✔ Students listen and take notes. (2.1) |
| The teacher invites the students to pray. The teacher says greetings. | Students pray. (2.1) Students say greetings. (2.1) |

Responsibility character indicator
Students,
2.1 Participating actively in following the direction of activities.
2.5 Daring to express opinions in learning activities

In the closing activity, the teacher and students individually and collectively evaluate the entire series of activities, provide feedback on the learning process and results, as well as to conduct follow-ups in the form of assignments.

Furthermore, the implementation of indicator 2.5 in the closing activities concerns the building of student argumentation skills in solving real-time and future work problems [40,41]. Argumentation skills consist of 3 aspects, namely claim, reasoning, and evidence [42,43]. Also, it is very good at building the responsible character of students in junior high school. The theory of Piaget's development reported that junior high school students (11-14 years) are included in the formal operation stage, which, therefore, allows them to have problem-solving behavior.

3.2 Validation of Lesson Plan
With a scientific approach in building the curiosity and responsibility character, the lesson plan is feasibly useful for trials after several revisions based on the validator’s comments and improvement suggestions. The product assessment is very good, meaning that the lesson plans developed are valid. In addition, the results of lesson plan instrument validation showed that the aspects of its format, language and content with the validity percentage of 100%, 98.33%, and 97.47% were included in very good qualifications shown in table 5.

Table 5. Lesson Plan validity
Aspect of Lesson Plan | Percentage (%) | Qualification
--- | --- | ---
Format | 100 | Very good
Language | 98.33 | Very good
Content | 97.46 | Very good
Overall Validity | 98.60 | Very good
Reliability | 98.05 | Very good

The calculation of lesson plan validation results shows that the assessment aspects, including format, language, and content, are included in very good qualifications with an overall validity percentage of 98.60%. Therefore, the lesson plan designed is feasible to be used.

However, the results and suggestions provided by the validator become a reference in making revisions. It was stated that an additional reference book should be provided to support the study material. Moreover, the learning media may use the school environment to provide project assignments for students.

The findings are consistent with the results on the implementation of a scientific approach, character building, and conservation in growth material which has a positive influence on cognitive, affective, and psychomotor learning outcomes as well as in achieving specified classical completeness [44].

### 3.3 Building Curiosity and Responsibility Characters in a Scientific Approach

The Movement for Strengthening Character Education is conducted at every level of education. The implementation at each level involves and utilizes the education ecosystem in the school environment [45] to strengthen the contextual local dimension of education in the regions. Therefore, the PPK movement is inseparable from the character values that grow and develop in the existing education ecosystem [8].

With this movement, all stakeholders, including education implementers, are required to actualize character-building efforts in their respective schools [46]. Based on various phenomena and thoughts, as well as existing policies, the government has made innovations in the education sector to anticipate challenges in the globalization era [47]. This was issued by the 2013 curriculum policy (K13). Through K13, the learning outcomes are developed based on knowledge, skills, and attitudes, which is obtained through the activity of "accepting, performing, appreciating, living, and practicing". On the contrary, knowledge is obtained through the activity of "remembering, understanding, applying, analyzing, evaluating, and creating". Meanwhile, skills are obtained through the activity of "observing, questioning, trying, reasoning, presenting, and creating" [48].

In addition, the development of attitudes in students is an impactful but very important mission for education today. Learning outcomes create productive, creative, innovative, and effective students by strengthening integrated attitudes, skills, and knowledge [24]. The character development process is achieved by integrating education in the curriculum. Therefore, do not only teach knowledge and skills but indirectly grow and strengthen the character of students. These two competencies (attitude and spirituality) are achieved through indirect teaching by exemplary, accession, and school culture, as well as by paying attention to the characteristics of subjects, the needs, and conditions of students [16].

The growth and development of attitude competence are performed throughout the learning process. Moreover, it is useful for developing student character [8]. Teachers need to teach character directly, especially in the context of religion and civic education.

The efforts to strengthen the character initiated by the government were realized by developing 18 national cultural characters, which are (1) Religious, (2) Honest, (3) Tolerance, (4) Discipline, (5) Hard Work, (6) Creative, (7) Independent, (8) Democratic, (9) Curiosity, (10) National Spirit, (11) Love of Homeland, (12) Respect for Achievements, (13) Friendly or Communicative, (14) Love Peace, (15) Like to Read, (16) Environment Care, (17) Social Care, (18) Responsibility [49].

These 18 national cultural characters need to be developed in schools [8]. One of these characters is curiosity, and it is a behavior of seeking to know about a problem. It is a way of thinking, attitudes, and
behavior, reflecting the desire to know everything seen, heard, and studied in more depth [50], and it is the initial capital for students in the learning process [51]. With high curiosity, students will learn more to fulfill their thirst for knowledge [17].

Furthermore, responsibility is one of the character values inherent in humans [52]. Responsibility is the ability to respond or answer. It is oriented towards other people, gives a form of attention, and actively responds to what they want. Mastuang defines responsibility as being brave, ready, and steadfast in accepting decisions and actions that are conducted intentionally or unintentionally. Therefore, students are said to be responsible when they are conscious of making decisions and willing to face all the consequences [53]. Meanwhile, the character of responsibility is the attitude and behavior of a person to perform the duties and obligations of the society, environment (natural, social, and cultural), and God Almighty [54].

Yuliyanto specified responsibility indicators based on all actions taken, fulfilling one's obligations, and trustworthy [52]. Based on the above statement, the responsibility indicator is daring to take risks for actions, do the best, be fair, understand the rights and obligations, be confident, and positively utilize the environment to control oneself. Additionally, responsibility involves carrying out obligations, respecting work, and being disciplined and trustworthy.

The scientific approach involves several stages that should be passed during the learning process, including:

1. Observing
   The observation stage is an activity conducted by students with the help of five senses to obtain information. There are two kinds of observations [55]. The first is quantitative observation, and the results are calculated or in the form of numbers, such as shape, temperature, volume, and weight. The second is qualitative observation, and its results are incalculable but are described in the form of a narrative text, such as responses, opinions, habits, and traits. Furthermore, an observation made by students can be conducted inside or outside the classroom according to the material studied. It aims to overcome boredom and gain new knowledge outside the classroom.
   
   This stage builds the student’s curiosity character in line with the indicators in lesson plan 1.2, which requires students to read sources other than textbooks on air pollution. Moreover, the observations outside the classroom are in line with lesson plan 1.3, in which students should read or discuss natural, recent phenomena through group discussions.

2. Asking questions
   In this stage, the educator provides the opportunity to ask as many questions as possible about what has been seen, read, heard, and others. Students are trained to ask questions related to the topic studied [56]. This activity helps to form students with a high sense of curiosity in line with the indicators of lesson plan 1.1, which requires students to ask questions about whatever is not understood through learning activities. Similarly, in lesson plan 1.4, students ask questions related to air pollution but outside the class discussion.

3. Gathering information or experiment
   In this case, the educator plays a role as a director or manager of learning activities, providing guidance to students, and exploring information from various sources. However, students will be involved in an investigation to solve a problem following the scientific approach by asking questions. Therefore, the ideas possessed by students may be developed [44] since they can think creatively. Furthermore, students need to conduct an investigation or experiment to explore some information in an effort to answer the question. Finally, educators conduct coordination to enable students to exchange ideas with friends by presenting their investigation results before the class. In some cases, experimenting with students less interested in these subjects arouses their enthusiasm for learning. Students build responsibility character at this stage because they have actively participated in the activity (indicator 2.1).

4. Reasoning/associating
   In the scientific approach of the 2013 curriculum, students need to be more active in the learning process. Reasoning is a process/way of thinking critically, logically, and systematically based on
empirical data obtained through observation. Meanwhile, educators may ask students to analyze the data obtained in an effort to reason [49].

This stage is in line with the responsibility character indicators 2.3, requiring students to respect peers in discussion activities. Furthermore, it is in line with the responsibility indicator 2.4, which obligates students to collaborate in completing discussions or joint assignments.

5. Developing a network (communicating)

In learning activities, communicating involves presenting research results for criticism [52], and when understood, the learning process at this stage includes 3 outcomes, attitudes, knowledge, and skills. This is in line with the indicator of responsibility character 2.4, which requires students to take leadership roles related to learning activities. Additionally, the communication stage is also in line with the responsibility indicator 2.5, whereby students express opinions in learning activities.

Based on the research and development, the implementation is inseparable from various weaknesses, including:

1. This study is only up to preliminary trials therefore the main field test will be conducted outside the context to continue research activities
2. The trial sample for student learning outcomes tests needs to take the low, medium, and high cognitive ranges

4. Conclusion

This study has developed a Learning Plan with a scientific approach containing curiosity and responsibility characters. The resulting lesson plan with a validity percentage of 98.60% (very feasible) can be used to build the character of curiosity and responsibility for students from junior high school. The results of this lesson plan development can help teachers in developing student competencies not only in the cognitive domain but also in the affective domain, namely the character development of curiosity and responsibility. The limitations of this research are still being carried out in Indonesian national character. This research hopes that in the future it can be carried out by including the character and culture of other countries.

References

[1] Wahidin U 2017 Edukasi Islam. J. Pendidik. Islam 2
[2] Bibri S E and Krogstie J 2017 Sustain. Cities Soc 29 219–246
[3] Apriani E 2016 Ta’dib J. Islam. Educ. (Jurnal Pendidik. Islam 21 59–72
[4] Chowdhury M 2018 MOJES Malaysian Online J. Educ. Sci 4 1–16
[5] Pasani C F 2017 Proceedings of International Conference on Education 2017 (ICE 2017
[6] Lapsley D and Woodbury R 2016 Action Teach. Educ 38 194–206
[7] Dalyono B and Lestariningsih E D 2016 Bangun Rekaprima Maj. Ilm. Pengemb. Rekayasa, Sos. dan Hum 3 33–42
[8] Peraturan Presiden RI No. 87 tahun 2017 Tentang Penguatan Pendidikan Karakter
[9] Lewis M and Ponzo V 2016 J. IIm. Peuradeun 4 137–146
[10] Smagorinsky P 2018 TESOL Encycl 1–6
[11] Malinda H, Mwania J and Maithya R 2017 African Educ. Res. J 5 64–74
[12] Khadafi M 2019 Int. Conf. Islam. Educ. Manag. (ICIEM
[13] Baehr J 2017 J. Youth Adolesc 46 1153–1161
[14] Curren R 2017 Impact 24 1–44
[15] Bates A 2019 Cambridge J. Educ 49 695–710
[16] Komara E 2018 P Sipatahoenan South ASEAN J. Youth, Sport Heal. Educ. 4
[17] Fauzi A, Zainuddin Z and Atok R 2018 J. Teor. dan Praksis Pembelajaran IPS 2 83–93,
[18] Berkowitz M W, Bier M C and McCauley B 2017 J. Character Educ 13 33–51,
[19] Agmanda I and Sumarmin R 2019 International Conference on Biology, Sciences and Education pp 343–345
[20] Isdaryanti B, Rahman M, Sukestiyarno Y L, Florentinus T S and Widodo W 2018 J. Pendidik.
IPA Indones 7 9–15,

[21] Pasani C F and Mariani N 2016 Values Character Development Strategy Based On Local Wisdom In State Primary School In Riverbanks Regional Barito Kuala District

[22] Pasani C F and Januarta I P 2015 EDU-MAT J. Pendidik. Mat 3

[23] Marini A 2017 *Int. J. Sci. Res* 73 177–182,

[24] Peraturan Menteri Pendidikan dan Kebudayaan Republik Indonesia Nomor 103 Tahun 2014 Tentang Pembelajaran pada Pendidikan Dasar dan Pendidikan Menengah

[25] Novelyya S 2019 *Brilliant J. Ris. dan Konseptual* 4 174–181,

[26] Agustiawan H and Puspiyasari E D 2019 *Symbion* 2

[27] Sukma E, Mahjuddin R and Amelia R 2017 *Int. J.* Sci. Res 73 177–182,

[28] Amelia R 2017 The Learning of Writing Experimental Reports with Scientific Approach at Elementary School

[29] D’Amico J and Gallaway K 2010 *Differentiated instruction for the middle school science teacher: Activities and strategies for an inclusive classroom* vol 3 (John Wiley and Sons)

[30] Amelia R 2018 *J. Inov. Pendidik. dan Pembelajaran Sekolah. Dasar* 2

[31] Peraturan Pemerintah No. 103 Tahun 2014 Tentang Pembelajaran pada Pendidikan Dasar dan Pendidikan Menengah

[32] Nwike M C and Catherine O 2013 *J. Educ. Soc. Res* 3 103

[33] Peraturan Menteri Pendidikan dan Kebudayaan Nomor 22 Tahun 2016 tentang Standar Proses

[34] Hendarto P, Rinanto Y and Ramli M 2019 *BIO-PEDAGOGY* 8 30–38,

[35] Karpudewan M, Roth W M and Sinniah D 2016 *Chem. Educ. Res. Pr.* 17 893–901,

[36] Acar Ö, Patton B R and White A L 2015 *Aust. J. Teach. Educ* 40 8

[37] Hsu P, Dyke M V, Chen Y and Smith T J 2015 *J. Comput. Assist. Learn* 31 3258

[38] Machin A and Saintifik I P 2016 *J. Pendidik. IPA* 3 30–35,

[39] Angun I 2017 *Perspekt. Ilmu Pendidik* 31 106–119,

[40] Anshori I 2017 *Halaqa Islam. Educ.* 1 63–74,

[41] Kusnoto Y 2018 *Sos. Horiz. J. Pendidik. Sos* 4 247–256,

[42] Peraturan Menteri Pendidikan dan Kebudayaan Nomor 22 Tahun 2016 tentang Standar Proses Pendidikan Dasar Menengah

[43] Hakim M N and Rahayu F D 2019 *Nazhruna J. Pendidik. Islam* 2 1–27,

[44] Muchtar D and Suryani A 2019 *Edumaspul J. Pendidik* 3 50–57,

[45] Amelia R 2017 *Halaqa Islam. Educ.* 1 63–74,

[46] Kusnoto Y 2018 *Sos. Horiz. J. Pendidik. Sos* 4 247–256,

[47] Peraturan Menteri Pendidikan dan Kebudayaan Nomor 22 Tahun 2016 tentang Standar Proses Pendidikan Dasar Menengah

[48] Hakim M N and Rahayu F D 2019 *Nazhruna J. Pendidik. Islam* 2 1–27,

[49] Muchtar D and Suryani A 2019 *Edumaspul J. Pendidik* 3 50–57,

[50] Amelia R 2017 *Halaqa Islam. Educ.* 1 63–74,

[51] Kusnoto Y 2018 *Sos. Horiz. J. Pendidik. Sos* 4 247–256,