Abstract. The Indonesian Student Competency Assessment (Asesmen Kompetensi Siswa Indonesia- AKSI) is a national survey aims to monitor the quality of education system across provinces. The results of the AKSI are expected to provide inputs on policies to improve the quality of learning outcomes in particular and the quality of education in general. The objective of AKSI is to measure students' cognitive abilities, which include science, mathematics and reading. In addition, AKSI also collects data through questionnaires, one of which is about Global Awareness. The purpose of this study was to analyze the influence of student gender, parent's education level, interest studying other cultures, adaptability and communication, understanding of global problems, tolerance, environmental awareness and school quality on students' reading literacy skill. The data used in this study are data from the 2019 AKSI survey of 15.738 grade IX students and school accreditation of 1.805 junior high schools in Indonesia. The results of parameter estimation and hypothesis testing using the multilevel regression model concluded that gender, father's education, adaptability and communication skills, understanding of global problems, tolerance of religious and cultural differences and school quality affect students' reading ability.

Keywords: AKSI, global awareness, multilevel regression model

INTRODUCTION

PISA 2009 defines reading literacy as understanding, using, reflecting on and engaging with written texts, in order to achieve one's goals, to develop one's knowledge and potential, and to participate in society (Sue et al, 2013). Based on this definition, the PISA concept of reading literacy emphasises the ability to use written information in situations that students may encounter in their life at and beyond school.

Responding to these technological developments, schools have an important role in helping students to develop global competencies. Schools must be critical on global development because it will affect student development.

There are four dimensions of global competency targets that need to be applied, namely: the capacity to understand problems and situations; the capacity to understand and appreciate multiple perspectives and world views; able to build positive interactions with people from various backgrounds; and the capacity to take constructive action (OECD, 2018).

There is an urgent need for schools to incorporate global awareness into the curriculum. A relevant curriculum is needed to help students understand various world views, social, cultural and economic and be able to understand the meaning of globalization and the role of education (Burnouf, 2004).
Global Awareness is an understanding of environmental, social, cultural, economic and political factors that have an impact on the world globally. Case (1993: 320) states that there are five main elements that describe global topics, namely a picture of universal values and cultural practices, global interconnections, a picture of concerns and conditions around the world, the origin and pattern of world problems, and an alternative picture of the future direction of the world. The Global awareness survey can be used to measure students' abilities in terms of social sensitivity and global awareness. Social sensitivity can be shown by social networks and social environment. According to Kayatun (2015), social networks and the social environment play an important role in student achievement.

Center for Assessment and Learning (Pusmenjar), Ministry of Education and Culture has conducted a survey on the Indonesian Student Competency Assessment (AKSI) as an effort to improve the quality of education in Indonesia. One of the benefits expected in AKSI is to determine the factors of schools, teachers, students, and regional policies that affect student achievement (Puspendik, 2019). In 2019, the AKSI survey was conducted among grade IX SMP students. The AKSI survey consists of instruments that measure students' cognitive abilities in the fields of mathematics, reading skill (literacy) and science and collect data through student and school questionnaires. One of the student questionnaires was about global awareness.

The purpose of this study was to examine the influence of student gender, parental education level, interest in learning from other cultures, adaptation and communication abilities, understanding of global problems, tolerance, environmental concern and school quality on students' reading literacy skills. This shows the existence of a multilevel data structure where student data is nested in schools.

In a multilevel data structure such as the AKSI data case, students in the same school have characteristics that tend to be similar so that they do not become independent or occur intra class correlation. On the other hand, there is also great diversity between schools (heteroscedasticity). Data analysis using classical methods for nested data such as AKSI data, for example multiple linear regression, will lead to invalid results of estimation and hypothesis testing. Hox (2002, 2018) offers a solution to solve problems that arise from multilevel data structures using the Hierarchical Linear Model (HLM) or the Multilevel Linear Model (MLM), where one of them is a multilevel regression model.

The multilevel regression model has a multilevel data structure with one response variable measured at the lowest level and explanatory variables measured at all levels (Hox, 2018). The simplest model is a two-level model where the first level is individual data and the second level is group data (West et al., 2007). In the case of the AKSI data in this article, the observed response variables were reading literacy scores, while individual student data were the results from the global awareness questionnaire, while group data used school accreditation variables from the National Accreditation Board for Schools/Madrasahs.

In the case of the 2019 AKSI survey data, it is defined each jth school is selected as many as n_j of sample students, with j = 1, 2, …, m. The number of independent variables X at the student level (level-1) is assumed to be as much as p (X_1, X_2, …, X_p), and the independent variable at the school level (level-2) is q (Z_1, Z_2, …, Z_q), then the regression model level 1 regardless of the influence of the school can be written as follows:

\[ Y_{ij} = \beta_{0j} + \sum_{p=1}^{p} \beta_{pj}X_{pij} + e_{ij} \]

The regression coefficient at level 1 (\( \beta_{0j} \) dan \( \beta_{pj} \)) has different values between
schools. The variation in the value of the regression coefficient can be explained by forming a level 2 model. The formation of a level 2 model is carried out for each regression coefficient as a response using explanatory variables at level 2. Level 2 modeling can be written as follows:

\[
\beta_{oj} = \gamma_{00} + \sum_{q=1}^{q} \gamma_{q0} z_{qj} + u_{oj}
\]

\[
\beta_{pj} = \gamma_{0p} + \sum_{q=1}^{q} \gamma_{qp} z_{qj} + u_{pj}
\]

The estimation of parameters in multilevel regression is used the Maximum Likelihood (ML) method, while selecting the best model is used the Likelihood Ratio Test (LRTs).

The data used in this study are data from the 2019 AKSI survey of 15,738 grade IX students from 1,805 junior high schools in Indonesia. The response variable (dependent variable) observed was the students’ reading literacy score (Y), while the independent variables were observed as in Table 1.

Table 1. List of Independent Variables at Student Level and School Level

| Variable at Level 1 (Students) | Variable at Level 2 (Schools) |
|-------------------------------|-------------------------------|
| X1 Gender (Male / Female)     | Z Score of school accreditation |
| X2 Father's education: < SD, SD, SMP, SMA, D4/S1, S2/S3 |     |
| X3 Mother's education: < SD, SD, SMP, SMA, D4/S1, S2/S3 |     |
| X4 Interest in learning about other cultures |     |
| X5 Adaptability skills |     |
| X6 Communication skills |     |
| X7 Understanding of global problems |     |
| X8 Tolerance for religious and cultural differences |     |
| X9 Concern for the environment |     |

**RESULT AND DISCUSSION**

Based on 2019 AKSI data, there were around 49% boys and 51% girls. The average reading literacy score of girls was 50.58, while boys were 48.68. This result is in accordance with the results of the PISA 2018 that girls are significantly better than boys (OECD, 2019).

Several studies state that the educational background of parents affects student learning outcomes. Parents who have a higher level of education can guide their children in learning according to the learning style of the child, so as to improve student learning outcomes (Cholifah et al., 2016: 490).

The results of the 2019 AKSI survey show that the majority of students’ parents have a high school level education or lower (around 45% below SMA and 38% SMA). The survey results showed that the higher the parent's education, the better the reading score of the students, although students from parents with postgraduate graduates had lower average reading scores than diploma and undergraduate graduates (Figure 1).
THE EFFECT OF GLOBAL AWARENESS ON STUDENTS’ READING SKILL BASED ON AKSI DATA.

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Table 2 presents the best model of parameter estimation results and hypothesis testing of the effect of independent variables at the student level and school level on reading scores using the multi-level regression method. Mother's education (X3) and interest in learning towards other cultures (X4) had no effect on students’ reading literacy scores. The factors that have an influence on reading literacy scores are gender (X1), father's education (X2), adaptability skill (X5), communication skills (X6), understanding of global problems (X7) and tolerance for religious and cultural differences (X8).

Table 2. Estimator of the regression coefficient and the results of testing the hypothesis

| Independent Variables | Coefficient | Std Deviation | P-Value |
|-----------------------|-------------|---------------|---------|
| Intercept             | 9.258335    | 1.8925354     | 0.0000  |
| X1                    | -1.596059   | 0.1047986     | 0.0000  |
| X2 (random)           | 0.200711    | 0.0147937     | 0.0000  |
| X5                    | -3.184626   | 1.0324161     | 0.0020  |
| X6 (random)           | 12.612230   | 1.1337210     | 0.0000  |
| X7                    | 16.478332   | 1.3801377     | 0.0000  |
| X8 (random)           | 7.583102    | 1.5741371     | 0.0000  |
| Z                     | 0.207453    | 0.0120221     | 0.0000  |

dengan

\[
\hat{y}_{ij} = \beta_{0j} + \beta_{1j}X_{1ij} + \beta_{2j}X_{2ij} - 3.184626X_{5ij} + \beta_{7j}X_{7ij} + \beta_{8j}X_{8ij} + \bar{\eta}_{ij}
\]

Based on Table 2, the best multilevel regression model can be written as follows:

\[
\hat{y}_{ij} = \beta_{0j} + \beta_{1j}X_{1ij} + \beta_{2j}X_{2ij} - 3.184626X_{5ij} + \beta_{7j}X_{7ij} + \beta_{8j}X_{8ij} + \bar{\eta}_{ij}
\]

with

\[
\begin{align*}
\beta_{0j} &= 9.258335 + 0.207453Z + \bar{u}_{0j} \\
\beta_{1j} &= 0.200711 + \bar{u}_{1j} \\
\beta_{2j} &= 12.612230 + \bar{u}_{2j} \\
\beta_{7j} &= 7.583102 + \bar{u}_{7j} \\
\end{align*}
\]

The factors that have the greatest influence on reading literacy scores are understanding of global problems (X7) and communication skills (X6). The gender factor (X1) and students' understanding of global problems (X7) have a fixed effect, meaning that the influence of these two factors does not vary between students. On the other hand, the father's educational background (X2), communication skills (X6), and tolerance for religious and cultural differences (X8) have a random effect. This means that the influence of these three factors on students' reading literacy skills varies between students.

Referring to the questions in the AKSI questionnaire, students who have a good understanding of global issues (X7) are characterized by a good understanding of climate issues, global health, migration, international conflicts, poverty, the environment and human rights. Students who have good communication skills (X6) are students who always observe the reactions of speaking partners when communicating, listen carefully to speech partners, are able to provide real examples to explain something and if there are problems with communication, they can find ways to solve them.
In addition to the influence of several variables at the student level, school quality (Z) affects students' reading literacy skills. The quality of the school here is measured by the results of the accreditation carried out by BAN-S/M. The absence of interaction between variables at the student level with the Z variable means that the influence of the variables at the student's level same between school.

CONCLUSION

Variables at student level that affect students' reading literacy scores are gender, father's education, adaptability skill, communication skills, understanding of global issues, and tolerance for religious and cultural differences. Good communication skills and understanding of global issues are the most influencing factors for reading literacy scores. Apart from student factors, school quality (based on accreditation) also affects students' reading literacy skills.

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