

Educational Assessment System in Japan, Germany, and Indonesia; a Comparative Study

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Abstract— Assessment is an essential aspect of education. Assessment in Indonesia has been carried out with various efforts to improve the quality of education in this country. However, this has not been optimal in producing good quality education. In an effort to improve the quality of educational assessment in Indonesia, a comparative study of the assessment system can be carried out in countries with good quality education and internationally recognized education, such as Japan and Germany. Although the two countries are advanced in various fields, the implementation of the assessment has its own characteristics. The similarity of the assessment systems of the two countries is that they do not use the national exam as a benchmark for students' graduation to move up to the next level of the education unit. The assessment system applied also contributes to the happiness index of the people in the country. Therefore, learning from the educational assessment systems of Japan and Germany, many aspects must be considered when adopting them for use in other countries, for example, in Indonesia. Various aspects of the education assessment and their best practices are described in this article.

Keywords—assessment; education; comparative; Japan; Germany; Indonesia

I. INTRODUCTION

Assessment is an essential aspect of education. According to the Ministry of National Education [1], educational assessment is collecting and processing information to determine the achievement of student learning outcomes. Assessment answers questions about how well a student's learning outcomes or achievements are. Therefore, the assessment aspect must be one of the main concerns for an educator.

Assessment in Indonesia has been carried out with various efforts to improve the quality of education in this country. However, this has not been optimal in producing good quality education. Therefore, as an effort to improve the quality of educational assessment in Indonesia is to conduct comparative studies to other countries that have succeeded in achieving quality education and are recognized internationally.

Countries with high-quality education systems internationally include Japan and Germany. Japan, as one of the developed countries in the world, has a high level of education which can be seen based on data [2] on November 15, 2013, which shows that

Japan is ranked 17th out of 187 countries based on its education index with a value of 0.890. In addition, based on data [3] that 99% of the Japanese population (127,103,388 people in 2014), both women and men from 15 years onwards can read and write. The data shows that only 1% of Japanese citizens are still illiterate.

Japan and Germany successfully advance their education, as seen in their well-organized educational system settings where all institutions cooperate and carry out their respective roles optimally, starting from administrative institutions, educational institutions, curriculum supervisory institutions, and others. Good support between the government, school principals, teachers, students, and parents who contribute to the country's advancement. Good cooperation between all components of the country can bring the success of Japan and Germany to be able to achieve all the educational goals that they have proclaimed and become a country with the best quality and education system globally.

The success of these developed countries is exemplary for Indonesia, where there must be good cooperation between educational institutions, government, and parents [4]. And one aspect that is a concern in the education system is the assessment that becomes the standard in quality control to always develop for the better. In the description of this article, the author focuses on the assessment aspect to be imitated and become an improvement material for the education assessment system in Indonesia.

II. ASSESSMENT IN LEARNING

According to [5], assessment is "The process of collecting data which shows the development of learning", so the assessment, in this case, is a job to see the development of students' learning process. According to [1], educational assessment is collecting and processing information to determine the achievement of student learning outcomes. Assessment answers questions about how well a student's learning outcomes or achievements are. Furthermore, teachers carried out class assessments, including assessment activities to obtain qualitative scores and measurement activities to obtain quantitative values (numbers). It is also stated that the class assessment is carried out primarily to obtain information about student learning outcomes that can be used as a diagnosis and input in guiding students and determining the follow-up actions that teachers need to take to improve student achievement competencies. The assessment includes the development of graduate competencies and improvement of student learning [5].

[5] categorizes assessments into two major groups: traditional assessments and alternative assessments or authentic assessments. The conventional assessments are true-false tests, multiple-choice tests, completeness tests, and limited answer tests. Authentic assessments are essays/descriptions, practical assessments, project assessments, questionnaires, inventories, checklists, assessments by peers, self-assessments, portfolios, observations, discussions, and interviews.

[1] states that assessment, in general, has a very important role in the curriculum. The role of the assessment is for grading, selection tools, knowing the level of mastery of competence, guidance, diagnosis, and prediction. First, like grading, assessment plays a role in determining or differentiating students' work compared to other students. This assessment will show the position of students in order compared to other children. Therefore, the assessment function for this grading tends to compare children with other children to refer more to norm-referenced assessments. Second, as a selection tool, assessment plays a role in separating students who fall into specific categories and those who don't. Students who may enter certain schools, or who cannot. In this case, the assessment function determines whether a person can enter or not at a particular school.

Third, the role of assessment is to describe the extent to which a student has mastered the competence. Fourth, as guidance, assessment plays a role in evaluating student learning outcomes to help students understand themselves and make decisions about the next step, both for program selection, personality development, and for majors. Fifth, as a diagnostic tool, assessment plays a role in showing learning difficulties experienced by students and possible achievements that can be developed. This will help the teacher determine whether a person needs remediation or enrichment. And sixth, as a predictive tool, assessment plays a role in obtaining information that can predict how students will perform at the next level of education or inappropriate jobs. An example of this assessment is the scholastic aptitude test or the potential academic test.

Under this role, classroom assessment requires teachers to directly or indirectly carry out assessments in the entire learning process. So, the role of classroom assessment is to provide comprehensive input of information about learning outcomes.

Furthermore, Law of the Indonesian Ministry of Education Number 20 of 2007 describes that assessing student learning outcomes at the primary and secondary education levels is based on the following principles: (1) valid, (2) objective, (3) fair, (4) integrated, (5) open, (6) comprehensive and continuous, (7) systematic, (8) based on criteria, and (9) accountable. To implement the principles of the assessment, some things must be considered in assessing learning processes and outcomes, including: (1) the

assessment is intended to measure the achievement of student competencies after participating in the learning process. (2) The assessment of student competence is carried out comprehensively and continuously. (3) The assessment results are followed up with remedial or enrichment programs depending on the students' learning completeness. (4) The assessment of students' competence must be under the learning activities carried out.

In addition, the things that need to be considered by an educator in developing an assessment include the following.

1. Assessment should be based on comprehensive measurement results. This means that the assessment is based on a relatively large sample of achievements, both types (homework, quizzes, daily tests, assignments, etc.) and types (true-false, cases, portfolios, objectives, essays, and so on). For this reason, continuous assessment and the use of various measurement techniques are required. With more types and numbers of exams, student achievement can be expressed more steadily, although it should also be noted that the quality of the questions must accompany the number of types and numbers of exams.
2. Assessment activities are carried out objectively. The objectivity of the implementation of the measurement and assessment of student learning achievement can be achieved by obeying the rules required in the measurement and assessment activities. The objective can be interpreted that the results of the assessment activities are processed and reported by the teacher as is, without teacher intervention. Thus the assessment activities require teachers to be responsible for measuring and assessing.
3. Assessment activities are carried out cooperatively. Assessment activities should be carried out cooperatively between teachers, between teachers and principals or other experienced teachers. This collaboration includes planning and preparing learning achievement tests so that each learning achievement that will be used is believed to be a quality learning achievement test. In addition, teachers can carry out cooperation in terms of understanding student conditions, cooperation in determining the assessment reference used in schools, discussions, upgrading, workshops, and so on.
4. Assessment activities are carried out authentically. Authentic assessment is collecting information by teachers about the development and achievement of learning carried out by students through various techniques that can reveal, prove, or show precisely that the learning objectives and abilities (competencies) have been truly mastered and achieved.
5. Assessments must be comparable. After the measurement stage that produces the numbers is carried out, achievements that occupy the same score must get the same value. Thus, the teacher can compare the achievements of one student with another student. Furthermore, the teacher can take specific actions so that students can achieve the specified standard competencies.
6. The assessment system used should be clear to students and teachers. The source of the irregularities in the assessment is mainly the lack of clarity of the scoring system itself. This irregularity has an impact on the interpretation of student learning outcomes. Each teacher, parent, school, and community does not have the same interpretation of student learning outcomes.
7. Good assessment should be able to provide sufficient information for teachers to make decisions and feedback. The selection of appropriate methods, techniques, and assessment tools will determine the information to be extracted from the assessment process. The teacher should be able to carry out an assessment with a scope of material and abilities that are not too much but the information obtained from the results of the assessment is very deep and broad.
8. Assessment should refer to competence. Assessment needs to be designed to measure whether students have mastered the abilities following the targets set by the curriculum. The material covered in the assessment must be directly related to the indicators of achievement of these abilities. The scope of the assessment material is adjusted to the stages of the material that has been taught and the student learning experience provided. Assignment or test material must truly reflect every ability that is targeted to be mastered by students.
9. Assessments carried out by teachers must be educational. Assessment is carried out not to discriminate against students (pass or fail) or punish students but to differentiate students (the extent to which a student makes progress or each student's position in the range of achievement of a competency). Various assessment activities should provide a picture of the student's abilities, not a picture of his disability.

III. METHOD

The method used in writing this article is through library research using various sources, such as books, articles in electronic journals, newspapers, magazines, accountable websites, and statistical data. References that have been obtained are processed using

three stages, namely: 1) descriptive analysis, namely collecting and analyzing data; 2) content analysis, which is using certain procedures to conclude; and 3) critical analysis, namely criticizing the facts that have been found during the literature study, as well as addressing the meaning of a phenomenon scientifically.

IV. COMPARISON ASSESSMENT SYSTEM IN THREE COUNTRIES

Every country has a different education system. The following discusses education in three countries (Japan, Germany, and Indonesia). This article focuses on discussing aspects of the educational assessment. Each assessment system in the country is described as follows.

A. Assessment System in Japan

The evaluation and assessment of education in Japan do not make the final exam a determinant of graduation or grade promotion, but rather an assessment during the learning process and a combination of daily assessments and other learning activities. Also, Japan has revised its evaluation system for the National Examination (UN) by eliminating the UN since 2011.

Based on an evaluation conducted by the Japanese Ministry of Education, it is known that a strict and competitive National Examination has a negative effect on the quality of education, both from the psychological aspect of students, as well as teachers and staff above, because they have to account for the quality of their education with only a few exam days. Therefore, the Japanese government no longer carries out the National Examination as a requirement to pass, but through the recapitulation of the results of daily test scores, extracurricular, mid-test, and final tests.

Primary education (shougakkou) does not recognize a grade promotion exam, but students who have completed the learning process in grade one will automatically advance to grade two and so on. There is no final exam. Assessment of the learning process is carried out with daily tests which aim to check students' comprehension. There are two tests at the junior high and high school levels: the mid-test and the final test, but not as a determinant of graduation. Graduation is determined from the accumulation of daily test scores, extracurricular, mid, and final examinations.

Another thing that has become an example of education in Japan and is a characteristic of this country is the implementation of Lesson Study, which has become a culture in Japanese education since it lost in World War II. The Lesson Study system is one of Japan's methods to get up in the field of education by implementing a team system starting from planning (plan), implementation (do), and learning evaluation (see).

With the application of lesson study, teachers in Japan are open to change and willing to be criticized and advised by other parties. At the planning stage, the teacher makes a lesson plan for learning in one KD and then conveys it to other parties involved in the lesson study team. The team provided comments and suggestions regarding the lesson plans submitted by the teacher. Next, the teacher corrects the lesson plan according to the team's suggestions. At the time of implementation, the lesson study team and other parties also participated in classroom learning as observers, observed student activities in learning. They reviewed the success of the learning objectives according to the initial plan. When learning has been completed, a joint evaluation of the implementation is carried out to improve future learning. With so many suggestions from the lesson study team, the teacher's learning is always improving. Thus, the quality of the learning process is getting better, and of course, it will positively affect the results.

B. Assessment System in Germany

The assessment system in Germany is quite a unique system. There is no regular national evaluation of educational outcomes in the German education system, as is the case in Indonesia. Evaluation in terms of program evaluation is very limited to research assigned to a commission or committee. With a few exceptions, evaluations (formal tests) are in principle not used to assess a child's success in school but only for diagnostic purposes to identify types of dyslexia (learning difficulties due to certain conditions in the brain). The approach used to determine student achievement is wholly left to the teacher during the learning process. The results are reported in the form of written progress (especially for basic education). The unofficial tests are given with minimum frequency requirements. The greater weight lies in student participation in the classroom. In addition, homework is also the basis for assessment. In contrast to assessments in Indonesia, the UAS and UAS have greater weight, while for homework and participation, the percentage is generally lower. Assessment procedures vary, so student grades/scores are highly dependent on individual assessments and the type of assignment being assessed.

Several states in Germany set their own central codes and standards in order to provide feedback to teachers so that the assessments given are truly in accordance with the abilities of the students themselves. For those who have graduated, students get a certificate and it is the responsibility of officials at the state level to achieve minimum standards. In most countries a part after completing education at the *Haushule* and *Realschule*, students receive a recognized certificate. While the final exam at the *Gymnasium* is submitted and approved by the ministry.

Exams, promotions, and certifications: student year-end assessments based on the results of an analysis of student performance. From grade 2 (primary age 7 years) onwards. There is a semi-annual report including comments on progress and scores obtained by comparing their performance. Assessment is carried out on the learning process and performance, and participation in class and student behavior in school. Those whose scores are not enough can choose to repeat at the beginning of the new year. There are no test scores or diplomas in elementary schools, only a student performance report at the end of the year. The National Examination is held in grades 10 and 12.

The approach used to determine student achievement is to leave it entirely up to the teacher to arrange their written test coupled with student-teacher verbal interaction during the learning process. The results are presented in the form of a written progress report or in the form of grades. There are no automatic increments, but repeating classes are also almost unworkable. All study results documents, such as certificates of completion and diplomas achieved at universities and state examinations, have official law. These documents are mutually recognized by the states and entitle the holder to enter a higher education program and contain professional names, including academic degrees.

C. Assessment System in Indonesia

Education in Indonesia is still of low quality. An evaluation of education in Indonesia reports that the Indonesian education system does not focus on achieving its educational goals, which should focus on high-quality teaching [6]. To carry out quality learning, one aspect that must be addressed is the assessment system so that it truly measures what is to be achieved from the learning itself.

Assessment of education in Indonesia emphasizes that students must be considered from a comprehensive and meaningful aspect, which means that students are assessed from the aspect of knowledge, attitudes, and skills and are related to real problems that are close to students' lives (authentic). However, teachers generally have not used authentic assessment in assessing students in learning [7]. In addition, the facts on the ground also show that this assessment standard is often not the focus of attention from educators. Because on the one hand, most educators don't really care about this, because they assume that if the learning is good, then the assessment system will automatically be good. As a result, the quality of education in Indonesia has not improved significantly, due to the ignorance of educators in this aspect of the assessment.

The fact that the quality of Indonesian education is still low can be seen from the results achieved by Indonesian students in the 2018 Program for International Student Assessment (PISA). The study compared the math, reading and science performance of each child. For the reading ability category, Indonesia is ranked 6th from the bottom (74) with an average score of 371, for the mathematics category, Indonesia is ranked 7th from the bottom (73) with an average score of 379, and for the science performance category, Indonesia is in ranked 9th from the bottom (71), with an average score of 396. China took first place with an average score of 590. The PISA program aims to measure the skills of 15-year-old children in implementing real-life problems [8].

In addition, the results of measuring student achievement based on the National Examination (UN) are in line with the achievements of TIMSS and PISA. The National Examination results show that students are still weak in the ability of Higher Order Thinking Skills (HOTS) [9]. This is in line with [10] that the HOTS skills at the UN high school level for the 2015/2016 academic year are 25%. Therefore, it is necessary to increase the HOTS question items so that students have a HOTS mindset.

The 2013 curriculum emphasizes authentic assessment, which assesses what should be assessed on the process and results [11]. One of the implementations of authentic assessment is applying questions based on higher-order thinking skills [12]. [13] revealed that the 2013 Curriculum uses an authentic assessment that includes three aspects of assessment, namely affective, cognitive, and psychomotor.

The knowledge aspect (cognitive) relates to thinking skills ranging from thinking to remembering to creating or building a new idea to solve a problem. According to [14], the cognitive domain components include recognizing, understanding, applying, analyzing, assessing, and creating. Cognitive levels of analyzing, assessing, and creating are related to higher-order thinking abilities

[15]. Higher-order thinking skills need to be improved, so the 2013 Curriculum needs to be refined based on standards that can improve higher-order thinking skills. According to [16] the improvement of the 2013 Curriculum was carried out on content standards and assessment standards. On the standard of content, namely by reducing irrelevant material but deepening and expanding the relevant material and enriching it to train critical and analytical thinking. Assessment standards are adjusted to international standard assessments. This is in line with [17] that the Ministry of Education and Culture has implemented an international standard evaluation on the 2018 UNBK questions, both mathematics, literacy, and Natural Sciences (IPA) that require high reasoning power or Higher Order Thinking Skills (HOTS). Therefore, in the 2013 Curriculum, students must have HOTS abilities that can be trained through assessment of learning outcomes.

Assessment of learning outcomes can improve the ability of HOTS by using appropriate assessments. HOTS ability can be assessed through learning outcomes tests [18]. Learning outcomes tests can be in the form of questions; according to [16], HOTS questions measure abilities in the realm of analyzing, evaluating, and creating. The characteristics of the HOTS assessment are measuring higher-order thinking skills based on contextual problems and using various forms of questions.

HOTS questions can measure higher-order thinking skills and have several benefits. According to [19] the benefits of HOTS assessment are increasing learning motivation and improving student learning outcomes. [16] also revealed that the HOTS assessment could increase the competitiveness of students nationally and internationally. The application of the HOTS assessment is expected that students can achieve various competencies, namely critical thinking, creative & innovative, communication skills, collaboration skills, and self-confidence. These five things are the targets of students who are attached to the evaluation system and are 21st-century skills [17]. The HOTS-based evaluation system can make students able to survive in the 21st century [20].

One of the factors that cause students' HOTS abilities to below is exam questions that have not trained students to think HOTS [21]. This is what underlies students need to be trained to work on HOTS questions and teachers need to train students' abilities by developing HOTS assessment instruments. This is in line with [22], which states that training students' HOTS skills is important because it is one of the curriculum objectives contained in the basic framework and structure of the SMA/MA curriculum.

Furthermore, learning from the facts of the assessment system in Japan shows that the National Examination is not a positive thing to be used as a selection material. Likewise, for Indonesia, the government has implemented it since 2020. There is no longer a National Examination. So far, by making the National Examination a requirement for graduation, many frauds have occurred at the school level to pass 100% of the students. This cheating is the destruction of students' attitudes because the teacher himself gives them an example. At the same time, teachers can not be blamed because they act so under pressure from those above, and so on. Alhamdulillah, since 2020, the government has abolished the National Examination, and replaced it with a Minimum Competency Assessment (MCA).

However, unfortunately the socialization of MCA in Indonesia is not yet clear, so many teachers are still confused in determining and making decisions. The education system in Indonesia needs to learn from Japanese and German teachers about the procedures for evaluating student learning success as a whole in learning, so that a non-standardized evaluation process does not harm students. Japanese and German teachers have clear standards in their evaluation, so that all parties can truly trust the quality of grades given by teachers in all schools. This really needs to be emulated by teachers in Indonesia, so that they can improve the quality of education Indonesia gradually.

In addition, learning from the implementation of lesson study in Japan, the implementation of lesson study has actually been carried out in some schools in Indonesia with the existence of Japan-Indonesia education cooperation, namely the Japan International Cooperation Agency (JICA) program, but unfortunately, the implementation of lesson study in Indonesia has only just begun. Only when there is a project, and there are funds. So that the usefulness of the lesson study program which has been reported by many parties to provide an increase in the quality of learning, does not have a long-term effect on improving the quality of education in Indonesia. Indonesia should imitate the implementation of lesson study in Japan, which is consistent in its application to innovate in learning so that the quality of learning continues to increase.

D. Analysis of the Educational Assessment System and Its Effect on Individual Happiness

Measured from the PISA ranking, education in Japan is superior to Germany. We can see this from the comparison of the 2018 PISA results in Table 1 below.

TABLE I. COMPARISON OF PISA 2018 RESULTS IN JAPAN, GERMANY, AND INDONESIA

No	Country	PISA Scores			Ranking of Average Scores
		Reading	Mathematics	Science	
1.	Jepang	504	527	529	13 of 78 countries
2.	German	498	500	503	17 of 78 countries
3.	Indonesia	371	379	396	70 of 78 countries
4.	Rata-rata OECD	487	489	489	-

Source: [8]

Table 1 above shows that Japanese students' PISA scores are superior in all aspects of German countries. Especially for mathematics and science, there is quite a difference in scores, namely Japan is 27 and 28 points ahead of Germany. Nevertheless, these two countries are above the average PISA scores of OECD countries, followed by 78 countries in 2018.

PISA results are in line with educational efforts in Japan, which are very intensive for students in mathematics and science, by giving assignments and homework that really makes children learn at school and at home. This shows the culture of Japanese people who are persistent and tough warriors, as described in the principles of a Samurai. In addition, parents in Japan are also accustomed to accompanying their children to do their homework until late at night, which shows parental support for their children's education.

It is different if we examine the education in Germany; like other European countries, Germany has implemented an education pattern that gives children the freedom to choose and be creative and does not focus on giving homework to students. This makes the German students' science and mathematics not at a high level but already above the PISA average score.

However, when viewed from the aspect of the happiness of its citizens, Germany is better than Japan. This is evident from the results of a survey released by the Sustainable Development Solutions Network, a United Nations organization, through the World Happiness Report; the data is shown in Table 2.

TABLE II. COMPARISON OF HAPPY INDEX IN JAPAN, GERMANY, AND INDONESIA IN 2019

No	Country	Happiness Index of 10 points	Ranking of Average Score
1.	Jepang	5,886	58 of 156 countries
2.	German	6,985	17 of 156 countries
3.	Indonesia	5,192	92 of 156 countries

Source: [23]

The facts in Table 2 show that the compulsion of students in learning (both at school and at home, with a high learning load) will make a major contribution to student learning outcomes in terms of learning achievement. However, this is not directly proportional to the level of student happiness. Because in a forced condition, it means that the child's psychological state is depressed, so this condition will make the soul uneasy and difficult to feel happy.

This is different from the education pattern in Germany, which gives children the freedom to express themselves according to their interests and talents. Children are not given a lot of learning load, and no homework is given regularly but in projects that train students to think in inquiry (find). In addition, the assessment techniques used in education in Germany also do not burden students' minds because they focus on the learning process. In principle, evaluation (formal tests) are not used to assess children's success in school, but only for diagnostic purposes to identify types of dyslexia (learning difficulties due to certain conditions in the brain). An assessment like this does not make students burdened and able to live happily.

A quality education system and providing happiness to the community is an essential goal of education in Indonesia. So that Indonesia's position both in terms of the quality of education and the happiness index can be in the top position globally. Therefore,

in the education system and especially in the assessment aspect, Indonesia needs to carry out reforms that adopt best practices from the education assessment system in Japan and Germany. This needs to be elaborated in the education system of the Indonesian state so that the quality of education is in line with increasing the happiness of its citizens.

V. CONCLUSION

Countries with high-quality education systems internationally include Japan and Germany. Focusing on the assessment aspect, the education assessment system in Japan does not make the final exam a determinant of graduation or grade promotion. Grade promotion is based on an assessment of the learning process in the classroom and outside the classroom. In addition, Japan has also no longer conducted national exams since 2011. This is based on the results of an evaluation conducted by the Japanese Ministry of Education; that strict and competitive national exams have a negative effect on the quality of education, both from the psychological aspect of students, as well as teachers and staff above, because they have to account for the quality of their education with only a few days of exams. Therefore, the Japanese government no longer carries out the National Examination as a requirement to pass, but through the recapitulation of the results of daily test scores, extra-curricular, mid-test, and final tests.

Unlike Japan, in the education system in Germany, there is no regular national evaluation of educational outcomes as is done in Indonesia. In Germany, evaluation (formal tests) in principle is not used to assess a child's success in school, but is only used for diagnostic purposes, such as identifying learning difficulties in students. The approach used to determine student achievement is wholly left to the teacher during the learning process. The highest weight of the assessment is given to the active participation of students in the classroom. In addition, homework is also the basis for the main assessment. In contrast to assessments in Indonesia, the mid term test and final examination have greater weight, while for homework and participation, the percentage is generally lower. In addition, the assessment procedures used by German teachers are varied, using authentic assessments to assess student competence as a whole.

Furthermore, learning from the facts of the assessment system in Japan shows that the national exam is not a positive thing to be used as selection material. Likewise, for Indonesia, the government has implemented it since 2020. There will be no more national exams because so far, by making the national exam a condition for passing, many cheating has occurred. So that since 2020, the government has abolished the National Examination and replaced it with a MCA.

The education system in Indonesia needs to learn from the assessment systems in Japan and Germany about the procedures for assessing student learning success as a whole in learning so that a non-standardized assessment process does not harm students. Japanese and German teachers have clear standards in the implementation of their assessments and evaluations so that all parties can truly trust the quality of grades given by teachers in all schools. This really needs to be emulated by teachers in Indonesia so as to be able to improve the quality of Indonesian education gradually.

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