Study on Regional Disparity of Academic Achievement in Indonesia

Rika Ohno
Hiroshima University
Hiroshima, Japan
m184527@hiroshima-u.ac.jp

Abstract—**While the access to education has been expanding primary and secondary education, the academic achievement gap became a significant issue in Indonesia. The result of national examination on 2014/2015 showed that students separated into two groups as low-achievers and high-achievers. Now, it is important to assure not an only opportunity of education access, but also equity of learning outcomes. This study investigated how the achievement gap exists, and the factors influencing academic achievement on the national examination. This study analyzed the relationship between students' test score and some indicators related to the quality of Education. The preliminary results of the research show that the financial indicators and quality of school environment yield a significant effect on the average score of the regional level. For conclusion, following the in-depth analysis of preliminary research results, and some recommendation to minimize gap will be presented.**

Keywords—academic achievement; quality of education; disparity; equity of education

I. INTRODUCTION

Educational development in developing countries has been aiming to be able to receive primary education for all people under the international goal of "Education for All" since 1990 [1]. As a result, "EFA Global Monitoring Report 2015" reported that the enrollment rate of primary education in developing countries had expanded rapidly since 2000, and the number of out of school children has decreased to around fifty present compared to the number of that in 2000. Despite this progress of quantitative expansion of education, the quality of education remains a big issue. UNESCO reported that millions of children do not acquire the necessary skills in the school.

Indonesia is one of the biggest island countries in the world, which has over 13 thousand islands in 1.89 million km² [2]. Despite this geographic condition, Indonesia has successfully expanded access to primary education in the 1990s. However, the quality of education has not been assured in all schools. The ministry of education has implemented the national examination since 2000 to assure the quality of education. The national examination report of 2014/2015 showed the significant disparity of average score (figure 1).
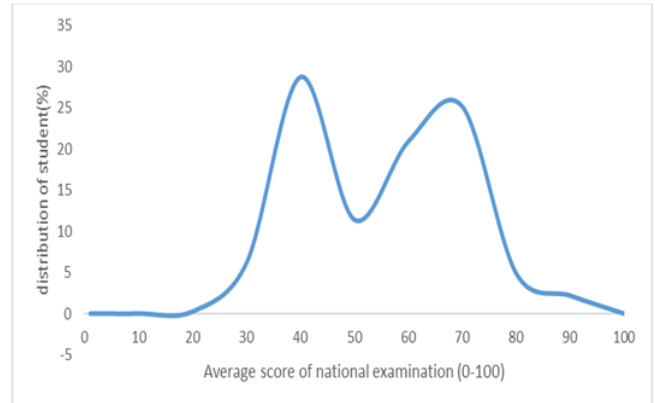

Fig. 1. Distribution of academic achievement (2014/2015).

To investigate the factors which make this separated mountain in the score distribution, this study used the regional statistics data from BPS; Badan Pusat Statistik [3]. Moreover, education quality indicators from "Regional Education Balance" reported by the ministry of education and culture of Indonesia. Furthermore, individual data of students were also collected to analyze also the individual factors affects academic achievement.

There have been several types of research about the disparity of education, and student's academic achievement. Mainly, the factors which can influence the academic achievement are categorized into two, (1) School: the facility, environment, teacher's experience, and pedagogical ability. (2) Students and family: their effort to the study, and IQ or inborn ability, parent's education experience, and economic status. In another word, the academic achievement is the outcome that affected both of supply and demand side of education [4-6].

In this study, the author evaluated the quality of input from the supply side on a macro level and investigated how each input affects the academic achievement of students. Moreover, the micro level evaluation also implemented by analyzing the answer to a questionnaire which conducted in two high schools.

II. RESULTS

A. Economic Growth and Academic Achievement

Figure 2 is the relationship between Gross Regional Domestic Product: GRDP and the average test score of the region. The result shows that positive correlation （r=0.291). This means that students in the region with high economic development tend to perform better than that in the region with low economic development. Jakarta is ranked number one in both indicators. Meanwhile, some regions are an outlier in the scatter graph, which means that other factors besides economic indicator need to be examined.

B. Quality of Education

TABLE I. MULTIPLE REGRESSION ANALYSIS AMONG TOTAL TEST SCORE AND INDICATORS OF EDUCATION QUALITY

Independent variables	Coefficient	Standard Error	t value	p value
Education budget per pupil	0.002	0.000514	4.345	0.0002***
Teacher pupil ratio	0.121	0.297629	0.408	0.6864
Teacher competency test	0.001	0.000727	1.064	0.2968
University graduate rate of teacher	-0.352	0.177687	-1.982	0.0577
School qualification	0.100	0.040585	2.452	0.0209
$R^2 = 0.614$ Adjusted $R^2 = 0.528$				

***$p<0.01$ **$p<0.05$

From the result of multiple regression analysis above, education budget per pupil and school qualification are recognized as significant independent variables.

1) Education budget per pupil: The amount of education budget recognized as a positive influence with 0.002, and its correlation coefficient $(r) = 0.443$. The number shows a strong correlation, and it is more significant than that of GRDP. The local education budget allocation was determined by the national education system in 2003. Budget allocation is delegated to the regional government, but the education low no.20 sets the minimum proportion of educational budget should be at least 20% of the overall budget (APBD), and it excludes teacher salary. However, the Ministry of Education and culture reported most of the region do not achieve the minimum line. In 2015, Jakarta (19.5%) Aceh (9.3%) and South Kalimantan (9.1%) are the best five regions which allocate the highest amount of educational budget, and these provinces also ranked the top in the average test score ranking of the national examination, but any region does not reach 20%. Moreover, the lower-developed province such as Papua (0.9%) and West Papua State (1.3%) have the lowest allocation rate for the education sector.

2) School qualification: The School qualification is evaluated by the National Accreditation Agency for Higher Education (NAAHE) of. The core mission of the committee is education quality assurance. The evaluation is conducted based on six evaluation points:1. The curriculum of the educational program, 2. Some teachers per student, 3. Student status, 4. Adjustment of educational implementation, 5. Educational facilities and infrastructure, 6. Human resources and financial management of the school: In the accreditation method, schools are qualified into three levels; A = 361 to 400, B = 301 to 360, C = 201 to 301 [7]. The top five regions with the highest proportion of qualified schools are Jogjakarta (100%), West Sumatra (100%), Bangka Belitung (93%), South Kalimantan (81%), Riau Islands (74.5%). Three of the five regions coincided with the five regions in the highest allocation of educational budget. Therefore, the result can infer that to increase the education budget might improve students' academic achievement by improving school quality.

3) Teaching quality: In this study, the indicators which related teaching quality including; teacher-pupil ratio, Teacher competency test, and university graduation rate of the teacher; do not show any statistical significance on academic achievement.

C. Cross-Analysis of Individual Students and Test Score

The following tables are the cross-analysis of students' data and test score. The questionnaire was answered by high school students from two schools. Table 2 is demographic data of the informants.

TABLE II. DEMOGRAPHIC DATA OF SCHOOL

	School A	School B
Location	Banten	Central Java
Number of students	Boy: 142 Girl: 162	Boy:208 Girl:208
Number of teachers	15	29
Class size	25.5	24.27
Curriculum	KTSP	KTSP
School qualification	A	A
Certified teachers	40%	51.72%
The average score of the national examination	270.9	306.4

Source: Sekolah kita [8]

The grade 12 students who had taken the national examination in 2014/2015 academic year selected as informants. The sample number is 127, and the number of effective respondents was 95 people.

D. Student Individual Data

From the answer of questionnaire, the author categorized students into groups according to their gender, religion, schools, and study experience. The following tables are cross analysis among grouped students and academic achievement on the national examination.

TABLE III.   GENDER.

	Boys	Girls	N.A	Total
N	42 (44%)	51(53.6%)	2(2.1%)	95(100%)
Indonesian language	72.4	78.3	78.3	75.7
English	69.0	73.1	68	71.2
IPA/IPS	65.4	80.9	78.5	74.0
Math	65.1	76.5	86	71.6
Total	272.0	308.7	319.8	292.5

Table 3 shows that among boys and girls, girls group performed higher than boys group in all subjects. In the total score, girls beyond 36 points on average.

TABLE IV.   EXPERIENCE OF SELF-STUDY FOR EXAMINATION

	Non-experienced	Experienced	N.A	Total
N	46	48	1.0	95
Indonesian language	75.2	76.1	80	75.7
English	71.0	71.3	70	71.2
IPA/IPS	65.8	81.7	80	74.0
Math	63.4	79.8	60	71.6
Total	275.5	308.9	290.0	292.5

Among the respondents, the number of students who have experienced self-study for the national examination and who have not experienced that is almost the same. However, the former group achieved a higher score than the latter group.

TABLE V.   EXPERIENCE OF STUDY IN CRAM SCHOOLS

	Non-experienced	Experienced	Total
N	18(19%)	77(81%)	95(100%)
Indonesian language	72.7	76.4	75.7
English	69.9	71.5	71.2
IPA/IPS	70.7	74.8	74.0
Math	63.1	73.6	71.6
Total	276.4	296.3	292.5

Table 5 represent that most of the students have experienced studying in cram school. The differences between the two groups are about 20 points in the total score. In each subject, especially on Math subject, the experienced group achieved higher 10.5 points than the non-experienced group.

TABLE VI.   TEXTBOOK POSSESSION

	Text book	No textbook	N.A	Total
N	65	56	5	127
Indonesian language	74.3	78.8	67.0	75.9
English	68.8	73.5	67.4	70.8
IPA/IPS	67.3	68.5	65.4	67.7
Math	67.9	76.1	72.8	71.7
Total	278.4	296.9	272.6	286.0

In the examined schools, the percentage of textbooks holder was 65 students. Moreover, it represents that many students did not possess their textbooks. In the cross analysis, the difference of total score was 9 points. Textbook holder achieved higher than the students who do not have textbooks. There was a relatively significant difference between in English, (4.7) and in mathematics (8.8). The reason why possession of textbooks has a positive influence on the result of the exam it seems that is generally used for self-study, review and preparation study in the home.

III. CONCLUSION

In this paper, we focused on the disparity of academic achievement on the national examination and the factors influencing the test score.

The result of the macro level analysis showed that financial inputs on education sector affect the school qualification by mainly investing in facilities, and eventually it influences the academic achievement of students. On the other hand, the teacher quality does not show a significant difference in the test score. The reasons can be supposed in two ways. First, the teacher competency test does not evaluate teachers' pedagogy skills, the knowledge that evaluated in the paper test does not seem to influence students' performance. Second, teachers' quality might not affect students' outcomes directly.

From this analysis, the gap between education policy planning regulated by the low and implementation on the local level is observed. It can be suggested that the equity budget allocation should be monitored by the central government to ensure all-regions which achieve the minimum standard for the education. Especially under the decentralization system, the effectiveness of budget usage depends on the financial management capacity of the local governments.

The cross analysis of students indicates that self- study outside of the school makes a significant difference in academic achievement. However, the self-studying in outside of the schools are not determined by students' motivation for study, but the socio-economic status of their family might determine it because the affordability for lesson fee of cram schools and textbook depends on the financial investment by parents.

Therefore, this research also suggests that inequality of education is occurring not only in schools but also outside of the schools. To address this issue, financial support or non-financial support such as providing after school lesson and free textbook especially for students from low-income family might help them to have an opportunity for self-study.

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