IRJE Indonesian Research Journal in Education

Alignment of Classroom Instruction with Indonesian National Standards

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Abstract

This study examines the degree of alignment between classroom instruction and national curriculum standards. This alignment may vary as a function of teacher characteristics. Using self-reports from teachers about their experiences teaching the national curriculum standards, the study explores the extent to which classroom instruction aligns with Indonesian national standards in the following nationally-assessed subjects: Indonesian, English, science, and mathematics. A mixed multilevel regression analyses was used to examine the relationships between alignments and teacher characteristics. The study involved 501 junior secondary school teachers from three western provinces in Indonesia (Lampung, Jakarta, and East Java). The findings showed that the majority of teachers taught 100% of the topics outlined in the national curriculum standards. However, a small number of teachers had taught less than 100% of the required topics. In fact, some of them had only taught less than 70%. As the Indonesian educational system used standards-based national exams, skipping topics in classroom instruction may significantly affect student achievement because test items are developed based on the curriculum standards. In terms of the relationships of alignments with teacher characteristics such as gender, working status, college major, level of education, years of teaching experience and professional development, the findings suggested that these relationships varied. Theoretically, this research provides two contributions: (1) lacking research in the area of curriculum standards and classroom instruction as mediator of student competencies, the findings of this study make an important contribution to the current research of the standards-based education system; (2) predicting alignments as a function of teacher characteristics in this study contributes to the theoretical discussion of teacher characteristics and their possible effects on classroom instruction.

Keywords

Classroom practice, curriculum, instructional alignment, teacher characteristics, Indonesian national standards

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Introduction

UNESCO (2006) calls for improvement in the quality of all aspects of education. Quality of education means that everyone should be able to achieve recognized and measurable learning outcomes, particularly with regard to literacy, numeracy, and other skills essential for life. Many governments are aware of these issues and respond by setting policies and programs to improve education through setting standards to achieve quality education for all (World Bank, 2008). For example, the United States embarked on a standards-based reform which addressed three important aspects: standards, tests, and accountability (Clarke et al., 2003; Lindquist, 2017; National Commission on Excellence in Education, 1983). States were required to implement challenging content standards in reading and mathematics. To measure achievement of the standards, tests were required annually for all students in Grades 3 through 8. In Indonesia, the students' mastery of national content standards is determined by the results of national exams which used to certify completion of education, especially at the junior and senior secondary school levels.

Regardless of the country or the specific details of any standards-based reform, major challenges are faced most national education systems. Two of the most common challenges involve content and assessment. Are the curriculum or content standards sufficiently rigorous? Are the national tests aligned with the curriculum standards? A third important challenge that it not often addressed is fidelity of implementation (Coburn, Hill & Spillane, 2016). For example, to what degree are curriculum standards aligned with classroom instruction? Often, a major assumption is that once the curriculum standards are set, they are taught in the classroom. If required curriculum content is not adequately covered in the classroom, then students cannot learn the required material, will perform less satisfactory on the national exams and will be less prepared for success later on in life.

The problem this research examined was the degree of alignment between classroom instruction and national curriculum standards in Indonesia and whether this alignment varied as a function of teacher characteristics. The effects of teacher characteristics are often examined as a possible explanation for a variety of effects in the classroom (Goldhaber, 2016; Hanushek & Rivkin, 2006; Klassen et al., 2018; Opdenakker & Van Damme, 2006).

Systemic alignment has been essential to increasing both quality of and access to education in standards-based reform. Alignment between classroom instruction and the curriculum standards has been the interface that ensures achievement of educational goals. Alignment research can offer a deeper view of the educational process (Blank, 2002; Martone & Sireci, 2009; Porter & Smithson, 2001) however; few studies have examined this issue.

Although the concept of standards-based reform is widely accepted in Indonesia, the term *alignment* is hardly mentioned in terms of its necessity in implementation of the curriculum standards. The degree of alignment of standards, classroom instruction, and assessment in the education system of Indonesia has not been adequately studied. The lack of clarity on this issue may significantly affect many aspects of education, including efforts to improve its quality and access. In addition, current progressive implementation of the national standards and the national testing or assessment program to determine completion

for each school level in Indonesia has not been followed up with sufficient intervention in classroom instruction. Insufficient attention to classroom instruction may result from limited information received by teachers about the standards, instructional practices based on the standards, and the assessment program gauging their effectiveness, as well as the overall alignment of these components.

The practice of classroom instruction is critical to standards-based reform. Research shows that the instructional process in reading increased achievement not only in reading but in content areas such as science, mathematics, and writing (Guthrie et al., 2000). Findings of a study on classroom quality conducted by Brown et al. (2010) supported an intervention in the classroom-level social process which is fundamental to positive youth development. Eliminating the instructional process from the mainstream of the reform will definitely create disparities involving teachers' knowledge about the standards and their classroom instructional practice. As a result, teachers may align their class instruction by referring more to the tests than to the standards of the curriculum. If this occurs, the education will narrowly focus only on the assessment and violate a critical concept of the standards-based reform.

More important, assessors need to realize that a superficial improvement in test scores may occur when teachers align their classroom instruction to the test rather than to the curriculum standards. If this happens, misalignment between the content standards and classroom instruction not only violates the concept of the standards-based system but may also result in a greater misallocation of resources for schools and misrepresent the actual quality level of education. Such misallocations and misrepresentations can interfere with students from different backgrounds receiving opportunities to get into better quality schools. Very little research has been done on the degree of alignment between content standards and classroom instruction in Indonesia. Koto (2013) studied the implementation of science curriculum in primary schools Bengkulu province. Documentary analysis of course syllabi and lesson plans was conducted. Questionnaires were completed by the teachers about the implementation of the new science curriculum. Over 90% of the teachers either agreed or strongly agreed with the implementation of the science standards in the classroom. In addition, six teachers were observed teaching in the classroom. The study concluded that the six teachers were still in the *adoption* mode of the national science standards in terms of course syllabi.

Without additional research on implementation of curriculum standards in the classroom, educators are challenged in assessing whether student achievement scores on the national exam reflect either student learning or the degree to which the content standards were taught in the classroom. In addition, without this knowledge policy makers have difficulty determining whether the national educational reform initiative is making any difference in student achievement. Research is urgently needed to investigate how well teachers align their classroom instruction with content standards. Thus the purpose of this study is to determine the extent to which Indonesian instructional practices align with the nation's standards. This study addresses two critical research questions: (1) to what extent does classroom instruction align with topic coverage specified by national curriculum standards? and (2) How are teacher characteristics such as gender, working status, college

major, level of education, years of teaching experience, and professional development associated with the degree to which classroom instruction reflects topic coverage aligned with the national curriculum standards?

Literature Review

Conceptual framework for standards-based reform

Standards-based reform is comprised of four basic components: curriculum or content standards, assessments, accountability, and alignment. The purpose of curriculum standards is to provide explicit guidelines for curriculum at various grade levels and implicit guidelines for what is to be tested (Clarke et al., 2003; Tran, Reys, Teuscher, Dingman, & Kasmer, 2016). The standards can provide a narrow or broad scope for educators to structure curricular content at the local or school level (Griffith, 2006). The aim is to provide guidelines that teachers can use to create a challenging high quality curriculum for all children, regardless of where they attend school (Azano, Missett, Tackett, & Callahan, 2018; Clark et al., 2003).

The second component of standards-based reform is assessments, which should be aligned with the curriculum standards. The purpose of assessments is to provide an external, objective measure of how well students have learned the content and skills specified in the standards (Bhola, Impara, & Buckdendahl, 2003; Clarke et al., 2003; Newton & Kasten, 2013). Many countries administer annually a national assessment or exam to gather this information about the extent of student learning. This information can indirectly shed light about specific education policies such as instructional practices, teacher quality, interventions, instructional practice, and adequate resources. In addition, international tests or exam such as PISA and TIMSS collect comparative data on student achievement across many countries (Tobini, Lietz, Nugroho, Vivekanadan, & Nyamkhuu, 2015).

The third component of standards-based reform is accountability; holding members of the education system accountable for how well students have learned the contents and skills laid out in the standards, as assessed by tests. Central considerations in accountability are quality and equity (Gershberg, Gonzalez, & Meade, 2012; Mbiti, 2016). Has the education provided to students of high quality? Is the quality of education and associated resources distributed in an equitable manner to all students? Is the education system characterized by high or low levels of student learning?

Alignment is the fourth critical component in standards-based reform. Alignment helps tie the other three components into a coordinated, coherent whole. If the national curriculum standards are not aligned with the national exam, the exam results are meaningless because they are measuring something else other than the extent to which students learned the curricular material. The validity and reliability of the national exam is called into question. If, however, we assume that there is alignment between the curriculum standards and the national exam, there is still another potential threat to the validity of the exam results and their usefulness in improving the quality of education. A common assumption is that teachers are teaching the curriculum standards in such a way that promotes student learning of the curriculum. As mentioned earlier, if the curriculum

standards are not being sufficiently taught in the classroom, then students will not be able to learn them well and they will not be adequately prepared to do well on the national exam.

The need for alignment is highlighted in the standards-based reform an initiative is pointed out in international research. The Trend International Mathematics and Science Study (TIMMS), an international ethnographic case study, has highlighted two possible explanations for the general patterns in school teaching: (a) universal elements that shape teaching practice in most schools are the school physical environment, the classroom social dynamic, and the curriculum content, and (b) countries have shaped teaching as evolving classroom methods aligned with their national cultural beliefs, expectations, and values (Givvin et al., 2005). These beliefs may include the nature of the subjects taught, the ways students should learn, the expectations for student performance levels, and the value of school processes and outcomes. In this context, alignment is critical, not only to achieve match, continuity, and synchronization among the main components of the instructional system, including classroom practice (Fonthal, 2004), but also to ensure that knowledge and skills assessed on tests are the same knowledge and skills specified in the content standards (Grossman et al., 2008; Lauer et al., 2005; Martone & Sireci, 2009; Rothman, 2003). Accordingly, many studies examining alignment have been conducted by scholars such as Porter (2002), Porter et al. (2007), Webb (1997, 1999), and Wixson et al. (2002) who have produced criteria and procedures to measure alignment. In those studies, both Webb (1997) and Wixson et al. (2002) focused their research mostly on alignment of the standards and the assessment or exam, while Porter (2002) addressed alignment of the standards with both classroom practice and assessment. Porter (2002) found that where teachers make decisions about what to teach and how to teach is a critical aspect for alignment and plays a key role in student performance with respect to the standards.

Systemic reformers seek to provide the state with a coherent system to guide instruction (Cohen, 1993). Newmann et al. (2001) suggested that studies on the broader educational system tend to discuss coherence as an alignment of a school's instructional program with external policies and standards. Similarly, Schmidt, and Prawat (2006) argued that in order to bring coherence to education, one must examine the relationship between content coverage at the classroom level and curricular governance at the system level. Alignment is the central focus of standards-based reform targeted to help students learn and perform on the assessments more effectively (Looney, 2011). Alignment is believed to offer more equitable educational opportunities for all children. Alignment helps not only to ensure that students have a fair opportunity at being prepared in class for what is on the tests and performing well on the tests, but also to confirm the validity of the results (Rothman, 2003). Based on this assumption, alignment is a critical issue not only in standards content and assessment but also in instructional practices in which the teachers' role is paramount.

Standards-based reform in Indonesian education

In the history of education in Indonesia, a centralized system has often been predominant over a decentralized model. From the earliest centuries (1598–1942), when the country was a Dutch colony, the control over local governments (including education) by

the Dutch central government was very strong. Education was restricted to the local elites. After colonialism ended, the period of the first presidency (1945–1966) found the country in economic and political turmoil. Thus efforts to decentralize some government systems were far from successful due to the country's instability. As a result the educational sector was not high on the priority list.

Education was again evolving in Indonesia in the era of the second presidency (1966–1998), although it was still centralized due to social instability and the need for nationalism justified Indonesia in remaining centralized (Bjork, 2003; Schwarz, 1999). During this era, education helped promote national unity by disseminating top-down government decisions. A minor move towards decentralization introduced in 1994, known as the Local Content Curriculum (LCC), allocated 20% of total instructional hours to locally designed subject matter. According to Bjork (2003), this move toward local control was unsuccessful because school cultures previously directed obedience rather than initiative, in accordance with the top-down system of the government, were too deeply engrained in the education process.

Major government decentralization initiatives were introduced in mid-1998, the third presidential era (1998–1999), as a result of the economic crisis that caused the collapse of the second presidency (1966–1998). The succeeding governments (1999–2001, 2001–2004, and 2004–2009) established the national standards and assessments as efforts to increase educational quality and accessibility. The National Education System Law 20/2003 was enacted in response to the change of education governance on a national level from a centralized model to a decentralized model under two major instruments of decentralization: Law 22/1999 on regional government and Law 25/1999 on fiscal relations. Under this new education system law, the government adopted two components of standards-based reform that are foundational initiatives of the central government: national curriculum standards and national assessment; these regulations mandate *what students should know and be able to do*. Conversely, the third component of standards-based reform, accountability, is barely discussed in this older education system law.

In 2013, the national curriculum was modified to assist students to meet "knowledge competencies and developing positive attitudes towards the national character" (Blackley, Rahmawati, Fitriani, Sheffield, & Koul, 2018, p. 25). In contrast to the previous curriculum, the *Kurikulum Tingkat Satuan Pendidikan* (KTSP), the "goal of K-13 was to develop productive, creative, and affective Indonesians through the integrated nurturing of their attitudes, skills and knowledge" (Blackley, Rahmawati, Fitriani, Sheffield, & Koul, 2018, p. 25). Along with the change in the curriculum, the teachers were expected to modify their pedagogy from that of "emphasizing rote learning and promoting deference to the teacher's authority" to a more "student-centred approach, and active learning" (Blackley, Rahmawati, Fitriani, Sheffield, & Koul, 2018, p. 25). Many countries have shaped their teaching by allowing classroom methods to evolve as they align with national cultural beliefs, expectations, and values (Givvin et al., 2005). "The implementation of this new curriculum, however, was halted after one year due to a presidential election which resulted in changes in the Ministry of Education. Schools and teachers were instructed to return to the previous KTSP school-based curriculum" (Suyanto, 2017, p. 2). Sukasni and Efendy (2017) note

several challenges in Indonesian education such as cost, the nature of the national exam, implementation of curriculum and quality teachers as part of a reform agenda for education. They conclude that the "settlement of the problems should be comprehensive and integrated," or in other words, a coherent whole where all of the key components in the Indonesian education system are aligned with each other (Sukasni & Efendy, 2017, p. 188).

Methodology

Using quantitative methods, this study examined the alignment of topics covered in classrooms in Indonesian junior secondary schools with those mandated by the national curriculum KBK standards. The measure of alignment between classroom instruction and the national curriculum standards is the breadth of instruction for the variable of topic coverage. Topic coverage is specified as the average number of topics mandated by national standards that were taught in the classrooms as reported by the participating teachers. The first research question explored the accuracy with which teachers were aligning their instruction with the specific national curriculum standards, and the second research question examined the association between various teacher characteristics and the alignment they practiced.

Sampling

Multistage sampling technique was utilized for the study (Shimizu, 2014). Three provinces located in the western part of Indonesia provided the sample of teachers for the study. Provinces, districts, and junior secondary schools were randomly sampled using the Excel software program. Lampung province was randomly selected from the ten provinces on Sumatra Island, and East Java province was randomly selected among the five on Java Island. The exception to random selection, Jakarta, the capital of the country, was included as it is the most populated city in Indonesia and differs in many ways from other provinces.

From each province, two districts were randomly selected: one urban district, commonly called a city district or *kota,* and one suburban/rural district, commonly called *kabupaten* for a total of 6 districts in the sample. One of the differences between urban (*kota)* and rural districts is that *kota* is a district without a rural area, while *kabupaten* is a district with some rural areas. Again Jakarta was an exception; two aspects were noted: (a) the province had no *kabupaten* districts, and (b) policy for all school levels was managed at the provincial level rather than the district level (as it was in other provinces). Teachers were taken from two *kota* districts, excluding private schools since according to the province officials, the private schools were on holiday when data were collected.

Enough schools were randomly selected to provide approximately 75 teachers for each district or 150 teachers per province. However, 200 teachers were included from East Java due to its large number of schools. From each school, all teachers who taught the subjects of Indonesian, English, science, and math were selected as respondents of the study. Based on this sampling strategy, the study included 27 schools (Lampung, four *kota* district

schools and four *kabupaten* district schools; Jakarta, four *kota*; and East Java, six *kota* and nine *kabupaten*), with a total of 501 junior secondary school teachers.

Data collection

Surveys are one of the most commonly used methods to understand the way societies work and to test theories of behavior (Czaja & Blair, 2005Groves et al., 2004). The advantages of using a survey include efficiency, internal and external validity, and feasibility for covering large geographical areas (Mathers, Fox, & Hunn, 2007). The geographical context of this study and the number of respondents lent itself to a survey instrument. The study collected data through a teacher survey questionnaire consisting of two parts. The first part collected teacher characteristics such as gender, working status, college major, level of education, years of teaching experience, and professional development. The collection of teacher characteristics is quite common in studies involving classroom teachers (Cakir & Bichelmeyer, 2016; Lee, Yeung, Tracey, & Baker, 2015; Monk & King, 1994; Wayne & Youngs, 2003). The reasoning behind collecting data on teacher characteristics is grounded in the fact that these characteristics are often associated with or influence what goes on the classroom. The rationale for collecting demographic data of teacher characteristics in this study was to examine the extent to which teachers were implementing the national curriculum standards was associated with any particular teacher characteristics. Findings of such associations would most likely warrant additional investigation.

The second part of the survey listed the standards for each of the four nationally assessed subjects (Indonesian, English, science, and mathematics), followed by questions to measure the breadth of alignment of classroom practice to each standard. The survey asked teachers to indicate whether they had taught the identified topics in their classrooms during the 2008/2009 school year, using *0* for the standard-mandated topics the teacher did not teach to *1* for each standard-mandated topic the teacher did teach. Teachers were given a week to complete the survey, with the choice to return the questionnaire when the researcher came back to the school to collect data or to mail the questionnaire to the address provided by the investigator using a provided envelope with an express stamp for schools in Lampung province and a regular stamp for schools in Jakarta and East Java province.

This study used teacher self-report because "'teacher perceptions' are one window into teacher-student relationship that can inform work related to improving relationships and interactions" (Saft et al., 2001, p. 126) (Cristina-Corina & Valerica, 2012; Greene, 2015). To increase the accuracy of reporting the perceptions of their own instructional practices rather than giving socially desirable answers, prior studies had utilized various validity measures (Kaplan, Gheen, & Midgley, 2002; Wolters & Daugherty, 2007). When explaining the purpose of the study to teachers, the investigator addressed consensual issues and convinced them that their responses would be kept confidential; only the investigator would have access to the data. Since no names were written on the surveys, respondents were assured their identities would not be recognized by anyone but the investigator. In an effort to improve the quality of the survey instrument, a pilot project was conducted in Jakarta with

24 invited teachers consisting of two teachers for each subject and grade. For this pilot, the English version of the questions for the survey had been translated into Indonesian. Teachers were then given both the Indonesian and the English versions and asked to review the survey instrument for possible changes in clarity and content.

By the end of four weeks, 95% of the questionnaires had been completed and received by investigators. At the end of the data collection period, 98% had been returned. Items on the instrument required approximately 30–35 minutes to complete. No compensation was offered for participating in this survey. A major factor in the 98% return rate could be the establishment of a research and innovation network at the district level. Personnel in the district network who had been trained in research methods and data collection assisted in collecting the survey data.

Data analysis

Data analyses utilized descriptive statistics, along with correlational and regression analyses. After data were collected from the completed surveys, the responses were recorded in Microsoft Excel. Data analyses were organized around the two research questions. The first question, exploring alignment of classroom instruction with the national curriculum standards, was analyzed by determining the percentage of the mandated national standards topics the teachers had taught during the 2008-2009 school year.

Analysis of data addressing the second question, the relationship of this alignment to teacher characteristics, estimated the parameters which seemed to maximize the likelihood, thus making the response appear as *likely* as possible (Rabe-Hesketh & Skrondal, 2008). Given that the study consisted of teachers were clustered and nested within schools (multilevel by grade level and subject taught in one school), the use of mixed multilevel modeling adjusted for possible school effects on the teachers' responses. Such multiple level structures are typical of education data (Little et al., 2000; Marsh et al., 2008; Marsh et al., 2009). Mixed multilevel regression examined the relationship between the alignment of classroom instruction (as measured by topic coverage) and teacher characteristics (gender, working status, college major, years of teaching experience, education level, and professional development). In the model, alignment of classroom instruction was the dependent variable and teacher characteristics were the independent variables. The following equation models the association of teacher characteristics as predictors of the alignment of teacher instruction with national standards. $\text{Topic coverage}_{oj} = \gamma_{00} + \gamma_{01}(\text{Gender})_j + \gamma_{02}(\text{Working status})_j + \gamma_{03}(\text{College major})_j + \gamma_{04}(\text{Years of teaching})_j + \gamma_{05}(\text{Education level})_j + \gamma_{06}(\text{Professional development1})_j + \gamma_{07}(\text{Professional development2}) + u_{oj} + e_{ij}$. The symbols and components in this formula represent the following:

- Topic coverage is defined as alignment for teacher i expressed as function of the independent variables gender, working status, college major, years of teaching, education level, and professional developments.
- γ_{00} is the y-intercepts, interpreted as the expected alignment for a male government teacher who is teaching the subject of his school major with zero education, experience, and professional development.

- The γ_{01-} γ_{07} are slope terms interpreted as the change in average of the alignments for each unit increase in the following characteristics: gender, working status, college major, years of teaching, education level, and professional developments variables.
- u_{oj} is the unique school effects.
- ε_{ij} = the error term interpreted as all other factors that affect average degree of alignment that are not accounted for in the model.

Results

The main objective of this paper is to report the findings addressing the two research questions. Research Question 1 established the primary alignment: "To what extent does classroom instruction align with topic coverage specified by national curriculum standards?" Research Question 2 looked at aspects that might affect likelihood and extent of alignment: "How are teacher characteristics such as gender, working status, college major, level of education, years of teaching experience, and professional development associated with the degree to which classroom instruction reflects topic coverage aligned with the national curriculum standards?"

Of the 501 participating teachers (98% response rate), East Java contributed the highest number (40.1%), followed by Jakarta (31%) and Lampung (28.74%). These three provinces included a large number of schools in 2008–2009: East Java had the largest number of schools (6,088) followed by Lampung (1,706 schools), and Jakarta (1,236 schools). Comparing the grades represented, seventh-grade teachers were the largest group to participate in the survey, followed by ninth grade and then eighth grade teachers. Of the subjects taught, the sample indicated a fairly even distribution of teachers at each grade level in all four subject areas. Across all grades, math teachers represented the largest group (n = 136; 27.1%), followed by English teachers (n = 126; 25.9%), Indonesian teachers (n = 124; 24.7%), and science teachers (n = 115; 23%).

Topic coverage by teachers

Table 1 presents the teachers' average topic coverage for each province by subject and grade level. Overall, the teachers' average topic coverage was 97.17% (n=501, sd=5.15). All scores were high with only two scores below 90%---East Java science in 7th grade and Jakarta English in 8th grade. In comparing provinces, East Java showed the lowest curriculum coverage average. In terms of grade levels, eighth grade teachers had the highest percent of topics covered with seventh grade teachers covered the lowest percentage of the topics. As can be seen from Table 2, while the majority of teachers taught 100% of the topics in each subject areas, as required by the national curriculum standard, 20.55% of the teachers—across grades and subjects—did teach fewer than required topics. Overall, the seventh grade had the lowest percentage of topic coverage, including the only grade with any teachers who taught 70% or below of the required topics across the subjects. This finding also aligns with the lower means for seventh grade in Table 1. Across the curriculum

subjects, science and math showed the highest number of teachers who did not teach 100% of these mandated topics, 30.43% for science and 22.79% for math.

Table 1. *Average topic coverage by province, subject, and grade (n=501)*

Province	Subject*	Grade 7			Grade 8			Grade 9			Average Mean
		Mean	SD	n	Mean	SD	n	Mean	SD	n	
Lampung	I	99.6	1.6	14	98.0	4.3	9	98.9	2.4	11	98.9
	E	99.0	4.4	18	100.0	0.0	9	96.7	11.0	11	98.6
	S	98.1	5.3	12	97.4	5.8	11	99.1	1.9	11	98.2
	M	98.7	2.8	14	96.5	11.2	10	99.2	1.9	14	98.3
	Total	98.8	3.5	58	98.0	5.3	39	98.5	4.3	47	98.5
Jakarta	I	95.2	9.7	14	99.3	2.4	11	100.0	0.0	11	97.9
	E	89.5	16.2	19	100.0	0.0	10	100.0	0.0	11	95.0
	S	99.1	1.9	15	100.0	0.0	11	100.0	0.0	10	99.6
	M	98.5	3.5	18	97.3	7.1	11	99.6	1.4	15	98.6
	Total	95.6	7.8	66	99.2	2.4	43	99.9	0.3	47	97.9
East Java	I	100.0	0.0	21	99.5	1.9	17	100.0	0.0	16	99.8
	E	91.7	18.0	21	96.9	7.1	13	94.8	12.1	14	94.0
	S	86.6	17.4	16	96.6	3.9	14	91.4	9.7	15	91.3
	M	91.7	14.9	23	99.7	1.4	17	96.6	4.4	14	95.5
	Total	92.5	12.6	81	98.2	3.6	61	95.7	6.6	59	95.7
Grand Total		95.64	7.96	205	98.4	3.8	143	98.04	3.73	153	97.17

*Subjects: I = Indonesian, E = English, S = Science, M = Mathematics
n= number of teachers

Table 2. *Number of teachers in topic coverage ranges for each subject and grade*

Grade	Range of Topic Coverage	Number of Teachers Indonesian	English	Science	Math	Total	% of Teachers
7	Up to 70%	1	5	2	2	10	4.88
	71%–89 %	1	6	7	4	18	8.78
	90%–99%	4	6	4	12	26	12.68
	100%	43	41	30	37	151	73.66
	Number of teachers	49	58	43	55	205	100.00
	% Teachers Not at 100%	12.24	29.31	30.23	32.72	26.3	
	% Total Teachers by Subject	23.90	28.29	20.98	26.83	100.00	100.00
8	Up to 70%	0	0	0	0	0	0.00
	71%–89%	1	2	2	2	7	4.90
	90%–99%	4	1	7	2	14	9.79
	100%	32	29	27	34	122	85.31
	Number of teachers	37	32	36	38	143	100.00
	% Teachers Not at 100%	13.51	9.38	25	10.5		

						14.7	
	% Total Teachers by Subject	25.87	22.38	25.17	26.57	100.00	100.00
	Up to 70%	0	0	0	0	0	0.00
	71%–89%	0	3	4	3	10	6.54
	90%–99%	2	1	9	6	18	11.76
9	100%	36	32	23	34	125	81.70
	Number of teachers	38	36	36	43	153	100.00
	% Teachers Not at 100%	5.26	11.11	36.11	20.9	18.3	
	% Total Teachers by Subject	24.84	23.53	23.53	28.10	100.00	100.00
	Up to 70%	1	5	2	2	10	1.99
	71%–89%	2	11	13	9	35	6.99
	90%–99%	10	8	20	20	58	11.58
Overal	100%	111	102	80	105	398	79.44
l	Number of teachers	124	126	115	136	501	100.00
	% Teachers Not at 100%	10.48	19.05	30.43	22.8	20.5	
	% Total Teachers by Subject	24.75	25.14	22.95	27.15	100.00	100.00

Teacher demographics

The numbers of male and female teachers are similar in the junior secondary school level in Indonesia. This gender similarity at the junior secondary level seems to be a middle ground between primary school and senior secondary school levels, in which there is more of a disparity. By gender, primary schools had more female teachers and senior secondary had more male teachers (Indonesian Center for School Statistics, 2010). Findings indicated that 26% of the respondents did not indicate their college major. For those teachers who did indicate their college majors, 12% of these teachers were teaching subjects that did not align their college majors. This percentage may actually be even higher if those who did not indicate their college major (26.3%) also share this discrepancy. One of the government requirements for certifying teachers for junior secondary school is that the teacher must have at least a three-year degree. On average, the teacher education levels were high, with 85.03% of the teachers having a bachelor's degree—higher than the government requirement. However, for 2% of the some teachers, their highest level of education was only senior high school, with Jakarta having the highest percentage of these teachers at 3.87%.

Findings regarding teacher experience indicated that participants had either relatively little experience (one to five years) (42.1%) or much experience (11 or more years) (40.3%) teaching their current subject. Thus, most teachers were either new teachers with relatively less experience or older teachers with more experience. The number of teachers with years of teaching experience in the middle range (six to ten years teaching the current subject) was fewer across all grade levels of education and, in many cases, across the subject and province. Findings indicated that 55.89% of the teachers had adequate professional development, a crucial aspect in a teacher's career, regarding the national curriculum standards. However, 36.53% had less than adequate or no professional development in this area. Because the

country has applied the standards-based curriculum system for the last five years, having over a third of the teachers in the study without adequate professional development with the national standards is not only discouraging for policy implementation but also for the potentially negative effects on student achievement. Even more discouraging is that teachers indicated the inadequate professional development to provide knowledge and skills concerning how to align classroom instruction with the standards (81.2%), which far outweighed adequate professional development (10.2%). The deficit of professional development about the standards and skills/techniques for aligning the standards with classroom practice may continue to lead to failure in implementing the new standards-based policy and be detrimental to student learning. Lack of knowledge and capacity are common problems affecting fidelity in implementing education policy. These important findings about teacher characteristics warrant additional research that would include a national sample of Indonesian secondary school teachers.

Relationships of teacher characteristics and alignment

In the analysis of the association between teacher characteristics and topic coverage alignment (see Table 3), the mean of percentage topic coverage did not differ significantly between male and female teachers.

Table 3. *Predicting the extent of topic coverage from teacher characteristics*

Predictors	Percentage of Topics Taught	
	$R^2 = .038$	
	β	T
Indonesian	1.0745	.993
English	-1.5893	-1.354
Science	-1.3888	-1.248
Gender	.5359	.683
Work Status	.8225	.839
Major	.2711	.314
Years of teaching experience	.5175	2.301*
Education Level	1.0129	.926
Professional Development 1	.9111	1.029
Professional Development 2	.5693	.585

Note. *p < .05

Math is reference subject as single categorical variables; gender (0 = female, 1 = male—reference); work status (0 = nongovernment, 1 = government —reference,); major (0 = has no major, 1 = has subject-specific major —reference). β = coefficient, t = t-value

Among the predictors, only years of teaching experience in teaching topics was a significant predictor ($F_{1,460} = 5.29$, $p < 05$; $R^2 = .039$) of extent of topic coverage. Subjects of Indonesian, English, science, and math were single categorical variables (with math as the

reference variable). A single categorical variable consists of only one category. Table 3 indicates no significant differences existed in the extent of topic coverage between the different subjects. The total model accounted for only 3.9% of the variance of extent of topic coverage explained by teacher characteristics. This finding suggests that teachers with more years of teaching the subject had more extensive coverage of the national curriculum standards. For both educational level and professional development, the positive relationships were not significant. Thus, only years of teaching experience significantly predicted alignment in terms of extent of topic coverage.

In summary, the findings addressed two issues: (a) the alignment between the national curriculum standards and classroom instruction and (b) the relationship between teacher characteristics and the degree to which the curriculum topics were taught in each subject. The overall average topic coverage was very high (97.17%), although some teachers for each subject did teach less than what was required by the national curriculum standards (2.83%). Across the grades, only in seventh grade did some teachers teach 70% or less across all subjects. Among the subjects, science and math demonstrated the highest curriculum gaps with a higher number of teachers teaching less than 100% of the required topics. In the relationship between teacher characteristics and topic coverage, the only significant predictor of extent of topic coverage was years of teaching experience.

Discussion

This study addressed research questions regarding (a) the extent to which classroom instruction in junior secondary schools in Indonesia aligned with the national curriculum standards and (b) the relationship between teacher characteristics and this extent of alignment. This section discusses the findings that respond to these two questions and provides policy recommendations. Some of the discussion about the findings is an initial attempt to make preliminary sense of the findings which must necessarily be couched in terms of exploratory explanations. These tentative explanations should be the investigated in future research.

Alignment of classroom instruction with national curriculum standards

Examination of the alignment of classroom instruction with national curriculum standards extends the research literature in this field, as most studies focus only on standards and assessment. Few research studies have addressed how actual classroom instruction relates to standards or assessment (Gamoran et al., 1997; Porter, 2002; Schmidt & Prawat, 2006). A primary finding of this study is the very high level of alignment of overall topic coverage (97.17%) with national curriculum standards across teachers, subjects, and grade levels. The national government and educators are thus provided with essential evidence that teachers in Indonesian junior secondary schools are teaching the subjects required by the national curriculum, with very minor exceptions, adding credibility to the Indonesian education accountability system.

Although topic coverage was very high overall, findings also indicated that 20.56% of the teachers had taught less than the required 100% of the topics. This finding is important

for national policy makers as it reveals gaps in the current standards-based system. As the educational system in Indonesia implements standards-based reform, the content of curriculum standards should become the main reference point for both classroom instruction and national tests. Because the national tests are designed according to the curriculum standards, covering the required curriculum topics is critical; skipping topics in class may put students at a disadvantage by leaving them unprepared for areas tested.

Several factors may explain the finding of lower topic coverage. First, with the Education Act No. 20/2003 the government enacted various regulations, most of which support the standards-based system. For example, one of the regulations (Regulation 19/2007) was the standard of school management, which gave schools flexibility to design curriculum to accommodate school characteristics and capacities. Second, teachers in small schools and rural areas may not teach all of the topics because they receive less supervision and monitoring. School size and the urban or rural nature of the school would be important predictors to examine in a future study. Third, ninth-grade teachers may not teach all of the topics because they have to take additional time to prepare their students specifically for the national test. Traditionally, most ninth grade teachers have devoted much of their time in the last semester to reviewing the content anticipated on the tests.

Disaggregating the results for low topic coverage showed several patterns in the data. First, the lowest levels of topic coverage occurred in seventh grade. No research literature suggested reasons that seventh-grade teachers would have covered the lowest percentage of required topics. One possible explanation could be that the adjustments necessary in transitioning from primary school, where they have one teacher for all subjects in small classes, to secondary school, which has subject-specific teachers and larger classes, affect the pace of students' learning. Second, some teachers may think that since the exams do not come until the end of ninth grade, the skipped topics will probably be covered by that time. Both of these assumptions would need to be examined in future research.

Third, a higher number of teachers taught less than 100% of the required topics in Science and Math. One explanation for less alignment in Science may be a shortage of Science teachers. The total number of 7th grade Science teachers for the three provinces was 43, compared to 49 teachers of Indonesian, 55 teachers of Math and 58 teachers of English. With fewer Science teachers available, many of them teach in multiple schools, which require travel time between schools. If Science teachers arrive late, they may have less time to teach the required topics. For Math, the number of teachers does not appear to be an issue, but, perhaps, seventh grade Math teachers are not as well qualified to teach Math as the science teachers are to teach Science.

Fourth, examining differences among provinces, we found the lowest topic coverage occurred in East Java across all four subjects. One reason for this low alignment may be its higher population in 2010 (37,476,757) in comparison to that of Jakarta (9,607,787) and Lampung (7,608,405, Badan Pusat Statistik, 2010). Future research should examine whether East Java's higher population affects school and classroom size, which may in turn affect the ability of the teachers to cover all of the required curriculum topics.

In summary, a vast majority of teachers reported that they covered 100% of the topics required by the national curriculum standards. However, the small number of teachers

who taught less than 100% should not be overlooked due to potential effects on students, particularly where coverage is lower in seventh grade, science, and East Java. This finding needs to be taken seriously by educational administrators at every level. As education continues to increase in emphasis on standards, skipping topics in the classroom can affect students' official *achievement* as measured by national exams based on the curriculum standards. Also topics skipped in lower grades may present problems for students in higher grades if they lack basic knowledge on which later curriculum content is based.

Alignment and teacher characteristics

Findings indicated that of the ten teacher characteristics selected as potential predictors of topic coverage, only teaching experience was positively and significantly related to the extent of alignment between classroom instruction and the national curriculum standards. The findings were consistent with previous research conducted to predict self-efficacy from teaching experiences (Fetler, 1999, 2001; Wolters & Daugherty, 2007). In investigating the relationship between teachers' self-efficacy and teaching experience using a self-report instrument via the Internet, Wolter and Daugherty (2007) found that some aspects of teachers' self-efficacy regarding individuals' judgments or belief regarding their ability to accomplish critical instructional tasks were greater for those with more teaching experience. Increased years of teaching may affect greater topic coverage, as more experienced teachers would likely have had opportunities for more training, professional development, and experience.

Other teacher characteristics were not found to be related to extent of topic coverage; however, the lack of correlation with gender, working status, education level, major, and professional development may have meaningful implications for other Indonesian educational policies and future research topics such as teacher effectiveness, student learning and achievement.

Practical implications and policy recommendations

As the scope of this study included only three provinces in western Indonesia and, due to timing, no private schools in Jakarta, limitations of both area and school type prevent generalization beyond the context of this study. In addition, this study did not involve certification as a teacher characteristic. Also the degree to which alignment of classroom instruction affected student achievement was beyond the scope of this study. Yet, this research contributes theoretically to understanding school quality in terms of curriculum alignment and the influence that teacher characteristics may have on this alignment.

Based on the findings, the following policy recommendations can be drawn to provide government alternatives for designing better policies for school improvement. First, although the findings indicate that the percentages of teaching less than 100% of curriculum topics is low, the evidence of lower coverage should be taken seriously by educational offices at any level and should motivate additional investigations. This high level of topic alignment may be related to government efforts, which include providing teachers

with professional development preparing them for this alignment, requiring teacher certification with a minimum education level for teachers, and increasing teachers' salaries. Future research should examine the specific effects of these efforts as well as comparing this high level of alignment to other national education systems. This study needs to be replicated in all of the remaining provinces of Indonesia to determine the extent to which all national curriculum topics are taught in schools throughout the country.

Second, as the educational system applied the standards-based curriculum, skipping topics from the class instruction can affect students' recorded achievement because test items are based on the curriculum standards. Future research should focus on multilevel methods to examine specific reasons why teachers skip curriculum topics across grades and schools. Once these reasons are identified, corrective measures can be taken to address this problem. Third, the findings of this study suggest that national policies should focus on helping newer teachers to develop successful strategies for more extensive topic coverage. Fourth, further research needs to examine the relationship between topic coverage and student achievement.

Conclusion

This study addressed both the alignment between the national curriculum standards and classroom instruction and the extent to which teacher characteristics predicted the degree of this alignment. Regarding alignment, a low yet important number of teachers taught less than 100% of the topics required in the standards. This research was different from studies on teacher characteristics that seek to predict either student achievement or self-efficacy, as it examined the predictive value of teacher characteristics in explaining the degree of alignment between national curriculum standards and classroom instruction.

In conclusion, this research contributes theoretically in two ways. First, most research in this area focuses on the alignment of standards and assessment, and very few studies have been done in the area of alignment between standards and classroom instruction. Thus the findings of this study make an important contribution to the current research of standards and instruction. The mediating aspect of classroom instruction can inform both student achievement and assessment outcomes. It is well known that alignment is critical in the success of standards-based systems. Second, most current research on teacher characteristics examines the association between teacher characteristics (as predictor variables) and either student achievement or self-efficacy (as dependent variables). Predicting curriculum alignment as a function of teacher characteristics in this study contributes to the theoretical discussion about influence of teacher characteristics on classroom instruction. Further research is needed to investigate whether a higher degree of alignment is associated with higher student achievement.

Disclosure statement

This work did not receive any support from a funding agency, and the authors have no financial interest or intent to benefit from this study or its direct application.

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