Aligning Teachers' Difficulty in Their Classroom Instruction with National Curriculum Standards

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Abstract
This study examines the degree of alignment between teachers' difficulty in their classroom instruction and national curriculum standards. This alignment may vary as a function of teacher characteristics. Using self-reports from teachers about their difficulty experiences in teaching the national curriculum standards, the study explores the extent to which teachers' difficulty in their 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 accounted for 51.5% of the variance of teacher difficulty level as explained by teacher characteristics. Teacher characteristics did predict alignment in terms of teacher difficulty. Specifically, teachers with the most difficulty worked in government schools, did not have subject related majors, had more years of experience, lower levels of education and less adequate professional development regarding curriculum standards. In addition, teachers had more difficulty teaching math than English but they had more difficulty teaching science than math.

Keywords: Classroom Practice, Teachers' Difficulty, Alignment, Teacher Characteristics, Indonesian National Standards' Curriculum

1. Introduction

Quality of education means that everyone should be able to achieve recognized and measurable learning outcome. Teachers play key role in increasing quality of education. If teachers have high level of difficulties (less aligned) in transfer the knowledge to students then students cannot learn the required materials and will be less prepared for examination to measure what they have learned from the subject. The role of teachers in shaping the education quality, especially in students mastering the content curriculum taught in the class had been hot topics from generation to generation. However, there are still very few number of research had been done to explore teachers level difficulties in teaching content curriculum standards in their daily class instructional. The investigation of the effects of teacher characteristics are often done to explain variations in students' achievement (Goldhaber, 2016; Klassen et al., 2013). The problem this paper addressed was to examine the degree of alignment between classroom instruction and national curriculum standards in Indonesia. A closely related question was to explore whether this alignment varied as a function of teacher characteristics.

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 (Martone & Sireci, 2009); however, few studies have been done

in this area, also the term alignment is hardly mentioned in terms of its necessity in implementation of the curriculum standards.

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. Koto (2013) studied the implementation of science curriculum in primary schools Bengkulu province. 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 teachers' level of difficulties in teaching the subjects in the classroom with many different students' background and characteristics. Research findings from India also confirmed that teaching specific to the level can improve literacy and numeracy achievements (Banerjee et al. 2016). Education research and implementation of in-class teaching methods in higher education was also claimed as a bridge between global path-breaking (Koul & Nayar, 2021). Research is urgently needed to investigate how teachers' experiences level of difficulties to align their classroom instruction with content standards. This study addresses two critical research questions: (1) to what extent does level of difficulties teachers in teaching their subjects in the classroom instruction? and (2) How are teacher characteristics such as gender, working status, college major, level of education, years of experience, and professional development associated with the degree to which teachers encounter difficulties in the classroom?

1.1. Alignment

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.

2. Research Method

Using quantitative methods, this study examined the level of teachers' difficulties in teaching across five subjects in Indonesian junior secondary schools. The first research question explored the level of teachers' difficulty in teaching national curriculum across five subjects, and the second research question examined the association between various teacher characteristics and the level of difficulties in their teaching practiced.

2.1. Sampling

Multistage sampling technique was administered for the study (Shimizu, 2014). Three provinces located in the western part of Indonesia provided the sample of teachers for the study (Lampung, Jakarta, and East Java). Provinces, districts, and junior secondary schools were randomly sampled using the Excel software program. 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.* Again Jakarta was an exception; two aspects were noted: (1) The province had no *kabupaten* districts, and (2) 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.

Each 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.

2.2. 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, 2005; Groves et al., 2004). The advantages of using a survey include efficiency, internal and external validity, and make it feasible to cover large geographical areas (Mathers, Fox, & Hunn, 2007). The geographical context of this study and the number of respondents lends 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 experience, and professional development. The collection of teacher data 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 second part listed the standards for each of the four nationally assessed subjects (Indonesian, English, science, and mathematics), followed by questions to measure the level of teachers' difficulty in teaching the five subjects. The survey asked teachers to indicate their level of difficulty in five scale, range from: very easy (1) to very difficult (5).

Teacher self-report was used in this study 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.

2.3. Data Analyses

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. 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 modelling 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 level of teacher difficulties in teaching the five subjects and teacher characteristics (gender, working status, college major, years of teaching experience, education level, and professional development). In the model, the level of difficulties were the dependent variable and teacher characteristics were the independent variables. The following

equations model the association of teacher characteristics as predictors of the alignment of teacher instruction with national standards.

Topic Teachers difficulty$_{oj}$ = γ_{00}+ γ_{01} (Gender)$_j$ + γ_{02} (Working status)$_j$ + γ_{03} (College major)$_j$ + γ_{04} (Years of teaching)$_j$ + γ_{05} (Education level)$_j$ +γ_{06} (Professional development1)$_j$ + γ_{07} (Professional development2) + u_{oj} + e_{ij}.

The topic of teachers' difficulty is defined as alignment, where teacher difficulty is expressed as a function of the independent variables, namely gender, working status, college major, years of teaching, education level, and professional development. The parameter γ00 represents the y-intercept and is interpreted as the expected level of alignment for a male government teacher who teaches a subject related to his school major and has zero education level, teaching experience, and professional development. The parameters γ01 to γ07 are slope terms that indicate the change in the average level of alignment for each unit increase in gender, working status, college major, years of teaching, education level, and professional development variables. The term u0j represents the unique effects at the school level, while εij is the error term, which accounts for all other factors affecting the average degree of alignment that are not included in the model.

3. Results and Discussions

3.1. Level of Teacher Difficulty

Level of teacher difficulty is defined as teachers self-rating of their level of difficulty in teaching the topics outlined in the national curriculum standards. This section presents findings of the study in teachers rated themselves on the level of their difficulty in teaching topics required by the standards (see Table 1) on a 4-point scale.

Table 1. Mean Rating of the Level of Teacher Difficulty by Province, Subject, and Grade

		Grade 7			Grade 8			Grade 9			Average
		Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean
Lampung	I	2.1	0.3	14	2.3	0.5	9	2.3	0.5	11	2.20
	E	2.1	0.7	18	2.3	0.8	9	3.2	0.4	11	2.21
	S	2.8	0.7	12	2.2	0.4	11	2.4	0.5	11	2.47
	M	2.4	0.6	14	2.1	0.3	10	2.3	0.7	14	2.28
	Total	2.3	0.6	58	2.2	0.5	39	2.3	0.6	47	2.29
Jakarta	I	2.5	0.5	14	2.4	0.5	11	2.5	0.7	11	2.47
	E	2.5	0.6	19	2.4	0.5	10	2.4	0.5	11	2.45
	S	2.6	0.5	15	2.4	0.5	11	2.7	0.5	10	2.61
	M	2.2	0.4	18	2.8	0.6	11	2.0	0.3	15	2.27
	Total	2.4	0.5	66	2.5	0.5	43	2.3	0.5	47	2.45
East Java	I	2.4	0.5	21	2.3	0.6	17	2.2	0.6	16	2.31

	Grade 7			Grade 8			Grade 9			Average
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean
E	2.2	0.5	21	2.5	0.6	13	2.3	0.5	14	2.31
S	2.6	0.5	16	2.4	0.5	14	2.6	0.5	15	2.53
M	2.6	0.6	23	2.0	0.6	17	2.4	0.5	14	2.33
Total	2.4	0.5	81	2.3	0.6	61	2.4	0.5	59	2.37
Grand Total	**2.40**	**0.57**	**205**	**2.33**	**0.57**	**143**	**2.36**	**057**	**153**	2.37

Note. n = 501. I = Indonesian, E = English, S = Science, and M = Mathematics.
The likert-scale for the level of teacher difficulty is 1 (very easy), 2 (easy), 3 (difficult), 4 (very difficult).

Overall, the mean rating of teacher difficulty level is 2.37, indicating that teachers reported that the topics were easy to teach. These ratings were consistent across province, subject, and grade level. The score ranges from 2.20 for Indonesian (Lampung) to 2.61 for Science (Jakarta).

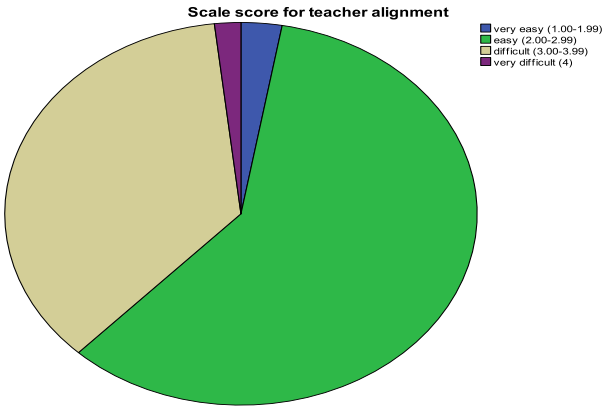

Figure 1. Mean Rating of the Level of Teacher Difficulty

As can be seen from Figure 1 the mean ratings of teacher difficulty level were dominated by ratings between 2.0 and 2.99, indicating that teachers felt that it was easy to teach the topics. However, the mean ratings of teachers who perceived that topics were difficult to teach also showed a moderate ratings level, which indicates that there are teachers having difficulty teaching some topics. Although the mean teacher ratings were high, further disaggregation of the data facilitated identification of which specific topics were difficult for teachers to teach (see later section of Patterns). In general, most teachers perceived that subjects were not difficult to teach. These findings indicate that a great gap exists between the ability of teachers to teach and of students to understand the subjects.

The second research question asks whether there is a relationship between teacher characteristics and the degree of alignment between national curriculum standards and classroom instruction. Teacher demographics are first presented to describe teacher characteristics across grade, subject, and province. Next, mixed multilevel regressions are modeled to assess the

relationship between teacher characteristics and alignment based on breadth of instruction variables: extent of topic coverage, level of teacher difficulty, and level of student difficulty.

3.2. Predicting Relationships between Teacher Characteristics and Alignment

To answer Research Question Two, statistical analysis of maximum likelihood and a mixed model regression was used to examine associations between teacher characteristics and the alignment measures of instruction: levels of teacher difficulty. Maximum likelihood is used to estimate the parameter to maximize the likelihood function, and because teachers are nested within schools that are taken as clusters, mixed model regression is used to adjust for potential cluster effects due to possible school effects on the teacher responses. Therefore, mixed multilevel regression is used to consider teachers across grades and subjects in all the schools. This helps to consider the multilevel random effect.

3.3. Predicting Level of Teacher Difficulty from Teacher Characteristics

The analysis of the association between teacher characteristics and the level of teacher difficulty is found in Table 2. Working status was a significant predictor ($F1,476 = 5.01$, $p < 05$; $R2 = .515$) with government school teachers reporting lowering mean ratings, indicating a higher level of difficulty than nongovernment teachers. Teachers with subject-related college majors also had a significantly higher mean rating, indicating a lower level of difficulty than teachers that did not major in the subject being taught ($F1,476 = 15.78$, $p < 001$; $R2 = .515$). Gender was not a significant predictor, although male teachers have lower mean ratings than female teachers, indicating that male teachers had a higher level of difficulty than female teachers.

Table 2. Predicting Teacher Level of Difficulty in Teaching from Teacher Characteristics

Predictors	Level of Teacher Difficulty $R^2 = .515$	
	B	t
Indonesian	.0637	1.797
English	-.1121	-2.919**
Science	.1625	4.461***
Gender	-0.3241	-1.280
Work status	.0692	2.239*
Major	.1112	3.972***
Years Experience	.01432	1.957*
Education Level	-.3353	-9.408***
Professional development 1	-.2965	-10.280***

Predictors	Level of Teacher Difficulty	
	$R^2 = .515$	
	B	t
Professional development 2	-.0475	-1.494
Note. *p < .05; **p < .01; ***p < .001		
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 major teaching the subject —reference). β = unstandardized coefficient, t = t-value		

Years of experience in teaching the subject was a significant predictor ($F_{1,476} = 3.83$, $p < 05$; $R^2 = .515$). Teachers with more years teaching reported more difficulty than those teachers with fewer years of experience. Educational level also demonstrated a significant relationship ($F_{1,476} = 88.51$, $p < 001$; $R^2 = .515$), indicating that teachers with a higher level of education had lower level of difficulty, or higher level of easiness in teaching. Similarly, professional development regarding national curriculum standards had a significant relationship ($F_{1,476} = 105.67$, $p < 001$; $R^2 = .515$), indicating that more adequate professional development was related to less difficulty in teaching the subject. In contrast, the positive relationship of both gender and professional development regarding alignment were not significant.

Subjects of Indonesian, English, science, and math are single categorical variables (with math as the reference variable). A single categorical variable consists of only one category. Two significant mean differences were found for level of teacher difficulty. First, teachers had more difficulty teaching math than English ($F_{3,456} = 18.48$, $p < 01$; $R^2 = .515$). Second, teachers had more difficulty teaching science than math ($F_{3,456} = 18.48$, $p < 001$; $R^2 = .515$). These findings indicate a rank order of teaching difficulty for subjects from English (as the least difficult) to math, Indonesian, and science (the most difficult). This means that English is perceived to be easier to teach than math, Indonesian, and science. The model in Table 9 accounted for 51.5% of the variance of level of teacher difficulty.

In summary, the total model, shown in Table 8, accounted for 51.5% of the variance of teacher difficulty level as explained by teacher characteristics. Teacher characteristics did predict alignment in terms of teacher difficulty. Specifically, teachers with the most difficulty worked in government schools, did not have subject related majors, had more years of experience, lower levels of education and less adequate professional development regarding curriculum standards. In addition, teachers had more difficulty teaching math than English but they had more difficulty teaching science than math.

3.4. Exploring Alignments of The Level of Teacher and Student Difficulty

In general, comparing teachers' self-reports about themselves and their reports on students, the results suggest that teachers' are more likely to indicate that they taught the topics with less difficulty than students' capacity to learn the topic. In other words, teachers rated themselves as having less difficulty than their students. Although the number of difficult topics to teach is not as high as the number of topics that are difficult to understand, it is important to consider this finding because one criterion of a good teacher is having high levels of content of knowledge regarding the subject they teach. Higher levels of content knowledge may also inform relevant teaching strategies. A teacher who experiences difficulty in teaching some topics may result from either lower levels of content knowledge or teaching strategies. The low number of teachers that actually reported difficulty suggests that the government is not setting their standards too high. To solve the first problem, professional development is needed that focuses on the content of the topics perceived difficult to teach and should target the specific types of teachers who indicated having teaching difficulty.

As practical implication, although the government standards currently would not appear to be too high, the government should continually review the national curriculum standards and be open to the possibility that different types of schools may need to respond to different standards. Specifically, the government should re-examine not only its curriculum standards but to whom they apply. The current disparity between standards for government private schools creates a potentially critical disparity in educational outcomes. Further research is also needed to collect more data to identify both difficult topics to teach and characteristics teachers.

In summary, with the scale score above 3, on average teachers report little difficulty in teaching the national curriculum standards.

3.5. Practical Implications

Even if socially desirable present when teachers expressed their experiences in this study, still there are great possibilities of the true low average of students understanding what the teacher teaches in the classroom. In addressing practical implication would require governments' involvement by activating the subject-matter of teacher club policy what had been called as the "Musyawarah Guru Mata Pelajaran (MGMP)." The policy would provide an opportunity for teachers to share teaching strategies since teachers will be promoted to have regular meeting to share their experiences with colleagues from other schools. The other implication for the government would be to continually review the national curriculum standards and be open to the possibility that different types of schools may need to respond to different standards. Specifically, the government should re-examine not only its curriculum standards but to whom they apply. The current disparity between standards for government and private schools or between urban and rural schools creates a potentially critical disparity in educational outcomes.

3.6. Alignment and Teacher Characteristics

Research Question Two asks whether there is a relationship between teacher characteristics and the level of teachers' difficulties in teaching the five subjects. This section discusses the findings regarding the relationships found between teacher characteristics and alignment.

3.7. Gender

In terms of numbers, male and female teachers of four subjects (Indonesian, English, science, and math) at junior secondary level are only slightly different. There are 263 (52.5%) male teachers compared to 238 (47.5%) female teachers. Comparing to the gender composition in primary school level, the gender composition in junior secondary school is equally represented. On the issue of the lower number of male teachers in primary school level, a study conducted in New Zealand by Cushman (2005) claims that the relative resistance of the schooling system to radical changes in gender roles in society could be an explanation. Despite accepting many educational reforms, the schooling system, according to Cushman, still tends to be characterized by traditional dominating notions of masculinity being associated with management, with fewer males participating in nurturing behaviors such as teaching younger children. Relatively equal numbers of female and male teachers in this study is consistent with this premise in the context of the secondary school level, where less nurturing behaviors are needed or expected and where there is a slightly higher number of male teachers.

Regarding the scale scores, it may be interesting to learn from research on primary school male and female teacher responses about teaching strategy by Raymond Lam et al. (2010). In this study, male teachers tended to be more authoritarian, more controlling of student learning, and more likely to read aloud while students follow the text. In contrast, female teacher responses suggest that they prefer to teach reading in groups and encourage students to discover by themselves the meaning of new vocabulary. The dramatic shift was pointed out by a female teacher who moved from elementary school to middle school, where she noticed the availability of patriarchal heteronormativity (Vavrus, 2009). Based on the online Wikipedia, heteronormativity is defined as "a term for a set of lifestyle norms that hold people fall into distinct and complementary gender of male and female with natural roles in life" (http://en.wikipedia.org/wiki/Heteronormativity, accessed August, 15, 2010). This concept and Lam et al.'s (2010) findings may explain why male teachers score higher on curriculum coverage, have lower teacher difficulty and rate students with higher difficulty than female teachers since junior high school is a midway point from elementary to senior secondary school. With higher degree of patience and caring, female teachers may be more concern with detail specific needs and try to help their students than male teachers which result on the lower topics coverage, and higher teacher difficulty but rate students with less difficulty. Additionally, given that many schools are religiously based, future research may need to examine the role of religion in predicting curriculum alignment and the function of gender in these religiously based schools. This is important since

Indonesia was often credited as the highest moslem population in the world. As well known Islam is often discredited as the religion with greater gender discrimination where men were attributed as more superior than women. With the current modern Indonesian and greater influence of the equal opportunity movements including in education sector, research need to be encouraged to explore the extent of which gender is matter in schools.

3.8. Working Status

The finding shows that government school teachers reported a lower average score on the level of teacher difficulty, suggesting that the private school teachers felt it was easier to teach the topics than the government school teachers did. One of the reasons for the difference may lie in the fact that private schools have more flexibility in hiring teachers, compared to the government schools, where once a teacher is hired, the teacher commonly will keep the position forever as a prestigious profession in the community. This tendency differs from private school teachers, many of whom keep their jobs only temporarily. With this situation, private schools can find better teachers when a teacher leaves.

There are many government school teachers who teach in private schools as the government's subsidy for teacher in private schools as they are generally of low performance schools. With this condition, there are great numbers of government school teachers who teach in private schools but not vice versa. One of the differences lies on the school quality where majority private schools are lower in school quality. Also most students go to private schools after failing to enroll in public school. This becomes the main reason for the government in providing teacher's subsidy for teaching in private schools. As the findings of this study show, there is a higher mean score for private school teachers on level of teacher difficulty (they find it easier to teach) compared to government school teachers. This finding may suggest that government school teachers are more confident in expressing their difficulty in teaching than are private school teachers who have less job security.

3.9. Major in College

Teachers whose major in college was the same as the subject they currently taught show a significantly relationship with teacher level of difficulty. The higher score of these teachers comparing with teachers whose college major differed from what they currently teach, indicated that the former felt easier in teaching the standards. This finding is consistent with prior research by Darling-Hammond (2000), which found that a significant relationship between teachers having a major in the field they taught and better student achievement in reading and mathematics. In sum, teachers who majored in the same subject that they currently taught reported higher alignment in level of teaching difficulty than those without a major. This finding suggests the importance of subject-matter knowledge for teachers in order to best transfer the content curriculum in the classroom instruction to students. Unfortunately, the study does not cover the pedagogical

knowledge of the teachers. As a practical implication, when making teacher hiring decisions, the government needs to highlight not only the educational level of the teacher but also the relevant subject-matter and pedagogical knowledge.

3.10. Teaching Experience

For alignment in terms of extent of topic coverage, findings of this study are consistent with previous research conducted to predict self-efficacy from teaching experiences. The greater number of years a teacher had in teaching a subject, the more topics they covered. This is consistent with previous research in predicting self-efficacy (Wolters & Daugherty, 2007) and student achievement (Fetler, 1999, 2001). 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. Similarly, the findings of this study show that more experienced teachers cover a greater percentage of curriculum topics. One of the reasons may be that they have obtained more training and experience in teaching effectiveness.

Teachers with fewer years of teaching experience generally teach the lower grades. The positive association of the findings that suggests that the more years teacher have teaching a subject, the greater the difficulty they report in teaching the subject and the greater difficulty they report for students to understand. Although these findings are inconsistent with previous research, there is a specific condition which may explain these differing results. This study shows that in their early careers, teachers struggle to develop a professional identity and to achieve their value within a school, which is necessary to build their self-efficacy and self-confidence. In contrast, teachers with more years of experience may feel less confident with the new system with its high demands on increasing student achievement. This phenomenon may fit with Luke and McArdle (2009), who propose a model of teacher professional development in math, as "some experienced teachers are experiencing difficulty engaging with learner diversity, requiring developmental diagnostic skills in math and alternative instructional approach" (p. 239).

3.11. Educational Level

Wayne and Youngs (2003) acknowledged that the lack of data on the relationship between teacher educational degrees or coursework prevented them from determining whether students learn more from teachers with a particular degree of education. With a data set about teacher educational levels, they found mixed results among the research where some of the subjects are indeterminate while some are positive or negative. Treating the subjects separately, Wayne and Youngs interpreted the study such that no conclusion can be drawn for the subjects of history and English. However, for math and science, they found a positive relationship between teacher educational levels and student achievement. These mixed results, however, may be partly

attributable to the failure to identify whether the teachers were teaching subjects in which the majored.

Partly consistent with Wayne and Youngs's interpretation, this study shows positive relationship with the topic coverage and negative relationship with both teacher and student level of difficulty. However, the statistically significant relationship found were between the perceived difficulty of teaching and learning a topic and the educational level, such that the higher the education level, the greater the ease of teaching a subject they currently teach and the greater the ease of student in learning. In summary, this study presents significant relationships between teacher educational level and the level of teacher and student difficulty. The significant relationships suggest that a higher education level helps teachers easier in teaching and student better understand. However, it is also important to examine if an additional degree or major is associated with the alignment scores.

3.12. Professional Development

Findings of this study regarding the level of teacher and student difficulty show that professional development on curriculum standards predicts alignment. This one insignificant finding regarding teacher difficulty from professional development can be explained given that although professional development is a foundational element of all models of teacher professionalism and quality, given the diverse background of teachers, it is possible that not all teachers benefit from the same professional development (Luke & McArdle, 2009). In other words, to maximize the outcomes, professional development should be specified or customized based on the teacher backgrounds and needs. Further research is needed to examine the impact of professional development on teacher classroom practices as a function of certain educational characteristics.

The findings are consistent, however, with prior research on teacher satisfaction and dissatisfaction with the professional development program. Previous research indicates that teacher satisfaction outweighs dissatisfaction (Mebane, 2000) and that as a result of professional development teachers felt more enjoyment in teaching (Pressley et al., 1992). Prior research also suggests that teachers benefit from professional development by making changes in their classroom practice. The significant relationships found in this study are similar to other research where teachers with more participation in professional development feel more valued professionally (Hall, 1996) and made changes in classroom practices (Bullough et al., 1997). The findings of this study suggest that the more professional development a teacher has, the easier it is for teachers to teach and for students to understand.

There was no significant relationship between professional development on alignment of standards with classroom practice and teacher difficulty level. This is consistent with prior research on the impact of professional development on teacher practice (Buczynski & Hansen, 2010) which identified barriers to the implementation of the knowledge/skills gained from professional development. The research identifies these obstacles as limited resources, time

constraints, mandated curriculum facing, language learning, and classroom management issues (Buczynski & Hansen, 2010). This study's findings confirm one of their explanations regarding the mandated curriculum where the high demand of the standards for teachers to have high alignment may be a burden for teachers who have been settled with the old system. However, further research is needed to investigate the impact of teacher professional development on more specific issues of alignment such as teaching strategies, student assessment, teaching facilities, and student learning.

In summary, findings of this study show that professional development generally provides positive associations with alignment. Except for professional development regarding how to align classroom instruction and the standards of curriculum, all professional development variables significantly predicted alignment of both teacher and student level of difficulty. This research provides positive information about the impact of teacher professional development on classroom instruction.

4. Conclusion

This research contributes theoretically in two ways. First, most research in this general area focuses on the alignment of the standards and assessment, and very few studies have been done in the area of standards and classroom instruction. Lacking research in the area of curriculum standards and classroom instruction, findings of this study make an important contribution to the current research of the standards and assessment. The mediation role of the classroom instruction provides a key to success for student achievement and informs assessment outcomes. It is well known that alignments play a critical role 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 alignments as a function of teacher characteristics in this study contributes to the theoretical discussion about teacher characteristics. Results from this study indicate that the alignments of the classroom instruction with standards vary as a function of teacher characteristics. Implications for further research may lead to investigations of whether higher alignments are associated with higher student achievement.

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