Differentiated Instruction in Public and Private Schools in Indonesia

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Abstract: This study investigates, on the base of the Differentiated Instruction Implementation Scale (DIIS), (1) the level and nature of differentiated instruction (DI) implementation in public and private schools, and (2) the large differences in quality in Indonesian private and public primary schools. By means of five vignettes, reflecting key dimensions of DI, 604 primary school teachers were reported their perspective on different areas of DI-implementation in their daily teaching practice, and the challenges they face in its implementation. Teachers' input revealed their overall DI-implementation level is significantly below a mastery learning benchmark of 80%, and is considerably different between public and private schools; the latter reflecting a lower DI-level.

1 INTRODUCTION

To improve educational quality, the Indonesian Government increased– during the last decades - the budget for education up to 20 % of the national budget. Unfortunately, to this day, education in Indonesia is still facing critical challenges, especially in improving students' achievement. (OECD, 2016)

In part, a solution to attain better education is related to enhancing the teaching and teacher's quality, especially to adopt the Differentiated Instruction (DI) (Fogarty and Pete, 2011). DI approaches are geared towards catering for the diversity in students, encouraging teachers to apply various teaching strategies and offering a broad range of learning activities (Moore, 2005). Recent research of (Suprayogi and Valcke, 2016) emphasized Indonesian teachers really lack capacities to implement DI in their teaching activities.

Another challenge in improving the Indonesian educational quality is about the large differences in quality between public and private schools with the former outperforming the latter. Several studies highlighted the disproportion in learning resources (Budiraharjo, 2014), operational funds (Heyneman and Stern, 2014) and in resulting student performance between both types of school (Newhouse and Beegle, 2006; Bedi and Garg, 2000).

The question remains to be answered whether part of the differences in quality result from differences in teaching and learning approaches adopted by teachers, as suggested by (Tomlinson, Brimijoin and Narvaez, 2008).

In response to the aforementioned challenges, the present study centres on the level and the nature of current DI-implementation by primary school teachers in both public and private schools. The results are expected to result in benchmarking data to support macro-level and school-level policies, especially in relation to teacher professional development.

2 THEORETICAL FRAMEWORK

2.1 Differentiated Instruction and Its Impact

Differentiated instruction (DI) is a practice that starts from the assumption that learners are different and they learn differently (Fogarty and Pete, 2011; Levy, 2008) defines DI in a practical way as a set of strategies that will help teachers meet each learner' needs and move them forward as far as possible in their educational career. DI stresses that a single teaching style will not accommodate every student, especially when the teaching style does not fit an

individual's learning style. Therefore, DI can be seen as a way to push teachers to invoke various learning activities, to consider different content demands, to adopt varying modes of assessment, and to install an active learning environment to meet the needs of each learner and support their growth (Thousand, Villa and Nevin, 2007; Reis, McCoach, Little, Muller and Kaniskan, 2011) reported their DI-implementation resulted in higher reading fluency and comprehension for students. (Baumgartner, Lipowski and Rush, 2003) concluded that the implementation of DI strategies resulted in increased reading achievement.

2.2 Dimensions of Differentiated Instruction

Different authors use varying but related concepts when describing the nature of DI. Building on this literature (Suprayogi, Valcke and Godwin, 2017) developed a synthesis of related dimensions and presented the following integrated approach, reflecting five dimensions: *Differentiated Instruction is an instructional approach that accommodates the diversity of students by (1) coping with student diversity, (2) adopting specific teaching strategy, (3) invoking a variety of learning activities, (4) monitoring individual student needs, and (5) pursuing optimal learning outcomes.*

2.3 Public and Private Schools in Indonesia

As discussed in the introduction, the quality difference between public and private schools is a challenge in Indonesia. The difference in the allocation of financial and learning recourses is of major concern (Budiraharjo, 2014; Heyneman and Stern, 2014; Bedi and Garg, 2000). Moreover, the government – through a voucher system – also supports private schools but requests these schools to fit the national standards, but allow a large degree of freedom in other issues; e.g., professional development (see e.g., Steiner-Khamsi, 2016).

The available evidence about quality differences in learning performance of learners in private and public schools is alarming, especially in the context of overall poor educational quality (Newhouse and Beegle, 2006). The study of (Newhouse and Beegle, 2006) builds on the data analysis of the national junior high school examination shows a consistent higher achievement level of public school graduates, as compared to their privately schooled peers.

Building on the theoretical and empirical base, the present study aims at developing a baseline about DI practices in Indonesian public and private primary schools by focusing on the following two research questions:
1. What is the level of DI-implementation in public and private schools?
2. What is the nature of DI-implementation in public and private schools considering the five DI-dimensions?

3 METHODOLOGY

The participant of this study consists of primary school teachers in six regions of Jakarta. 604 teachers from 145 schools participated in the study. 294 teachers from 78 public schools, and 310 teachers from 67 private schools. Two research instruments were developed for this study: a DI-implementation Scale (DIIS), and a vignette-based instrument. The DIIS consists of 15 items; three for each DI-dimension presented above. The DIIS was designed to determine the extent to which teachers currently adopt this particular DI-dimension. The DIIS reliability is $\alpha=.916$. The vignettes were employed in this study as a technique for exploring teachers' perceptions, beliefs and meanings about concrete situations with regard to DI-adoption. The vignettes presented five different cases based on real life stories derived from Indonesian school reality. This study applied descriptive statistics and comparison of means to answer the research question A significance level of $p < .05$ was put forward. The one-sample t-test was applied to compare mean levels of DI-implementation with an external benchmark. With reference to this benchmark, we put forward an 80% or higher mastery level (Zimmerman and Dibenedetto, 2008). A qualitative analysis was adopted to analyse responses to the vignettes. The analysis followed the three-step qualitative analysis approach as described by (Miles and Huberman, 1994). To ensure the reliability of vignette coding, 15% of the vignette responses were recoded independently and showed a high reliability level (Kappa= .87). In view of interpreting the differences in proportions of themes coded in either public or private schools, a two-sample Z-test was applied.

Table 1 : Mean, and one-sample t-test of DI-implementation.

DI-dimensions	Public schools (*n*=294)		Private schools (*n*=310)	
	Mean	*t*	*Mean*	*t*
Coping with student diversity	7.22	-982,04*	6.82	-853,62*
Adopting specific teaching strategy	7.56	-991,47*	7.43	-987,99*
Invoking a variety in learning activity	7.35	-968,19*	7.14	-951,35*
Monitoring individual student needs	7.89	-1091,99*	7.88	-1244,36*
Pursuing optimal learning outcomes	7.14	-738,98*	6.68	-715,01*
Overall DI-implementation	7.43	-1125,71*	7.19	-1171,53*

* p<.05

4 RESULT AND DISCUSSION

4.1 The Level of DI-implementation in Public and Private Schools

In order to determine the level of DI-Implementation, teachers in both of school were asked to indicate on a scale from 0 to 10 the extent to which they implemented each DI-dimension. We put forward the value of 80%. Table 1 summarises the analysis results.

The overall DI-implementation level is 7.43 for public schools, and 7.19 for private schools. Both are significantly below threshold compared to the benchmark of mastery learning (80%). The mean score for each of the five DI-dimensions in public and private schools is consistently below the threshold.

To examine the difference between public and private schools, we used the independent sample *t*-test. The results (Table 2) show clear and significant differences between public and private schools in dimension 1, dimension 5, as well as on the overall

DI-implementation level. The mean score of DI-implementation in public school appears higher than

in private school. This exemplifies further the gap between public and private school teachers in terms of school quality.

First of all, these results help explaining the low education quality in Indonesia as compared to international benchmarks (OECD, 2016). In addition, they help explaining the gap between public and private schools' quality in Indonesia (Budiraharjo, 2014; Heyneman and Stern, 2014; Bedi and Garg, 2000).

4.2 The Nature of DI-implementation in Public and Private Schools

To find out the nature of DI-implementation, teachers responded to a vignette describing a school case according to each of the five DI-dimensions. Particular vignette responses are shown in Tables3to 7. We only focus on the three most frequently observed themes in relation to each dimension. Percentages point at the proportion of indicators uttered by teachers from either public or private schools, in relation to this theme.

Table 2 : Mean, SD, and independent sample *t*-test of DI-dimension.

DI-dimension	Public school (*n*=294)		Private school (*n*=310)		*t*
	Mean	*SD*	*Mean*	*SD*	
Coping with student diversity	*7.22*	*1.27*	*6.82*	*1.51*	*3.54**
Adopting specific teaching strategy	7.56	1.25	7.43	1.29	1.23
Invoking a variety in learning activity	7.35	1.29	7.14	1.35	1.91
Monitoring individual student needs	7.89	1.13	7.88	1.02	0.16
Pursuing optimal learning outcomes	*7.14*	*1.69*	*6.68*	*1.81*	*3.25**
Overall DI-implementation	*7.43*	*1.33*	*7.19*	*1.40*	*2.71**

* p<.05

Table 3 : Dimension 1. (*N*=604).

	Public schools	Private schools	Z*
Question 1: Is coping with student diversity realistic? Why?			
	Realistic 94%	*Realistic 99%*	3.4*
Teachers want students to succeed	55%	50%	1.2
Teachers are willing to make extra effort for students	29%	37%	2.1
Teachers use appropriate teaching strategy	11%	12%	0.4
Question 2: How to cope with student diversity?			
Use appropriate teaching strategy	51%	53%	0.5
Make extra effort and extra time for students	22%	34%	3.3*
Identify the need and characteristics of students	11%	20%	3*
Question 3: What support is needed to cope with student diversity?			
Teaching aids and learning facilities	22%	28%	1.7
Support from parents	22%	19%	0.9
Support from school and other teachers	20%	20%	0

* p<.05

4.3 Dimension 1: Coping with Student Diversity

Looking at the data, we can conclude that the majority of teachers in both public (94%) and private (99%) schools felt it is realistic to cope with student diversity. A large proportion of teachers described they want their students to succeed academically; they are willing to make extra efforts for these students and to adopt alternative teaching strategies.

To cope with student diversity, more than 50% of the teachers in public and private schools mentioned appropriate teaching strategies. This can be linked to the meta-analysis study of (Hattie, 2009) who stressed that using an appropriate teaching strategy is a positive response to learner diversity. Furthermore, they also mentioned this requires time, training, intentional planning and long-term commitment. In our findings, the willingness of teachers to exert further effort and devote extra time is clearly expressed.

As to their need for support, the private school teachers mention a strong need for more teaching aids and learning facilities as compared to their public school counterparts. This finding corroborates the results of (Budiraharjo, 2014; Heyneman and Stern, 2014) who stated that public schools enjoy better resources compared to private schools.

4.4 Dimension 2: Adopting Specific Teaching Strategies

The following table summarizes the key vignette results. The table makes clear that three main teaching strategies were being adopted by all teachers. The majority of public school teachers adopt grouping strategies (31%), while private school teachers mostly adopt interactive learning approaches (30%). Both are the key strategy mentioned by public and private school teachers.

Table 4. Dimension 2. (*N*=604).

	Public schools	*Private schools*	Z*
Question 1: What teaching strategy do you adopt to cope with student diversity?			
Grouping the students	31%	27%	1.1
Interactive learning	25%	30%	1.4
Experiential learning	10%	12%	0.8
Question 2: Do you agree with 'one size fits all' approach? Why?			
	Disagree 92%	*Disagree 96%*	2.1
Teachers want to accommodate student diversity	70%	71%	0.3
One strategy is not enough	15%	17%	0.7
Teachers want to achieve the goal of learning	7%	7%	0

*p< .05

Table 5. Dimension 3. (*N*=604).

	Public schools	Private schools	Z*
Question 1: What learning activity do you invoke in students?			
Activity that uses teaching aids	18%	18%	0
Play/games activity	16%	20%	1.3
Personal/group task	16%	16%	0
Question 2: Why do you invoke these specific learning activities?			
To activate students in class	48%	46%	0.5
To help students to comprehend the lesson	42%	42%	0
Students like that activity	10%	12%	0.8
Question 3: Do you agree with selecting different activities for different students? Why?			
	Agree 64%	*Agree 59%*	1.3
Agree, because teacher want to cope with student diversity	33%	29%	1.1
Disagree, because teacher don't want to differentiate the student activity	19%	19%	0
Disagree, because it will disrupt the student focus	15%	21%	1.9

*p< .05

The third teaching strategy -applying experiential learning strategies- is mentioned to a lesser extent.

These results can be linked to a study by (McQuarrie and McRae, 2010) who mentioned the benefits of grouping students. In terms of interactive learning and experiential learning, (Hannafin, Hill and Land, 1997) stated that learning is most effective when it evolves from rich hands-on concrete experiences with realistic and relevant problems. Also the focus on experiential learning is relevant. It emphasises direct experiences and in-context actions as a primary source of learning, balancing the role of thinking, analysis and academic knowledge (Kolb, 2014). Our results also suggest that most teachers disagree with the *one-size-fits-all (OSFA)* approach. This positive commitment fits the recommendation of Fogarty and Pete (McQuarrie and McRae, 2010; Fox and Hoffman, 2011).

4.5 Dimension 3: Invoking a Variety in Learning Activities

Public school teachers build more strongly on activity that uses teaching aids, play/games activity (18%), whereas private school teachers invoke more play/games activity (20%). In general, private school teachers have a higher tendency to utilise teaching aids than public school teachers. Brazdeikis and Masaitis (2012) state that teaching aids can promote the transformation of educational environments into a 'personal' learning environment. In terms of invoking play/games activities, other teachers' responses stress the need for planning different additional activities for different students. Most teachers agree with this idea since it guarantees engaging all students in learning at the same time.

4.6 Dimension #4: Monitoring Individual Student Needs

Table 6 shows that public and private school teachers feel it is realistic to monitor students' needs (94%). They state it is part of a teacher's responsibility, even quite necessary, and they will do the best they can for their students. These reiterate the statements put forward in relation to first dimension.

To monitor student needs, public school and private school teachers put a high percentage on understanding the students' characteristics and needs, providing extra time for guidance, and teaching according to students' characteristics. In terms of understanding students' needs and characteristic, these results support the findings of Fogarty and Pete (2011) who recommend teachers to identify particular students' needs and characteristics.

Teachers mentioned problems related to lack of parental support.

Table 6. Dimension #4. (*N*=604).

	Public schools	Private schools	Z*
Question 1: is it realistic to monitor all student needs? Why?			
	Realistic 94%	Realistic 94%	0
It is part of a teacher's responsibility	32%	27%	1.3
It is necessary to meet the student needs	17%	27%	3*
Teacher will do the best for students			
Question 2: What are your actions to monitor student needs?			
Try to understand the student characteristics and needs	28%	26%	0.6
Give extra time for guidance	24%	21%	0.9
Teach students according to their characteristics			
Question 3: What are the problems when attempting to monitor the student needs?			
Lack of parent attention	33%	20%	3.6*
Lack of student motivation	22%	21%	0.3
Lack of teaching aids	18%	21%	0.9

* $p<.05$

This reiterates themes stated in first dimension on parent involvement linking parent engagement to academic achievement (Hattie, 2009). Furthermore, students' motivation is considered to be crucial for learning in a DI-setting. Students motivation is perceived to be positively related to their achievement (Hattie, 2009). The lack of teaching aids reappears with higher percentage among private school teachers (21%).

4.7 Dimension #5: Pursuing Optimal Learning Outcomes

The 'Jakarta Smart' programme implemented by the Governor of Jakarta gives extra money to particular students to cater for their learning expenses. This can be linked to this vignette. This particular vignette also invites teachers to indicate what they do in order to pursue optimal learning outcomes. The vignette data show that most teachers encourage students to invest in teaching aids and extra learning facilities. This reflects teachers' beliefs about teaching aids and learning facilities.
Aside from the 'Jakarta Smart' money, actions to pursue optimal learning outcomes comprise: choosing fun and active learning activities, motivating students, and providing extra time for remedial and enriching instructional activities. About motivating the student, the public (19%) and private (24%) school-teachers try to build up a strong relationship with their students. This is,

according to Hattie (2009), well known to have a positive impact on student achievement.
Finally, to indicate the problems in pursuing optimal learning outcomes, public school teachers asserted that they lack parental support (42%), can hardly build on strong student motivation (37%), and they lack teaching aids (7%), while private school teachers reflected somewhat different responses. It seems that public school receive more resources from the government, but they facing more problems in relation to parent and student involvement.

5 IMPLICATIONS AND CONCLUSIONS

The present study centered on the level and the nature of current DI-implementation by primary school teachers in public and private Indonesian schools. The DI-implementation Scale (DIIS) revealed an overall DI-implementation level of 7.43 in public schools, and 7.19 in private schools. The score could be interpreted as relatively good, however, this still significantly below the benchmark as compared to mastery learning criteria (80%). DI-implementation seems challenging.

Table 7: Dimension #5. (N=604).

	Public schools	Private schools	Z*
Question 1: What action will you do to pursue the optimal learning outcomes with money from 'Jakarta Smart' programme?			
Recommend the student to buy teaching aids and learning support	54%	61%	1.7
Improve teachers' professionalism	14%	18%	1.3
Motivate the students	10%	11%	0.4
Question 2: Regardless of the 'Jakarta Smart' money, how do you pursue optimal learning outcome?			
Opt for fun and active learning activity	29%	28%	0.3
Motivate the student	19%	24%	1.5
Give extra time to the students for remedial and enrichment	21%	19%	0.6
Question 3: What are the problems to pursue optimal learning outcome?			
Lack of parent attention	42%	30%	3.1*
Lack of student motivation	37%	27%	2.6*
Lack of teaching aids	7%	11%	1.7

* $p < .05$

Though teachers provide an optimistic response to the vignettes (e.g. on first dimension, 94% and above teachers are feel realistic to cope with student diversity), the actual DI-implementation is still below the benchmark. This corroborates the study of Mills, Monk (2014), who concluded that DI is a complex concept which is not easy to shift from a policy to a reality. Another study by Tobin and Tippet (2014) revealed similar barriers to implementing DI; i.e. the fears and insecurities of teacher performance, the lack of time, and the lack of resources. The results of a *t*-test also confirmed that there is a significant difference in the average of DI-implementation between public and private schools. Teachers in public schools reflect higher DI-scores. This finding also reflected the gap between public and private schools as also proven in the disproportion in learning resources (Budiraharjo, 2014), operational funds (Heyneman and Stern, 2014) and in resulting student performance between both types of school (Newhouse and Beegle, 2006; Bedi and Garg, 2000). Moreover, none of the DI-dimensions in public and private school is at par with the benchmarks standard.

This finding has key implications, especially at policy level; in particular, when it comes to the professional development (PD) of in-service teachers, next to reconsidering the curriculum for pre-service teachers. The PD has a significant impact to school improvement (Hoque, Alam and Abdullah, 2011). Furthermore, the finding provides the 'nature' of DI-implementation. Teachers' responses to the vignettes reflected an awareness of the importance of DI and the fact that student diversity should be considered during lesson planning and instruction. Regarding the *coping with student diversity*, a majority of the teachers seems to be aware of student diversity, and they want to cope with it by applying appropriate teaching strategies. In view of *adopting specific teaching strategy*, most teachers reported the adoption of a group-based teaching strategy. Most teachers disagree with the OSFA approach, and want to accommodate to student diversity. On *invoking a variety of learning activities*, most teachers are willing to use teaching aids and play/games activities to motivate students and make them more active. Considering the *monitoring individual student needs*, most teachers feel it is realistic to monitor individual needs, as part of their teaching responsibilities. Concerning the *pursuing optimal learning outcome*, most teachers recommend students to allocate the money from 'Jakarta Smart' program to purchase their own teaching aids/learning support. In view of the challenges facing the implementation of most DI-dimensions, teachers mentioned the lack of parental support, the lack of student motivation, and the lack of teaching aids.

The quality of Indonesian education can clearly be improved. At the macro-level, the Indonesian Ministry of Education could set up a national plan to put a high priority on educational quality and implement a consistent related regulatory system to monitor educational outcomes in relation to new instructional approaches. At the same time, there has to be a shift in the nature and quality of PD about DI, next to an emphasis on extra teaching resources/teaching aids. These plans could build on a school-based exchange of good practices, school-based lesson plan studies focusing on DI-solutions,

collegial consultation when attempting to implement DI. Other countries such as Korea (Cha and Ahn, 2014), England and Australia (Mills, Monk, Keddiea, Renshawa, Christiec, Geelanb, et al., 2014) also emphasize professional standards that cater for DI. Future research could centre on studying actual teacher behaviour in classrooms, next to experimenting with particular DI-strategies.

Student diversity puts educational quality at the forefront of education in general and of Indonesian education in particular. The present study can be considered as a benchmark study contributing to processes that push education forward to the benefit of all stakeholders.

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