

# Differentiated Instruction Implementation: A Survey Study Among Elementary School Teachers

Muhamad Nanang Suprayogi<sup>1\*</sup> Budi Sulaeman<sup>1</sup> Baydhowi Baydhowi<sup>1</sup>

<sup>1</sup>Psychology Department, Faculty of Humanities, Bina Nusantara University, Jakarta 11480, Indonesia

\*Corresponding author. Email: msuprayogi@binus.edu

## ABSTRACT

The students in the classroom come from various characteristics and backgrounds. Dealing with this diversity of students, the teacher needs to apply multiple teaching strategies and learning activities, rather than using One Size Fits All (OSFA) teaching strategy. Many authors suggest applying Differentiated Instruction (DI) to cope with student diversity. Therefore, this study aimed to assess the teacher's understanding of DI and compare it with the implementation of DI among elementary school teachers. The study involved 113 elementary school teachers from 5 schools from public schools and private schools. The result revealed that the mean score of teachers understanding of DI was 104.42, while teacher implementation of DI was 98.51. Using the paired samples test, it showed that there was a significant difference between the understanding of DI and the implementation of DI. Based on the finding, this study recommends schools to provide a specific program to increase DI implementation among teachers. The program can be professional development on DI and sharing session among teachers who already have good experience in DI implementation. Therefore, the increase in DI implementation will help sustainable teaching and learning activities for all teachers and students.

**Keywords:** *Differentiated instruction, elementary school, Indonesia*

## 1. INTRODUCTION

Differentiated instruction (DI) is a teaching approach to cater to the diversity of students and to improve students' achievement [1]. Teachers who teach students in their classes realize that their students are diverse. Students are different in many aspects, such as ability, interest, readiness, and learning profile, so teachers need to cope with this kind of student diversity [2]. Teachers need to implement a teaching approach to cater to the diverse needs and characteristics of students.

In the meantime, the student diversity grows, looks unavoidable, and has become undoubted fact [2, 3]. The growth of diversity is related to the growth of the population worldwide. Indonesia is currently the fourth most populated country [4]. Consequently, applying the appropriate teaching approach is needed [3].

In terms of teaching and learning, the conventional teaching strategy known as One Size Fits All (OSFA) treats all students in the classroom with only one teaching strategy to cater to students' diverse needs. To deal with student diversity, the conventional teaching strategy OSFA currently does not fit anymore to cater to all the student's diverse characteristics [5, 6]. Teachers need to apply various teaching strategies to accommodate the diverse need of students. Teachers also need to provide various learning activities to facilitate the student's learning experience. DI reflects teachers' thoughtful diagnosis of

students' learning needs and purposeful planning activities [6]. The implementation of DI will help sustainable teaching and learning activities for all teachers and students. Furthermore, in the context of Indonesia, the student learning outcome faces the challenge. The recent international assessment of student achievement in 2018, known as Program for International Student Assessment (PISA) held by Organization for Economic Co-operation and Development (OECD), assessed the student achievement on reading, math, and science. It revealed that among 76 countries, Indonesia was in the rank of 70 [7]. The international data echoed the previous PISA in 2015, in which Indonesia ranked 62 among 70 countries [8]. Then, Program for the International Assessment of Adult Competencies (PIAAC) measuring the competency of students in numeracy, literacy, and problem-solving ranked Indonesia 34 out of 34 countries [9]. These international assessments put a strong recommendation for Indonesia to provide serious action for the better quality of education. Considering the growing of student diversity and the need to improve the quality education mentioned, many authors put forward the promising solution to apply DI on teaching and learning activity. The DI implementation will help every student to receive better educational treatment and follow the better education process.

DI is recommended because of various reasons found in the literature. It avoids teachers' teaching to the middle ability by responding to the whole range of student needs [3]. It

presents a concrete list of ways to handle student differences [10]. It also offers the possibility to create various expectation levels about task completion [11]. It is based on student interest, learning profile, and student readiness [12]. Available research also underpins the positive impact of DI. It is revealed that students in the DI setting achieve higher academic scores than students in conventional instruction setting [13]. It is also reported that DI results in more motivated and enthusiastic students.

Furthermore, setting up specific school subjects also reiterates the positive impact of DI [14]. DI also results in significant progress in reading [15]. DI impacts the higher reading fluency and reading comprehension [16]. Then, there is also a positive impact on student literacy [10]. Next, regarding the influence on language literacy, researchers show a positive influence on math achievement [17].

The DI is based on the socio-cultural theory of Vigotsky. Following this theory, learning takes place in a Zone of Proximate Development (ZPD) [18]. The ZPD is the actual gap between what a student can achieve individually at this moment and at this level versus the level he/she can achieve with some support. This support can be provided by peer students, experts, or teachers. This support is also labeled as 'mediation' to pursue the next step of achievement.

Because the benefit of DI implementation is the increase in students' achievement and improvement of quality of education, this study will focus on a survey study of DI among elementary teachers. The survey will assess the teacher's understanding of DI and the implementation of DI. The research focuses on elementary school teachers, as the elementary school is the basic and fundamental compulsory education. The result of the study will provide academic information for the Indonesian government for further necessary action for a better quality of education.

## 2. METHOD

### 2.1. Participant

This study involved 113 elementary school teachers in Jakarta and South Tangerang. There were five schools comprising three private schools with 80 teachers and two public schools with 33 teachers. The initial schools are MP (35 teachers), BC (10 teachers), P (18 teachers), K (15 teachers), and ST (35 teachers).

Related to gender, there are 78 female and 35 male teachers. The participants are voluntarily based, and they agree to participate in this study.

### 2.2. Measure

This study uses the two-scale of DI. The first scale using a Likert scale asked teachers to identify their understanding of DI. The second scale using a Likert scale asked teachers to determine their ability to implement DI. The first and second scales of DI were organized by the six components of DI, as developed by Carol A. Tomlinson and modified by Sandra Page. There were Student Interest (4 items), Assessment (5 items), Lesson Planning (5 items), Content (4 items), Process (4 items), and Product (4 items).

There were 26 items of the first scale measuring the teachers' DI understanding, and 26 items of the second scale for the teacher implementation of DI. The reliability of the scale for understanding was .921 Cronbach's Alpha. In comparison, the reliability for implementation was .954 Cronbach's Alpha. It was counted as a high-reliability index.

### 2.3. Procedure

We applied an online questionnaire and paper and pencil questionnaire. Three schools were administrated using paper and pencil questionnaire, and two schools were asked using an online questionnaire.

Before we started the data collection, we came to school to inform and asked permission to have a survey study for informed consent. After receiving the school agreement, we provided the questionnaire of the study to the teachers. Every teacher involved in the study also provided their informed consent. Three schools agreed to have the paper and pencil questionnaire. Two other schools agreed to have an online questionnaire. As the study was voluntary, we only received the data from the teacher who agreed to participate in this study.

## 3. RESULT AND DISCUSSION

The results are divided into two sections: the first section is demographic data and the second section is DI implementation.

### 3.1. Demographic Data

The demographic data of the participants consist of gender of the participants and the school status. The complete demographic data can be seen in Table 1.

**Table 1** Demographic Data

Aspect	N	N	Total
Gender	Female: 78	Male: 35	113
School status	Private: 80	Public: 33	113

The researchers collected the data from 113 teachers from five schools: three private schools with 80 teachers and two public schools with 33 teachers. We had more female teachers (78) than the male teachers (35).

### 3.2. DI Understanding and DI Implementation

The data shown the understanding of DI and the implementation of DI among the teachers' participant were in Table 2.

**Table 2** Descriptive Statistics

	N	Minimum	Maximum	Mean	SD
UoDI	113	54	177	104.42	33.206
IofDI	113	58	188	98.51	34.738

\*UoDI: Understanding of DI; IoDI: Implementation of DI

The result revealed that the mean score of the understanding of DI was 104.42. Meanwhile, the mean score of the implementation of DI was 98.51. The score showed that the teacher's DI understanding was higher

than the teacher's DI implementation. For further analysis, we used the paired-sample t-test to check whether the difference between understanding of DI and teacher implementation of DI was significant or not significant. The result of the paired-sample t-test was in Table 3.

**Table 3** Paired-Sample Test

Pair	Paired Differences					t	df	Sig.
	Mean	SD	SEM	95% CI				
				Lower	Upper			
UoDI - IoDI	5.90	15.4	1.45	3.02	8.78	4.06	112	.00

\*UoDI: Understanding of DI; IoDI: Implementation of DI

The result of the paired-sample t-test showed that the difference between teacher understanding of DI and teacher implementation of DI was significant with the sig of .00 below .05.

As the difference between teacher understanding of DI and teacher implementation of DI was significant, it brought us to the conclusion that there was a gap between the understanding of DI and its implementation among elementary school teachers. The teachers' DI implementation was lower than their understanding of DI. It meant that although teachers had known more DI, their implementation of DI remained lower than their DI understanding.

Furthermore, if we adjusted the mean score of understanding of DI and mean score of implementations of DI to the percentage, the adjusted score of understanding of

DI became 81,08 %, and the adjusted score of implementation of DI was 74.77 %.

For further analysis, we used the benchmark to compare the adjusted score of teacher understanding of DI and teacher implementation of DI. The available benchmark was the mastery learning [19], which put the value of 80% (score 8) as a critical benchmark. Compared to the benchmark of mastery learning, the understanding of DI is higher, and the implementation of DI is lower.

### 3.3. Public Schools

The data analysis in public schools was in Table 4 and Table 5.

**Table 4** Descriptive Statistics

	N	Minimum	Maximum	Mean	SD
UoDI	33	54	104	85.33	14.92
IoDI	33	67	104	88.15	10.82

\*UoDI: Understanding of DI; IoDI: Implementation of DI

**Table 5** Paired-Sample Test

Pair	Paired Differences					t	df	Sig.
	Mean	SD	SEM	95% CI				
				Lower	Upper			
UoDI - IoDI	-2.82	11.39	1.98	-6.86	1.22	-1.42	32	.16

\*UoDI: Understanding of DI; IoDI: Implementation of DI

In public schools, the teacher implementation of DI was 88.15, and it was higher than the understanding of DI (85.15). This result reflected that teachers in public school were more confident to implement the DI. Both implementation of DI and understanding of DI in public schools were below the score in private school.

### 3.4. Private Schools

The data analysis in private schools was in Table 6 and Table 7.

**Table 6** Descriptive Statistics

	N	Minimum	Maximum	Mean	SD
UoDI	80	63	177	112.29	35.47
IoDI	80	58	188	102.79	40.00

\*UoDI: Understanding of DI; IoDI: Implementation of DI

**Table 7 Paired-Samples Test**

Pair	Paired Differences					t	df	Sig.
	Mean	SD	SEM	95% CI				
				Lower	Upper			
UoDI – IoDI	9.50	15.53	1.74	6.04	12.96	5.47	79	.000

\*UoDI: Understanding of DI; IoDI: Implementation of DI

In private schools, the score of teachers understanding of DI was 112.29, while the score of implementations of DI was 102.79. The score of understanding of DI was higher than the implementation of DI. It reflected that although teachers in private schools had a better understanding of DI, their implementation of DI remained lower. However, compared to public school data, the teachers in private schools showed better scores in the understanding and implementation of DI.

From the result data provided, teachers in private schools showed a better score than teachers in public schools. However, teachers in public schools were more confident in implementing DI.

For the aggregate data in public school and private school, the teachers' DI understanding was higher than their DI implementation. The possible reason for the gap between understanding of DI and implementation of DI was that teachers had too many administrative works, less support from the school, less school policy on DI implementation, and less professional development with specific on DI.

## 4. CONCLUSION

This study shows that the mean score for the understanding of DI is 104.42, and the implementation of DI is 98.51. The data show that there is a significant difference between the understanding and implementation of DI.

If we adjust the mean score to the percentage, the score of understanding of DI is 81.08%, and the implementation of DI is 74.77%. Compared to the value of 80% as a critical benchmark of mastery learning criteria, the DI implementation is below the benchmark.

Seeing to result that show the gap between the understanding of DI and the implementation of DI. The school need to consider to take the action in making the gap closer and even disappear.

To increase the understanding and implementation of DI, this study recommends schools to provide the program to improve the DI implementation among teachers. The program can be professional development on DI and sharing sessions among teachers who have good experience of DI implementation. The better implementation of DI is, the more it helps the sustainable teaching and learning activities for all teachers and students.

The limitation of this study related to the limitation of the participant from teachers and schools. Further study is recommended to involve more participants to gather more data, and therefore the result will more adequate.

## REFERENCES

- [1] Suprayogi M N, Valcke M and Godwin R 2017 Teachers and their implementation of differentiated instruction in the classroom *Teach. Teach. Educ.* **67** 291–301
- [2] Tomlinson C. A, Brighton C., Hertberg H., Callahan C. M., Moon T. R., Brimijoin K, Conover L. A. and Reynolds T. 2003 Differentiated instruction in response to student readiness, interest, and learning profile in academically diverse classroom: A review of literature *J. Educ. Gift.* **27** 119–145
- [3] Subban P., 2006, Differentiated instruction: A research basis, *Int. Educ. J.* **7** 35–947
- [4] 2020 world population by country world provided by Population Review, 2020. Available from: <http://worldpopulationreview.com/> [Accessed on 25th February 2020]

- [5] Fox J. and Hoffman W. 2011 *The Differentiated Instruction Book of Lists* (San Francisco: Jossey-Bass)
- [6] Heacox D., 2012. *Differentiating Instruction in the Regular Classroom* (Minneapolis: Free Spirit Publishing)
- [7] Program for International Student Assessment (PISA): PISA 2018 result. 2019. Available from: [https://www.oecd.org/pisa/publications/PISA2018\\_CN\\_IDN.pdf](https://www.oecd.org/pisa/publications/PISA2018_CN_IDN.pdf) [Accessed on 23rd December 2019]
- [8] Program for international student assessment (PISA): PISA 2015 result. 2016. Available from: <http://www.oecd.org/pisa/PISA-2015-Indonesia.pdf> [Accessed on 20th December 2016]
- [9] Program for the International Assessment of Adult Competencies (PIAAC): PIAAC 2016 result. 2016. Available from: <http://www.oecd.org/skills/piaac/Skills-Matter-Jakarta-Indonesia.pdf> [Accessed on 5th September 2016]
- [10] Tobin R. and McInnes A., 2008. Accommodating differences: Variations in differentiated literacy instruction in grade 2/3 classroom *Literacy* **42** 3–9
- [11] Waldron N. and Mcleskey J. 2001 Helping schools include all learners *Interv. Sch. Clin.* **36** 175–181
- [12] Tomlinson C. A. 2001 Differentiated instruction in the regular classroom *Underst. Our Gift.* **14** 3–6
- [13] Tulbure C., 2011. Do different learning styles require differentiated teaching strategies? *Procedia Soc. Behav. Sci.* **11** 155–159
- [14] McAdamis 2001 Teachers tailor their instruction to meet a variety of students' needs *J. Staff Dev.* **22** 1–5
- [15] Firmender J. M., Reis S. M., and Sweeny S. M. 2013 Reading comprehension and fluency levels ranges across diverse classrooms: The need or differentiated reading insruction and content *Gift. Child Q.* **57** 3–14
- [16] Reis S M, McCoach D. B., Little C. A., Muller L. M. and Kaniskan R. B. 2011 The effect of differentiated instruction and enrichment pedagogy on reading achievement in five elementary schools *Am. Educ. Res. J.* **48** 462–501
- [17] Chamberlin M. and Power R. 2010 The promise of differentiated instruction for enhancing the mathematical understandings of college students *Teach. Math. its Appl.* **29** 113–139
- [18] Vygotsky L. 1978. Interaction between learning and development *Readings Dev. Child.* **23** 34-41
- [19] Zimmerman B. J. and Dibenedetto M. K., 2008. Mastery learning and assessment: Implications for students and teachers in an area of high-stakes testing *Psychol. Sch.* **45** 206–2