

# Development and Acceptability of Lesson Exemplars with Differentiated Instruction for Grade 7 Students

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**Abstract:** *This study aims to develop and validate differentiated instructions according to the learning styles of grade 7 students in J.P. Laurel High School of the school year 2019–2020. This study utilizes descriptive-developmental method to develop lesson exemplars in mathematics utilizing differentiated instruction in accordance to the varied learning styles of the students. Inventory tools and questionnaires were given to the respondents in conducting the study and collected all the gathered results afterwards. The literatures of the study focuses on the definition of differentiated instructions, students' learning styles, and effect of using differentiated instruction in lesson. The study was conducted on the sample of 35 grade 7 students of J.P. Laurel High School. The findings of the study revealed that the majority of the respondents are visual learners (51.42%), followed by auditory learners (20%), and kinesthetic and visual-auditory learners (14.29%). In addition, the study revealed that the students scored higher in post-test than in pre-test after the conduct of the developed lesson exemplars using differentiated instruction. Moreover, the study also showed that there is a significant difference between the mastery level of the students in the pre-test and post-test when grouped according to their learning styles. The following are the recommendations based from the conclusions of the study: diversity of the students must always be considered in every learning situation. Without knowing the learners' preferred learning styles (visual, auditory, or kinesthetic), parents or the learner himself may choose a curriculum that doesn't meet the needs; use differentiated instructions and interventions that are compatible to the students' learning styles to further enhance students' achievements; teachers may formulate appropriate teaching pedagogy and develop understanding of curriculum content with regards to the varied learning styles of the students to improve the mastery level of the students; teachers should assess students' learning and reconstruct teaching methods to achieve the desired learning outcomes; school administrators and mathematics master teachers may continue to conduct class observations to teachers to provide technical assistance in the delivery of the lesson; and future research should also be conducted to validate the effects of using differentiated instruction in other branches of Mathematics to address learning gaps.*

**Keywords:** Development, Acceptability, Lesson Exemplars, Differentiated Instruction

## 1. Introduction

Students learn in different ways – through seeing, hearing, memorizing, reflecting, visualizing and creating mathematical models. These learners have different levels of motivation, attitudes about learning, and responses to specific classroom environments and instructional practices. Felder and Brent (2013), said that there are three categories of diversity that have been shown to have important implications for teaching and learning: (1) differences in students' learning styles (characteristic ways of taking in and processing information), (2) approaches to learning (surface, deep, and strategic), and (3) intellectual development levels (attitudes about the nature of knowledge and how it should be acquired and evaluated).

Learning styles have been attributed to a variety of student's differences. Some students prefer studying in a quiet environment while others can fully digest the material with music on their ears. Some students learn best with pictures or visual presentation of information while others learn more on verbal explanations. However, one learning style can never be superior against the other, nor that it is more effective than other styles. In other words, they are just different, with different weaknesses and strengths.

Learning styles refers to the concept that individuals differ in regard to what mode of instruction or study is most effective for them (Pashler, et al, 2008). Some people may find that they have a dominant learning style while some find that they use different learning styles in different circumstances. Similarly, in a learning environment, variety

of learners is present with different needs. Thus, the diversity of learners is indeed present in every classroom situation.

Such diversity requires different teaching styles to fully cater the needs of every learner. To address this diversity, different teaching approaches and methods were developed – Lecture method, Peer tutoring, Inquiry-based instruction, and the like. Each approach focuses on different aspects of instructions and takes into account different classroom settings. One of the approaches is integrating Differentiated Instruction in lessons. Differentiated Instruction is a way in which a teacher anticipates and responds to a variety of students' needs in the classroom. To meet students' needs, teachers differentiate by modifying the content, the process, and the product of instruction. Differentiating instruction offers different paths to understanding content, process, and products, considering what is appropriate given a child's profile of strengths, interests, and styles (Dixon, et al., 2014).

According to Tomlinson (2001), a teacher who differentiates his or her instruction recognizes this diversity and uses a variety of strategies to reach and engage all learners. Differentiated instruction takes a variety of forms in the classroom according to what is learned (content), how it is learned (process), how learning is demonstrated (product), or what environment it is learned.

Differentiated Instruction caters to the need of the students with respect to their in-class learning (Tomlinson, 2014;

Suprayogi, et al., 2017; Magayon and Tan, 2016), as well as out-of-classroom learning (Beecher and Sweeny, 2008).

Furthermore, it also develops professional pedagogical growth on the teacher (Robinson, et al., 2014; Wan, 2015). However, there are possible conflicts arising from the use of differentiated instruction (Wan, 2015).

In terms of students learning inside the classroom, Differentiated Instruction allows the students to compete against one another, always moving toward – and often beyond – designated content goals. In other words, teachers who differentiate instruction provide specific alternatives for individuals to learn as deeply as possible and as quickly as possible, without assuming one student's road map for learning is identical to anyone else. (Tomlinson, 2014) Differentiated instruction can in still a new excitement and passion for learning to all students. Thus, it can provide enrichment opportunities to all learners.

Moreover, differentiated instruction is put forward as a key solution to meet the growing diversity of the students (Suprayogi, et al., 2017). It is proven in the study of Magayon and Tan (2016) which states that in the Philippine setting, the use of differentiated instruction in Mathematics motivates students' interest, makes learning easier, and challenges students to learn and do more. Hence, implementing differentiated instruction is said to be effective in catering to the individuality of students and at the same time helping them to have positive outlook about school, increase engagement in learning, and improve achievement.

The benefit of using differentiated instruction extends beyond classroom walls. Beecher and Sweeny (2008) noticed that students became interested in afterschool classes. The school studied by Beecher and Sweeny had, on average, 200 students participating in afterschool classes. The authors proposed that students wanted to spend extra time studying and learning because they felt it was valuable and related to their lives, which increased their academic achievement.

In the study of Robinson, et al (2014), educating teachers about how to differentiate instruction in classrooms is significant for it develops and implements professional development opportunity that includes cross curricular strategies and time to create real lessons that can be actively used within the classroom. Thus, it allows teachers to identify and share successful differentiation strategies and to add new practices in the field of teaching.

With the use of Differentiated Instruction, changes in teaching beliefs regarding this approach as well as teaching efficacy levels, and positive attitudes toward differentiated teaching have been evident in the teaching-learning process. However, there existed different concerns including class management and conflicts with personal teaching beliefs. These concerns may be related to practical experiences and confidence as well as expectations upon students. (Wan, 2015)

Since the Philippines has adopted the K-12 Curriculum Program in the Basic Education in 2012, one of the implementation guidelines is to have a content differentiation (Department of Education, 2012). Hence, the study on integrating differentiated instructions in accordance to the students' learning styles is needed.

Implementing Differentiated Instruction indeed hones students to become more responsible individuals as every student is challenged at his or her own level. Despite possible conflicts with personal teaching beliefs, studies have found that Differentiated Instruction as a pedagogical approach is more beneficial to the students in terms of having more comprehensive and deeper learning, and in developing students' individuality. By this, it would allow the students to reach their highest potential and increase their understanding and knowledge to the fullest extent possible. In light of this, the researcher proposed this study to develop and validate differentiated instruction used in a classroom situation considering the varied learning styles of the learners.

## 2. Statement of the Problem

This study aims to develop and validate differentiated instructions through learning styles of grade 7 students at J.P. Laurel High School for the school year 2019 – 2020.

Specifically, the study aims to answer the following questions:

- 1) What are the learning styles of grade 7 students?
- 2) What lesson exemplars using differentiated instructions could be developed in teaching grade 7 students?
- 3) What is the mastery level of the students when grouped according to the learning styles along pre-test and post-test?
- 4) Is there a significant difference between the mastery level of the students in the pre-test and post-test when grouped according to their learning styles?
- 5) What is the acceptability of the lesson exemplars with differentiated instructions as validated by the experts?

## 3. Research Methodology and Procedures

### Research Design

Descriptive – Developmental is used by the researcher in this study. According to Richey (1994), developmental research has been defined as the systematic study of designing, developing, and evaluating instructional programs, processes, and products that must meet criteria of internal consistency and effectiveness. There are many types of developmental research and one of which involves situations in which the product-development process is analyzed and described, and the final product is evaluated. The researcher developed two (2) lesson exemplars in Mathematics 7 using differentiated instruction according to the learning styles of the students to assess students' achievement.

The researcher utilized inventory tool to determine the learning styles of the students. Lesson exemplars with differentiated activities about basic concepts in geometry and angles were used to discuss the said topics. To

determine the mastery level of the students, a teacher-made pre-post design was used. Frequency count, percentage, weighted mean and t-test, were also used to interpret the results of pre-test and post-test, learning style inventory tool and experts' validation tool for the developed lesson exemplars.

### The Sample

The respondents of the study are grade 7 students of J.P. Laurel High School for the school year 2019 – 2020. According to the statistical data provided by the School Records Designate as of school year 2019-2020, record shows that there are 176 enrolled grade 7 students. The respondents are grouped homogenously. However, only one class, composed of 35 students, are the respondents of the study. The respondents were chosen based on convenience sampling since they are one of the handled classes of the researcher himself.

### The Instrument

The gathering of data used in this study is possible using the following instruments: (a) Learning Style Inventory Tool (b) A teacher made pre-test and post-test, (c) Developed lesson exemplars, and (d) Validation tool to rate the validity and reliability of the lesson exemplars.

Learning Style Inventory Tool. The research adopted an inventory tool from Dunn and Dunnto determine the learning styles of the grade 7 students. It is composed of twenty-four (24) questions. The respondents will answer each question from 1 to 3 with the following indicators: 1 – Never applies to me, 2 – Sometimes applies to me, and 3 – Often applies to me.

Pre-Test and Post-Test. The pre-test and post-test to be administered to the Grade 7 students was composed of 10 items, with four options-multiple choices test with some open-ended questions. The test was only limited to 10 items due to time constraints and because of the fact that there are only two (2) learning competencies discussed and some questions in the differentiated activities are under formative assessment. The test was designed to measure the concepts to be learned by the learners in Basic Concepts in Geometry and Angles. The contents of the test are taken from different learning resources by the researcher himself.

Two lesson exemplars with the following topics; Basic Concepts in Geometry and Angles were developed. The learning competency of these developed lesson exemplars are anchored to the curriculum guide of the Department of Education (DepEd). The lesson exemplars are composed of four (4) main parts: learning objectives, learning content, learning procedure, and assignment. The learning procedure used the 5E's learning model – Engage, Explore, Explain, Elaborate, and Evaluate. These lesson exemplars were evaluated by mathematics teachers of Bulan Cluster using the validation tool for pre-service teachers adopted from Sorsogon State College. The experts evaluated the following parts of the lesson exemplar: (1) objectives, (2) subject matter, (3) procedure, (4) evaluation, and (5) assignment using 5-point Likert Scale: 5-outstanding, 4-very satisfactory, 3-satisfactory, 2-fair, and 1-poor. The comments and suggestions on how to discuss the lessons

effectively are added to the developed lesson activities made by the researcher. Below is the rating scale with its corresponding descriptive interpretation for the experts' validation tool:

### Rating Scale Descriptive Interpretation

4.50 – 5.00 Outstanding  
3.50 – 4.49 Very Satisfactory  
2.50 – 3.49 Satisfactory  
1.50 – 2.49 Fair  
1.00 – 1.49 Poor

Based from the result of the pre-test and post-test, the level of the students was categorized into the following mastery levels (DepEd Order No. 71, s. 2010 & “Standards-Based Assessment DepEd’s Perspective” NETRC-Department of Education):

Mastery Level Scale

### Mean Percentage Mastery Level Descriptive Equivalence

96 – 100 Mastered 86 – 95 Closely Approaching Mastery  
66 – 85 Moving Towards Mastery  
35 – 65 Average Mastery 16 – 34 Low Mastery 5 – 15 Very Low Mastery 0 – 4 Absolutely No Mastery

### Data Collection Procedure

To gather data and information on the respondents, the researcher sent communication letters to the principal of Bulan National High School to ask permission to allow three Mathematics teachers namely Ms. Ma. Anunciacion C. Jazmin, T-III; Mr. Dante G. Gleabo, MT-I; and Ms. Charity V. Luzuriaga, MT-I to evaluate and validate the instruments used in the study. The same letters and copy of the instruments (Learning Style Inventory Tool, Pre-Post Test, Validation Tool, and Developed Lesson Exemplars) were sent to Ms. Maria Luisa L. Gordola, T-III and Mr. Jomar A. Gersalia, T-III, both are Mathematics teachers of San Francisco National High School; Ms. Rissa G. Bonita, T-III of J.P. Laurel High School; and Mr. Domingo H. Enteria, SSP-I of Gate National High School for validation.

The researcher collected, organized, and tabulated the data after the retrieval of the instruments. After establishing the validity and reliability of the instruments, the researcher sent communication letter to Sorsogon Division Office headed by Mr. Jose L. Doncillo, CESO V, to ask permission to conduct the study in J.P. Laurel High School which is under its supervision. The School head of J.P. Laurel High School, Mr. Acheron M. De Jesus, SSP-I, and respondents of the school were also given letters to gather data in conducting the study.

An inventory tool for the learning styles of the students, and a teacher-made pre-test, were administered before the implementation of the developed lesson exemplars. The developed lesson exemplars were validated by the above mentioned Mathematics teachers of Bulan Cluster. The two topics in grade 7 Mathematics which are basic concepts in geometry and angles were discussed with the use of differentiated instruction considering the students' varied learning styles. Post-test was administered after the implementation of the lesson.



Afterwards, the researcher summarized all the information and resulting data. Statistical treatment was used to the gathered data for interpretation.

#### 4. Data Analysis Procedure

Statistical tools to which the data were subjected to after conducting the study are the following: frequency count, percentage, weighted mean, and t-test.

The learning style inventory tool was used to determine the preferred learning styles of the respondents. Frequency count was used in interpreting the results of learning style inventory tool.

In the evaluation and validation tool of the experts on the developed lesson exemplars, weighted mean was used to compute for the overall average of the instrument.

With regards to the pre-test and post-test results, frequency count and percentage was used to determine the level of mastery of the respondents. The primary goal of using the pre-post design is to determine if there is a difference among groups with regard to some variable of interest after imposition of intervention (Bonate, 2000). Moreover, t-test was also used to know the significant difference of the mastery level in pre-test and post-test when grouped according to the learning styles of the students. Results were tested at 0.05 level of significance to determine the significant difference of the mastery level in pre-test and post-test scores.

#### 5. Findings

Based on the results of the statistical analyses of the data, the findings of the study are as follows:

- 1) In terms of the learning style of the respondents, 51.42% of the Grade 7 students are Visual learners, 20% are Auditory learners, and 14.29% are Kinesthetic learners and Visual-Auditory learners. It implies that majority of the respondents are visual learners that preferred learning through visual format rather than auditory or using body movements.
- 2) The developed lesson exemplars taught in grade 7 using differentiated instructions according to the learning styles of the students are Basic Concepts in Geometry and Angles.
- 3) It was determined that when it comes to the mastery level of the visual learners during pre-test, students scored 35.6% with an above mastery descriptive interpretation, while 86.1% is the score in post-test which means closely approaching mastery. For students under auditory type of learning style, they scored 44.3% in pre-test (average mastery), while 90% in post-test (closely approaching mastery). In terms of kinesthetic learners, students have a mean percentage score of 24% in pre-test (low mastery), while 80% in post-test (moving towards mastery). When it comes to visual-auditory learners, the mean percentage score of the students in pre-test is 36% (average mastery), while 86% in post-test (closely approaching mastery).
- 4) In terms of the comparison between the mastery level of the students in pre-test and post-test when grouped

according to their learning styles, 3.56 is the mean score in pre-test of the visual learners, while 8.61 in post-test. For auditory learners, students scored 4.43 in pre-test, while 9 in post-test. When it comes to kinesthetic learners, the mean score in pre-test is 2.4, while the mean score in post-test is 8. For students under visual-auditory learning style, 3.6 is the mean score in pre-test, while 8.6 in post-test. The computed p-value in all area is 0.00 which is tested at 0.05 level of significance represents highly significant.

- 5) When it comes to the acceptability of the developed lesson exemplars in the topic Basic Concept in Geometry, the mean score in the following indicators are as follows: objective – 4.83, subject matter – 4.63, procedure – 4.5, evaluation – 4.67, and assignment – 4.83, which means that all indicators has a descriptive interpretation of outstanding. On the other hand, the topic Angles has a mean score of 4.92 in objective, 4.85 in subject matter, 4.63 in procedure, 4.92 in evaluation, and 4.75 in assignment. The overall weighted mean of the lesson exemplars is 4.69 (Basic Concepts in Geometry), and 4.81 (Angles) which are both under the descriptive interpretation outstanding.

#### 6. Conclusions

Based on the findings, the following conclusions are drawn:

- 1) The Grade 7 students of J.P. Laurel High School S.Y. 2019 – 2020 have different learning styles. Majority of them are visual learners, some of them are auditory learners and kinesthetic learners, while some of them have two learning style (visual-auditory learners) which is the combination of visual and auditory.
- 2) The topics Basic Concepts in Geometry and Angles are the two lesson exemplars developed using differentiated instructions in accordance to the learning styles of the students.
- 3) In the area of the mastery level, students scored higher in post-test than in pre-test in all type of learning style (visual, auditory, kinesthetic, and visual-auditory). The mastery level descriptive equivalence of the students in pre-test and post-test when grouped according to their learning style is closely approaching mastery.
- 4) There is a significant difference between the mastery level of the students in the pre-test and post-test when grouped according to their learning styles.
- 5) The two developed lesson exemplars entitled, Basic Concepts in Geometry and Angles has an overall rating of outstanding based on the validation of the experts.

#### 7. Recommendations

After the conclusions are mentioned, the following recommendations are presented:

- 1) Students' diversity must always be considered in every learning environment. Without knowing the learners' preferred learning styles, parents or the learner himself may choose a curriculum that doesn't meet the needs.
- 2) Use differentiated instructions and interventions that are compatible to the students' learning styles to further enhance students' achievements.
- 3) Teachers may formulate appropriate teaching pedagogy and develop understanding of curriculum content with

regards to the varied learning styles of the students to improve the mastery level of the students.

- 4) Teachers should assess students' learning and reconstruct teaching methods to achieve the desired learning outcomes.
- 5) School administrators and mathematics master teachers may continue to conduct class observations to teachers to provide technical assistance in the delivery of the lesson.
- 6) A future research should also be conducted to validate the effects of using Differentiated Instruction in other branches of Mathematics to address learning gaps.

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