

Effectiveness of Differentiated Instruction in Teaching Media and Information Literacy to Senior High School Students of Ungos National High School

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This study promotes and encourages the use of Differentiated Instruction (DI) in teaching Media and Information Literacy in senior high school among the schools of DepEd Quezon. This action research used a quantitative experimental design in employing the action research framework. Based on the results of the study, there is significant difference between the control group's pretest and posttest scores based on the T-Value of 3.24 which is higher than the tabular value of 2.05 at 0.05 level of significance at 28 degrees of freedom. For the experimental group's pretest and posttest score there is a significant difference based on the T-Value of 4.93 which is higher than the tabular value of 2.05 at 0.05 level of significance at 28 degrees of freedom. However, the data between the T-Value of the control and experimental group are that the experimental group has a higher computed T-Value by 1.69 which means that learners have better understanding and learning of the subject Media and Information Literacy if Differentiated Instruction was used compared to the control group without Differentiated Instruction and is of significant difference. This action research had proven the usefulness of DI in improving the performance and understanding of learners in senior high schools in the country as a method of effective classroom instruction.

Keywords: Differentiated Instruction, Media and Information Literacy

Introduction

The empowerment of the Filipino citizens is at the core of Media and Information Literacy and this information era has brought up new literacies although some or most of them are still not part of the K-12 curriculum. UNESCO defines Media and Information Literacy as a set of competencies that empower citizens to access, retrieve, understand, evaluate, and use, to create as well as share information and media content in all formats, using various tools, in critical, ethical, and effective way, to participate and engage in personal, professional, and societal activities.

Basically, it is concerned with the learners understanding of Media and Information Literacy and related concepts and these learners demonstrate the understanding of different resources of media and information, their design principle elements and selection criteria (K to 12 curriculum guides for senior high school). The K to 12 Basic Education Curriculum is aiming to help learners to become empowered individual, through a

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program rooted on the competence to engage in work and be productive, the ability to coexist in fruitful harmony with local and global communities, the capability to engage in creative and critical thinking, and the capacity and willingness to transform others and oneself.

However, teachers are having difficulties in teaching different kinds of learners as they may have different intellectual capabilities and even learning styles especially to senior high school students who are enrolled in different tracks and that they are in a place of bridging between high school and college which is the starting foundation of becoming a prepared and competent individual.

According to UNESCO (2017) as cited in Nazarbayev University Library website, knowledge can be created and disseminated in all forms and formats. Media and Information increases everyday and it becomes so abundant that it can be found anywhere, anytime especially in the booming era of data and information explosion. The basic idea of Differentiated Instruction (DI) is that teachers need to take into consideration "not only the subject they teach, but the learners as well" (Wolfolk, 2009 as cited in Ismajli & Imami-Morina, 2018).

As one of the core curricula subjects in senior high school, a teacher who will teach this subject can adjust the teaching content, progress, and evaluation methods according to individual differences and needs of the learners, to enhance student's learning effect and guide learner's adaptive development (Wu, 2012 as cited in J.-H. Chen & Y.-C. Chen, 2018).

Statement of the Problem

This study will determine the effectiveness of conducting a Differentiated Instruction (DI) to senior high school Media and Information Literacy students. It will specifically answer the following.

1. What is the performance of the two groups of respondents in the pretest on a selected topic in Media and Information Literacy?

1.1. Control group;

1.2. Experimental group.

2. What is the performance of the two groups of respondents in the posttest on a selected topic in Media and Information Literacy?

1.1. Control group;

1.2. Experimental group.

3. Is there any significant difference between the pretest scores of the control and experimental group?

4. Is there a significant difference between the posttest scores of the control and experimental group?

5. Is there a significant difference between the pretest and posttest scores of the control and experimental group?

Hypothesis

Null Hypothesis:

1. There is no significant difference between the pretest result of the experimental and control group.

2. There is no significant difference between posttest result of the experimental and control group.

3. There is no significant difference between the pretest and posttest result of the experimental and control

group.

Alternative Hypothesis:

1. There is significant difference between the pretest result of the experimental and control group.

2. There is significant difference between posttest result of the experimental and control group.

3. There is significant difference between the pretest and posttest result of the experimental and control group.

Review of Related Literature and Studies

According to Tomlinson (2009), differentiation means tailoring the instruction to meet individual needs. Teachers differentiate the content, the process, products, and even the learning environment. Differentiated Instruction consists of efforts of teachers to respond to variance among learners in the classroom. Tomlinson (2009) also mentioned that there are at least four classroom elements which teachers can differentiate that is according to content, process, products, and learning environment. Pedersen and Liu (2003) as cited by Aftab (2015) in their paper, though there are uncertainties and doubts relating to teachers' beliefs about education, these are recommended because teachers' perceptions and beliefs reflect their teaching practices in the classroom. Brenda Logan (2011) said in her research that today's classroom is now defined by diversity and in this sense, the major purpose of differentiated instruction is to maximize student growth by meeting each where he or she is. She also argued that schools have responsibility to adjust to the developmental needs and levels of students. Today's classroom is different as to be compared before, as it is filled with diverse learners not only culturally and linguistically but also in their cognitive abilities, background knowledge, and learning preferences (Huebner, 2010).

That is the reason why the application of Differentiated Instruction in Media and Information Literacy can play a significant importance in student's learning. Carstarphen (1995) mentioned that increasing challenges of such task are underscored the amorphous boundaries of the subject matter itself. But Carstarphen (1995) underscored that even when computers are available in schools, all children are not afforded the same level of access to information, especially in the public schools here in the Philippines for the reason of lacking needed materials. In South East Asia, media literacy is not yet included in the primary and secondary school curriculum, even with a country where media has prospered and much developed (Nupairoj, 2016).

Developing students' 21st century skills, including creativity, critical thinking, and problem solving, has been a prevailing concern in our globalized and hyper-connected society and one of the key components for students to accomplish this is to take part in today's participatory culture, which involves becoming creators of knowledge rather than being passive consumers of information (Gretter & Yadav, 2016). Gretter and Yadav (2016) also concluded that the global impact of technology has implications on the role educators play in teaching the skills that students need to acquire to become active citizens in their 21st century participatory culture. In connection with this, George (2005) concluded that changing one's instructional style and capability is much easier to talk about than it is, as difficult as it is essential. Many teachers seem quite willing to continue with the traditional teacher-directed, whole class instructional model even if they harbor deep uncertainties about their fundamental effectiveness.

As an educator in the senior high school, the proponent is motived to conduct an action research on the effectiveness of Differentiated Instruction in teaching Media and Information Literacy to a selected of Grade 11 students for a one-week lesson. The researcher of this study would like to know the effect of this method on the academic performance of the learners from the result of pretest and posttest.

Scope and Limitations

Research Local, Population and Sampling

The study was conducted at Ungos National High School—main senior high school, real, Quezon for the school year 2018-2019 during the month of October. The subject of this research is Grade 11 learners from the General Academic Strand.

Conceptual Framework

The following conceptual paradigm summarizes the framework of this action research:



Figure 1. Conceptual framework of the study, focusing on its input, process, and output.

Methodology

This action research will utilize a quantitative experimental design because the main purpose of this study was to determine the effectiveness of the Differentiated Instruction and the possible effects of the scores on the achievement of learners on lessons in Media and Information Literacy.

Two groups are taught of the same lesson for one-week. The control group was taught using the traditional mode of teaching but with same activities and the experimental group was taught using a Differentiated Instruction with sets of activities, evaluation, and facilitation for the learners for the one-week duration. Two sections of Grade 11 were included in the study. A simple random sampling was used to select two sections as the subject of the study

Each group was given a pretest and posttest and the results of the test will be compared to determine whether using Differentiated Instruction is effective or not.

To determine the percentage score of the control and experimental groups in their pretest and posttest results, the percentage rating was considered.

$$P = \frac{\text{Score x 50}}{\text{Total Item}} + 50\%$$

where:

P = percentage rating.

To interpret the results of the pretest and posttest taken by the respondents, the following scale was used as a reference.

74% & Below	=	Beginning
75 – 79	=	Developing
80 - 84	=	Approaching Proficient

85-89 = Proficient90% & Above = Advanced

Data Gathering and Statistical Treatment

The researcher will conduct the experiment for a duration of one week. The scores of both pretest and posttest will be taken and coded, tallied and will be statistically treated using the measurement of central tendency which is the mean, standard deviation and to verify the significant difference, t-test will be used. The following formula will be used:

Mean:

$$M = \sum_{N} X$$

where:

M = mean of learner's score,

 $\sum X =$ sum of learner's score,

N = total number of learners.

Standard Deviation (SD):

$$SD \sqrt{\frac{\Sigma D^2}{N} - \frac{\Sigma D^2}{N}}$$

where:

SD = Deviation Standard for one sample t-test;

D =Difference between pretest and posttest;

N = Number of observations in a sample.

T-test:

To know the significance between pretest and posttest, the collected data are counted by t-test as the formula below:

$$t = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{\frac{S1^2}{N_1} + \frac{S2^2}{N_2}}}$$

where:

t = T-Value;

X = mean difference between pretest and posttest;

S = standard deviation;

N = number of observations in a sample.

The use of mean and standard deviation will determine the level of performance of the control group and experimental group. The use of t-test will determine the significant difference of the mean scores on pretest and posttest of both groups on Media and Information Literacy subject.

Results and Discussion

The following are the results and the analysis done from the data.

The Performance of Two Groups of Respondents in the Diagnostic Test (Pretest)

The results of the pretest of the two class groups are presented in Table 1.

Diagnostic scores reveal that the control group has a mean of 12.60 (SD = 0.910) while the experimental group reported a mean score of 12.80 (SD = 1.21) which is higher by 0.20.

Table 1

Pretest Result of the Control and Experimental Groups Prior to the Start of Experiment

Groups	Ν	Mean	Standard deviation
Control group	15	12.60	0.910
Experimental group	15	12.80	1.21

The result of 0.910 and 1.21 has a small difference which signify that both classes are heterogenous, meaning the learners were of differing levels of intelligence. This is a good basis since the results suggest that two sections included in the study are almost the same manner that the scores are scattered. This means that the learner's grouping is mixed as to their abilities.

Performance of the Two Groups of Respondents in the Posttest

Table 2

Table 3

Posttest Result of the Control and Experimental Groups After the Experiment

Groups	Ν	Mean	Standard deviation
Control group	15	13.67	0.723
Experimental group	15	15.07	1.98

The level of performance of the two groups in the posttest is presented in Table 2.

The experimental group of learners who were exposed to Differentiated Instruction obtains a mean score of 15.07 (SD = 1.98) while the control group who were taught using the traditional method obtains a mean score of 13.67 (SD = 0.723).

The result showed that the posttest scores of the experimental group taught with Differentiated Instruction are better as compared to the group that was taught with traditional approach. Based on the standard deviation scores, it shows that the variance of the experimental group was smaller than that of the control group which suggests that the learner's intellectual ability is not scattered compared to the pretest result.

Classification of Learner's in the Control and Experimental Group Based on the Pretest Score Results

Diagnostic Score range Classification Control (x = 12.60)Experimental (x = 12.80)f f % % 90% & 0 Advanced 00.00% 1 06.67% above 20.00% Proficient 4 26.67% 3 85-89 80-84 Approaching proficient 11 73.33% 11 73.33% 75-79 Beginning 0 00.00% 0 00.00% 74% & 0 00.00% Developing 0 00.00% below 15 100.00% 15 100.00% Total

Classification of Learners Based on Pretest Results

Table 3 presents the grouping of the learners both in control and the experimental group. As per classification of students based on the mean and standard deviation results, majority of the learners were on the approaching proficient classification for the control and experimental group prior to the treatment.

Classification of Learner's in the Control and Experimental Group Based on the Posttest Score Results

Table 4

Score range	Classification		Control ($x = 13.67$)	Ex	Experimental ($x = 15.07$)	
	Classification	f	%	f	0⁄0	
90% & above	Advanced	0	00.00%	4	26.67%	
85-89	Proficient	10	66.67%	10	66.67%	
80-84	Approaching proficient	5	33.33%	1	6.67%	
75-79	Beginning	0	00.00%	0	0.00%	
74% & below	Developing	0	00.00%	0	00.00%	
Total		15	100.00%	15	100.00%	

Classification of Learners Based on the Posttest Result

Table 4 shows that as per classification of learners based on the mean and standard deviation results, a majority of the students now belong to the proficient classification. There were no learners reported to be in the developing and beginning group for both control and experimental group.

The data suggest that both approach in teaching increased the achievement, but a remarkable increase was noted in the group taught with Differentiated Instruction.

Classification of Learners in the Control Group Before and After the Lesson Using the Traditional Mode of Teaching

Table 5

Classification of Learners on the Control Group Pretest and Posttest Result

Score range		Before $(x = 12.60)$		After $(x = 1)$	3.67)
	Classification	f	%	f	%
90% & above	Advanced	0	00.00%	0	00.00%
85-89	Proficient	4	26.67%	10	66.67%
80-84	Approaching proficient	11	73.33%	5	33.33%
75-79	Beginning	0	00.00%	0	00.00%
74% & below	Developing	0	00.00%	0	00.00%
Total		15	100.00%	15	100.00%

Table 5 shows the classification of learners based on the mean and standard deviation results; majority of the students are now in the proficient classification for the control group after using the non-Differentiated Instruction.

Classification of Learners in the Experimental Group Before and After Using the Differentiated Instruction

Table 6 shows the classification of learners based on the mean and standard deviation results; majority of the students are now in the proficient group for the experimental group after using the treatment using the Differentiated Instruction.

Score range	Classification]	Before (x = $\overline{12.80}$)		After (x = 15.07)	
	Classification	f	%	f	%	
90% & above	Advanced	1	06.67%	4	26.67%	
85-89	Proficient	3	20.00%	10	66.67%	
80-84	Approaching proficient	11	73.33%	1	6.67%	
75-79	Beginning	0	00.00%	0	0.00%	
74% & below	Developing	0	00.00%	0	00.00%	
Total		15	100.00%	15	100.00%	

 Table 6

 Classification of Learners on the Experimental Group Pretest and Posttest Result

It could be noticed that the percentages of classification have significantly improved. The idea presented by Tomlinson (2009) that differences of pupils should be addressed by the teacher in the classroom is good according to Robinson, Maldonado, and Whaley (2014) that the teachers are the best facilitators of learning for pupils of diverse background and abilities.

Results of Significant Difference Between the Pretest Scores of the Control and Experimental Group

Table /						
Significant Dij	fference Bet	ween the Pretes	t Scores of the C	Control and Experim	nental Group	
Groups	Mean	Standard deviation	Computed T-Value	Tabular value at 0.05 level of significance	Decision	Impression
Control	12.60	0.910	0.52	2.05	Accept the Null	No significance
Experimental	12.80	1.21	0.32	2.03	Hypothesis	no significance

Table 7 presents the significant difference in the pretest scores of the two groups. The computed T-Value of 0.52 is lower than the critical value of 2.05 at 0.05 level of significance at 28 degrees of freedom. Hence the hypothesis of no significant difference is accepted. There is no significant difference in the pretest scores of the class groups.

This result is good since the baseline data prior to the use of Differentiated Instruction (DI) suggest that the learners have similar intellectual abilities which will be very crucial for trying out the experiment in the teaching approach. The data suggest that the groups are very ideal for the experiment since they posses similarities prior to the experiment.

Results of Significant Difference Between the Posttest Scores of the Control and Experimental Group

Significant Difference Between the Posttest Scores of the Control and Experimental Group

Groups	Mean	Standard deviation	Computed T-Value	Tabular value at 0.05 level of significance	Decision	Impression
Control	13.67	0.723	2 22	2.05	Reject the Null	
Experimental	15.07	1.98	5.55	2.05	Hypothesis	Significant

Table 8 presents the significant difference of the posttest scores between the control and experimental group. From the data provided, it is very clear that the differences in scores in the posttest favor the

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Table 8

experimental group which was taught using DI. Hence, it is safe to say that DI is effective based on the data generated.

Significant Difference Between the Pretest and Posttest Scores of the Control and Experimental Group

Table 9Significant Difference Between the Pretest and Posttest Scores of the Control and Experimental Group

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Groups	Mean	Standard deviation	Computed T-Value	Tabular value at 0.05 level of significance	Decision	Impression
Pretest vs. posttes	t (df = 28)				D :	
Control	12.60	0.910	3.24	2.05	Reject the Null	Significant
Control	13.67	0.723			Trypomesis	
Pretest vs. posttes	t (df = 28)				D 1 1 1 1 1	
Experimental	12.80	1.21	4.93	2.05	Reject the Null	Significant
Experimental	15.07	1.98			Trypomesis	

Table 9 presents the comparison of the pretest and posttest scores of the control and the experimental group. Clearly for the experimental group, there is significant difference by the computed T-Value of 4.93 which is higher than the tabular value of 2.05 using 28 degrees of freedom. Hence the hypothesis of there is significant difference between the pretest and posttest scores which is accepted by who uses DI. For the control group, there is also a significant difference by the computed T-Value of 3.23 which is also higher that the tabular value of 2.05 using 28 degrees of freedom. Hence the hypothesis also of there is significant difference between the pretest and posttest scores which is also of there is significant difference between the pretest and posttest scores which is also of there is significant difference between the pretest and posttest scores which is also of there is significant difference between the pretest and posttest scores which is also of there is significant difference between the pretest and posttest scores which is also higher that the tabular value of 2.05 using 28 degrees of freedom. Hence the hypothesis also of there is significant difference between the pretest and posttest scores which is accepted.

But if we will analyze the data between the control group and the experimental group, the experimental group has a higher computed T-Value by 1.69 which means that learners can better understand and obtain higher scores if DI is used in teaching Media and Information Literacy.

Findings

The following are the findings of this action research:

1. The mean scores of both control (12.60, SD 0.910) and the experimental (12.80, SD 1.21) group after the pretest do not significantly differ based on the T-Value of 0.52 which is lower than the tabular value of 2.05 at 28 degrees of freedom.

2. The mean scores of both control (13.67, SD 0.723) and the experimental (15.07, SD 1.98) group after the posttest significantly differ which favors the use DI from the computed T-Value of 3.33 which is higher than the tabular value of 2.05 at 28 degrees of freedom.

3. After the pretest was conducted, majority of the learners in the control group are approaching proficient (11 or 73.33%). While majority of the learners in the experimental group are also in the approaching efficient (11 or 73.33%) as well which means that prior teaching the lesson, the learners are somewhat familiar with the concepts and ideas being presented and in which based on the results of the scores there is no significant difference.

4. After the posttest was conducted, majority of the learners in the control group are now in the proficient classification (10 or 66.67%), but none in the advanced classification. For the learners in the experimental

group, majority of the learners are now in the proficient classification (10 or 66.67%). But it can be noticed that with the use of DI (4 or 26.67%) it achieved the advanced classification.

It is considered that there is a significant difference between the scores of the control and experimental group because a certain percentage of students achieved the advanced classification in the experimental group compared with the control group in which no student achieved the advanced classification.

5. There is significant difference between the control group's pretest and posttest scores based on the T-Value of 3.24 which is higher than the tabular value of 2.05 at 0.05 level of significance at 28 degrees of freedom. For the experimental group's pretest and posttest score there is a significant difference based on the T-Value of 4.93 which is higher than the tabular value of 2.05 at 0.05 level of significance at 28 degrees of freedom. However, the data between the T-Value of the control and experimental group are that the experimental group has a higher computed T-Value by 1.69 which means that learners have better understanding and learning of the subject Media and Information Literacy if Differentiated Instruction was used compared to the control group without Differentiated Instruction and is of significant difference.

Conclusion

Based on the findings, the following are the conclusions:

1. The pretest scores of the control and the experimental group do not differ significantly

2. The posttest scores of the control group and the experimental group significantly differ resulting for a higher score for the experimental group.

3. No significant difference exists in the pretest and posttest scores of the control group, but significant difference is noted for the experimental group.

4. There is an improvement in the groupings of learners both in the control and the experimental group, but significant improvement was shown for the learners taught with DI.

5. Use of DI is effective in teaching the subject Media and Information Literacy considering the scores of the experimental group compared to the control group.

Recommendation

Based on the above findings and conclusions, the following recommendations are suggested.

1. DI should be used in teaching Media and Information Literacy in senior high school because it improves their classroom performance.

2. An in-service training can be conducted on DI for them to gain more knowledge and clear understanding of the approach.

3. Although the use of DI is a tedious task on the part of the teachers, they should still be encouraging to use this approach in order to motivate learners and participate in class discussions.

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