Effectiveness of Multigrade Instruction in Lined with the K to 12 Curriculum Standards

Glaidein S. Camongay, Aela Megan J. Lepiten, Dianne Claire C. Pulvera, & Angelica G. Suarez
University of San Jose-Recoletos

Abstract:- This study shows the effectiveness of multigrade instruction in-line with the K to 12 curriculum standards. Multigrade is a context wherein the teacher handles two or more grade levels in a single classroom setting. The paper utilizes the descriptive correlational method that tests the significant relationships and differences affecting the teacher's profile and delivery of instruction towards students' academic performances (AP). The statistical treatments used are the Weighted Mean, Linear Regression, and T-test of the mean difference. The anticipated outcome of this study is the teacher's delivery of instruction based on the multigrade Daily Lesson Log (DLL) affecting students AP. Results revealed that 14.9 % contribute the increase of academic performance in multigrade teacher despite from the complexity of this context, the multigrade students still learned from Teaching-Learning Process. The findings are used to prove the effectivity of multigrade instruction in-line with K to 12 curriculum standards to strengthen the progress of teacher's instruction in upholding the foundation of Education of the multigrade learners in the far-flung areas in the future.

Keywords:- *Multigrade Instruction, Curriculum, Kto12 Standards, Effectiveness, Far-Flung areas.*

I. INTRODUCTION

Multigrade teaching involves various grade levels corresponding one classroom context (Hyry-BeihammerandHascher,2015). Multigrade teaching gives ample chances for teaching and learning improvement (Nkoro et al. 2014). The Philippines adapt the multigrade system in achieving inclusive education for all (Bacani, 2014). In the 1920's status, the Philippines have a widespread of teachers in the field of teaching multiple grade levels (Chesterfield et al. 2013). Attaining multigrade effectivity depends on factors like teaching, planning, and organizing (Saqlain, 2015). Thus, this study investigates the effectiveness of multigrade instruction concurring Kto12 standards.

According to Little (2005), achieving effective multigrade teaching depends on the implementation of teaching pedagogies. Moreover, the success of multigrade teaching requires multigrade teachers to have appropriate instructional training in attaining the diverse needs of the students (Fat, 2015). Saqlain (2015) stated that multigrade teaching is a learner-centered because students' multiple intelligences and different learning styles are accentuated. Cooperative learning, peer tutoring and observation are appropriate in multigrade context (Saqlain, 2015). In the case of a multigrade class, lower year students learn from higher year students and vice versa through interactions (Saqlain, 2015). Hence, one acquires to seek for help and others learn to offer help results to mutual progressions of social learning (Zins, Bloodworth, Weissberg, & Walberg, 2007; Wagener, 2014). Teachers have problems regarding classroom organization, suitable methods, finding approaches and creating learning spheres (Bilir, 2008). The absence of a curriculum in multigrade is due to the lack of training of teacher (Kivunja, 2014). Teachers of multigrade classes have difficulty in designing a curriculum in multigrade teaching, so they follow the monograde curriculum (Saqlain, 2015). Furthermore, multigrade classroom organization, instructional materials, grouping and instructional delivery techniques differ from monograde classroom (Nkoro, et al. 2014). Through high quality teachers, holistic learners are developed and will be equip with 21st century skills. Furthermore, Kto12 Reform (RA 10533) in 2013 has modified the teacher requirements in the Philippines. The Philippines Professional Standards for Teachers (PPST) counterparts the reform initiatives. This constitutes teachers' quality through well-structured domains, strands and indicators that gives effective management and practice. In addition, the multigrade teachers are fledgling and inexperienced because some of them accept very less pre-service or in-service teacher training (Sag, 2009). Additionally, Benveniste & McEwan (2000) made mention the issues of multigrade structure that emphasizes the teachers' deficiency in trainings and self-instructional textbooks. The insufficiency of the prescribed training skills for multigrade context results teachers to rely on passive strategies that incapacitate students to interact in learning (Kivunja, 2014). Sag, Savas and Sezer (2009) proposed in-service teacher training for multi-grade teaching a solution of some of the issues above mentioned. DepEd Order No. 32, s. 2011 stated about policies and guidelines on training and development (T&D) programs and activities. Department of Education reviewed and reformulated policy guidelines on designing training and development (T&D) programs and in conducting activities for the capacity and capability building of the DepEd personnel and staff. Through this, it can enhance individuals with knowledge, skills and attitudes to enable them to perform their functions effectively. In rural areas it is dominant in the Philippines intermediary schools to have decreasing rate of enrollees (Benson, 2016). In this aspect, this becomes a positive outlook in the educational practice (Benson, 2016).

However, multigrade education existing in rural districts is ignored compared to monograde education (Brown, 2010; Little, 2006). Top of that, the application of multigrade in rural areas became a complicated situation wherein teachers tend to forget their traditional purpose of teaching their students that causes a major different to the communal teaching model (Benson, 2016). For a reason, many multigrade schools cannot recruit enough teachers because of the geographical features of the area (Kivunja, 2014). Shaeffer (2014) affirms that multigrade teaching focuses on teaching-learning approaches are active, learner-centered, partaking, collaborative, and self-paced with peer teaching through grade levels. Moreover, in such activities multigrade programs, collaboration inspire among individuals as it affects teacher and student relationship (Chesterfield, et al. 2013). In addition, active learning emboldens the individual learning of students by this means the aptitude of multigrade teachers increase, enables to cope up multiple grade levels (Juarez Inc., 2003). There is a lack of studying strategies of the teacher practiced ways to cope up with the difficulties of multigrade instructional processes in the research literature context (Mulryan-Kyne, 2005).

Before the literature reviews, the researchers focus more on the distinct performances of monograde students and multigrade students. The difficulties of multigrade education in rural areas and the teachers' capabilities of teaching multigrade classes are also quantified. In this aspect, the Department of Education provided lesson designs for multigrade teaching to minimize the encumbrance of a multigrade teacher handling different grade levels in a similar context. Hence, the implementation of the lesson design depends on how the teacher delivers the instruction effectively towards the recipients. This study concedes the current domains in PPST that reflects the needs for teachers' practices, for students' development and the implementation of the Kto12 curriculum. Moreover, the purpose of this study is to analyze the flexibility of teaching delivery practices of a multigrade teacher in dealing various instructions and to interpret whether the teacher's execution targeted the Kto12 curriculum standards or followed the provided lesson designs specifically set by the Department of Education.

This paper aims to address the problem for the multigrade teachers through determining the effectiveness of the multigrade instruction in teacher's delivery and teaching methodology. Additionally, identifying the skills of the teachers, scrutinizing the teacher's delivery in the form of background assessment such as acquiring seminars/training related for teaching in the multigrade setting and utilizing the triangular model of the lesson design that comprises of the teacher, the delivery and the recipient (student) are necessary for evaluation.

II.   THEORETICAL BACKGROUND

This study is supported by different theories namely Instructional Theory of Benjamin Bloom, Theory of Proficiency and Differentiated Instruction as a model used by Carol Tomlinson.

Instructional theory prescribes how to help students to learn better. In this aspect, it will regulate on how the teachers deliver the instruction towards the learners. Moreover, multigrade teaching requires teachers to be equipped with the teaching delivery strategies. Hence, this determines the effectiveness of the teacher in the implementation of the instruction in the multigrade classroom using the standard Daily Lesson Log (DLL) for multigrade teaching provided by the DepEd. It outlines pedagogies that teachers' will adapt to achieve the learning objectives based on the educational content corresponding to the alignment of the K-12 curriculum standards. Furthermore, the concept of this theory is that students will learn best if their teacher possesses high standards and excellence in delivering the instruction. The variables that will determine in this theory are the demonstration, application, and integration of the lesson. Additionally, modelling implies that the lesson design serves as a guide towards the learners through observation. However, application of instruction engages learners in peer-collaboration, and it mentioned that instruction activates prior knowledge of the learners to acquire a structure for organizing new knowledge. Lastly, integration states that teacher's instruction should integrate learners to reflect on, discuss and defend the knowledge or skills that they are accountable for. Nonetheless, these variables treated into two major types of contextualities for fundamentally different sets of methods such as different approaches to instruction (means): Mastery learning, Experiential learning and Peer learning or based on different learning outcomes (ends): Criterion-referenced Testing.

The other theory that supports this study is the Theory of Proficiency. This theory also covers the teachers' delivery of instruction because teaching uses proficiency as a unifying concept to relate acquisition of knowledge, skills, and attitudes to improve the students' academic performances. Moreover, the variables encompass these theories are qualifications and teaching experiences, key teaching competencies and professional conduct and personality. Qualifications and teaching experiences involve prescribing training and quality and duration of the teachers' experiences, since multigrade education deals with varied grade levels, so it needs well-trained teachers to cater the demands of the diverse learners inside the classroom. Multigrade teachers should have appropriate key teaching competencies which incorporate the suitable pedagogies, classroom management, monitoring and students' performance measurement. Moreover, the teachers must uphold professional conduct because it serves as a guide for teachers to steer an ethical and respectful course through their career in teaching. In multigrade teaching, varieties of cultures are being tapped. Hence, teachers should bear aptly

of ethics in-line of their professional codes. Multigrade teaching comprises social learning towards students.

Lastly, is the Social Developmental Theory of Lev Vygotsky depending on the "Zone of Proximal Development" (ZPD), this theory restates the significant level of development of a learner when he or she engages to a social, behavioral context. Moreover, in the multigrade aspect of learning during teacher's delivery of instruction, the lower grade level students tend to be paired by the upper-grade level students as to practice the peer tutoring of the learners in understanding a specified topic. These evaluate on how the learners assess their individuals' learning progress through asking the following questions such as What can I do? What I can do with help? And what I can't do? Furthermore, this focus on the students' learnings especially academically based on the teacher factor that influenced on how he or she delivers the instruction, being proficient and the peer factor that helps in assessing. By this, the effect towards the students can merely enhance their readiness to comprehend lessons and their behavioral aspects in the class.

To further understand the concept of this study, the diagram below will show the importance of the role of the teacher, the delivery of the instruction and the results or impact towards the recipients or students about the lesson designs created by the DepEd towards teachers that are teaching in multigrade classes.
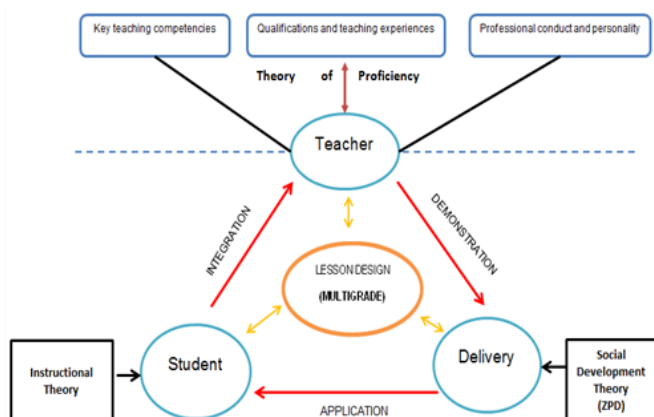

Figure 1. Conceptual Framework

III. RESEARCH METHODS AND DESIGN

This research is a quantitative study that seeks the effectiveness of the teacher's delivery in a multigrade context. The independent variable in this study is the Lesson Design, and the dependent variables are the teacher, student, delivery of instruction. This study utilizes the descriptive correlation method in determining the relationship between the independent variable and the dependent variables. Other variables in the study correspond to the different aspect of a multigrade teacher regarding one's qualifications and teaching experiences, professional conduct and personality, and teaching competencies. On the other hand, demonstration, application, and integration are the constituents of the delivery of instruction.

Furthermore, the sample for the study is the proportionate sampling technique. This sampling technique is used to select two teachers (using teacher's survey sheet) evaluated by their respective principal. 51 students taught by their two teachers used for the study. Additionally, the selections of respondents in this research are the pupils and teachers who are in the far-flung school areas of the District of Carmen, Cebu. In fact, there are seven existing multigrade schools in Carmen, Cebu out of 119 multigrade schools present in the Division of Cebu Region VII. The instruments used for the teacher are the Teacher's Survey Sheet to get their background and teaching experiences to have the appropriate data. On the other hand, Results-based Performance Management System (RPMS) is to scrutinize teacher's performance as observed by their principal or school head. Additionally, the instrument used for the students is the Student's Survey Sheet to determine their rating towards their teacher's personality and performance. In measuring students' progress academically, the applied instruments are the resulting scores of the standardized tests of the Department of Education of the three major subjects namely English, Mathematics, and Science in different grade levels such as Grade III and Grade IV.

Moreover, the profiling of the teachers both is in their middle adulthood that range from 25-65 y/o serves as their age profile. For their sex profile, they differ from one another because one teacher is female and the other is male while their teacher's status is the same since both are married. Lastly, the years of service of the teachers have equal experiences that range from 1.5-3.5 years.

The statistical treatments used are the Weighted Mean, Linear Regression, and T-test of the mean difference. Linear regression utilizes a linear method for showing the scalar dependent variables which are the teacher, student, and delivery of instruction with its connection to the independent variable which is lesson design. Furthermore, the function of weighted mean is where there is widely in descriptive statistical analysis especially index numbers. This treatment determines the dominant dimension of which affects the effectiveness of multigrade instruction. Also, having two samples is frequently used with slight sample sizes in t-test and having two populations' means with the presence of statistical examination. For a reason, this study composed of 3 variables that serve as the factors to determine the effectiveness of the DLL reflected the teacher's delivery of instruction and the direct effect to the students' performances. Furthermore, this paper is a collected quantitative data that enables descriptive correlation analysis of the relationship among variables through testing the following research hypothesis:

Hypothesis 1: There is a significant relationship between delivery of instruction and the teacher's profile.
Hypothesis 2: There is a significant relationship between teacher's delivery and the multigrade students' academic performance or academic achievement.
Hypothesis 3: There is a significant relationship between the multigrade lesson design and the delivery of instruction.

IV.   RESULTS AND DISCUSSION

This section presents the results of the data gathered vis-à-vis the effectiveness of the multigrade instructional strategies. The significant relationship between the independent variable and dependent variables delineate.

Subsequently, teacher's instructional method and content significantly complemented to the students' academic performance. Available data on the effectiveness of teacher's delivery based on multigrade Daily Lesson Log are presented.

Table 1: Students' Academic Performance in Math, English, and Science
Table 1.1 Grade 3 Students' Academic Performance in Math, English, and Science

Scores	Grade 3			Frequency	Percentage	Interpretation
	English	Science	Math			
16-25	29	24	23	76	77.55%	Above Average
13-15	6	6	10	22	22.45%	Average
1-12	0	0	0	0	0%	Below Average

Table 1.1 shows that the English subject has the highest number of students passed the above average scores based on the 50% passing rate of DepEd in public schools. In contrary to the results in the Science subject that has the lowest number of students who passed the test in the average scores. These mean that students excel more in the English topic rather than in Science and Mathematics as well. Moreover, even if the results of the three areas differ from each other, the percentage rate of students who passed the passing score from 16-25 is 77.55%. Hence, grade 3 students had excellence performance because most them passed the test having above average scores. These imply that majority of the students did learn from their teacher in the three subject areas despite the challenges in teaching in the multigrade context.

Table 1.2 Grade 4 Students' Academic Performance in Math, English, and Science

Scores	Grade 3			Frequency	Percentage	Interpretation
	English	Science	Math			
18-30	14	8	13	35	50.72%	Above Average
14-17	8	14	12	34	49.28%	Average
1-13	0	0	0	0	0%	Below Average

Table 1.2 shows that the Mathematics subject has the highest number of students who passed the test based on the 50% passing rate of DepEd in public schools. In contrary to the results in Science and English subject that has the lowest number of students who passed the test and having the same value of scores based on the passing rate. These mean that Grade 4 students excel more in Mathematics subject. The percentage rate of students who passed the passing of above-average scores from 18-30 has the percentage value of 50.72%. It states the general high satisfactory performances of the Grade 4 students in taking the test because most of the class passed the test. These imply students learned from their teacher in the all the three subject areas` despite the challenges of the flexibility of the teacher to teach two different grade levels in a multigrade classroom.

Table 2: Students' Rating
Table 2.1 (Teacher's Instructional Methods and Delivery of Content)

Indicators	Weighted Mean	Standard Deviation	Interpretation
A. Teacher's instructional methods and delivery of content 1. I learn from my teacher's discussion in all our subject areas.	3.94	0.24	Strongly Agree
2. My teacher gives us a lot of activities during class.	2.96	0.85	Agree
3.My teacher gives us the same lessons with the other grade levels.	3.10	1.04	Agree
4. My teacher discusses every concept in class.	3.39	0.85	Agree
5. My teacher introduces a new topic to us interestingly.	3.35	0.91	Agree
6. My teacher gives us feedback for better learning.	3.57	0.76	Strongly Agree
7. My teacher allows us to ask questions during class.	3.84	5.70	Strongly Agree
8. My teacher is good at helping us when we need help.	3.20	0.98	Agree
9. My teacher gives us assignment every day.	3.35	0.96	Agree
10. My teacher allows us to work in groups or pairs during lesson activities	3.24	0.95	Agree
TOTAL AVERAGE	**3.41**	**1.32**	**AGREE**

This table specifies that the highest weighted mean based from the indicators is the teacher's discussion in all subject areas that have the value of 3.94 interprets strongly agree while the lowest weighted mean based from the pointers is the giving a lot of activities during class that has 2.96 means agree. These imply that even though the students learned from the discussion of the teacher in all subject areas, still the teacher needs to facilitate more activities to enhance their learnings and skills. In a multigrade setting having a lot of exercises is an advantage in the teaching-learning process because it can gain students attention. Having varied activities will enhance the effectivity of instructional method and delivery of content towards the learners.

Table 2.2 (Teacher's Personality

Indicators	Weighted Mean	Standard Deviation	Interpretation
B. Teacher's personality			
11. My teacher treats us with equality and respect.	3.22	1.12	Agree
12. My teacher is strict in implementing class rules in our class.	2.75	1.40	Agree
13. I feel comfortable with my teacher in this class.	3.53	0.73	Strongly Agree
14. My teacher is kind and lovable.	3.61	0.87	Strongly Agree
15. My teacher is patient.	2.84	1.07	Agree
16. My teacher is approachable.	3.45	0.90	Agree
17. My teacher has humor.	3.28	1.12	Agree
18. My teacher is always punctual.	2.88	1.09	Agree
19. My teacher is thoughtful	3.49	0.78	Agree
20. My teacher is God fearing	3.80	0.53	Strongly Agree
TOTAL AVERAGE	3.29	0.96	**AGREE**

This table specifies that the highest weighted mean based from the indicators is that the teacher is God fearing that has the value of 3.80 reveals strongly agree while the lowest weighted mean based from the pointers is that the teacher is strict in implementing class rules in the class that has the value of 2.75 means agree. These imply that possessing virtues can contribute the teacher's character. Students are not afraid to learn from their teacher because of the teacher's pleasing personality such as being approachable and patient. This personality is significant towards diverse students in the multigrade classroom.

TABLE 3. Multigrade Teacher Performance Rating

RPMS Principal	N	Weighted Mean	Standard Deviation	Interpretation
4.05	23	3.254	0.624	Satisfactory
4.4	28	3.218	0.325	Satisfactory

The results mentioned above is all about the two Multigrade Teachers' Performance Rating evaluated by their different School Principal. Table 7 shows that the 2nd teacher delivers the instruction more effectively than the 1st teacher because it has a lower standard deviation in which teacher's performance clustered. Hence, it has also minimal disparity value of the weighted mean. Furthermore, still, both teachers have satisfactory performance.

Table 4. Significant difference of Multigrade Education Perceived by Learners and Principals

	N	Df	P-value	T-value	Decision	Interpretation
Learners' Rating	51	4	0.802	0.25	Accept H_1	There is a significant difference on the perception of multigrade teachers.
Teacher's Performance as perceived by Principals	2	1				

Table 4 shows that T-value is 0.25 and P-value 0.802. This lead to the decision in accepting the hypothesis. Hence, there is a significant difference on the perception of multigrade teachers. These imply that the view of the learners from the teacher's performance differs significantly to the insight of the principal.

Table 5. Significant difference of Students Academic in English, Science, and Math

Predictor	Coef SE	Coef	T	P
Constant	4.4559	0.3782	11.78	0.000
English	0.02249	0.01112	2.02	0.049
Science	-0.02803	0.01668	-1.68	0.100
Math	-0.00787	0.01132	-0.7	0.49

In this table, the T-value of the English subject is 2.02 which is the highest among the three. On the other hand, the Science has the lowest T-value which is -1.68. These indicate that the multigrade students have the highest academic performance in English rather than in Science and Math. Hence, the multigrade teachers successfully delivered the multigrade instruction in English. Through this, most multigrade students got high scores on this subject.

There is a significant linear relationship between teachers' performance and students' academic performance after utilizing the students' academic performance in English, Science and, Math. An empirical model is obtained which states that Teacher performance = 4.46 + 0.0225 English - 0.0280 Science - 0.0079 Math with an R-squared value of 14.9%. The strength of its correlation states that teachers' performance yields to students' mastery of academic performance. Furthermore, the increase of students' academic performance by 14.9% significantly explained by the teachers' performance.

V. CONCLUSION

This study reveals that students can acquire knowledge on how the teacher delivers the instruction in a multigrade setting because it reflected in their academic performances that shows on what subject they excel the most. Additionally, with the usage of the multigrade lesson design, the teacher's performance in delivering the instruction is efficiently conveyed towards the learners, and it redirects to the teacher's performance rating. In short, the significant relationship between the teacher's delivery and the multigrade students' academic performance or academic achievement as well as the significant relationship between the multigrade lesson design and the delivery of instruction guarantees the effectiveness of the multigrade instruction in-lined with the Kto12 curriculum standards. In the educational system specifically in the mountainous areas, multigrade is inevitable. This paper will be a contribution for further researches regarding the effectivity of multigrade instruction in-line with K-12 curriculum standards to strengthen the progress of the foundation of Education of the multigrade learners. This will also be a turning point for the multigrade teachers to enhance their teaching methods and strategies in instruction through actively participating seminars or training.

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