

**LEVELS OF PRODUCTIVITY AMONG ELEMENTARY MATHEMATICS
TEACHERS IN ZONE III, DIVISION OF ZAMBALES, PHILIPPINES**

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ABSTRACT

This research determined the Levels of Productivity among Elementary Mathematics Teachers in Zone III, Division of Zambales, Philippines. The study made use of descriptive research design with the aid of questionnaire as the main instrument in gathering data. The respondents were the two hundred forty-five elementary teachers who are teaching Mathematics in Zone III, Division of Zambales. The study utilized descriptive statistics and inferential statistics. The findings revealed that teacher – respondents' level of productivity was extremely productive in terms of teacher's attitude towards teaching mathematics, teacher's performance and very productive in terms of teacher's innovation in teaching. It was recommended that teachers should perform their duties in the highest degree of excellence; may apply ranges of teaching strategies to develop critical and creative thinking; and implements strategic intervention materials to improve their productivity and the mathematics performance of the learners.

Key Words: Teacher's Productivity, Mathematics Performance, Innovation, Attitude, and Motivation.

1. INTRODUCTION

Educational productivity is the efficient production of educational outcomes (Rolle, 2001). Teacher's productivity can be achieved through the use of valuable staff development programs which are vital instruments for ensuring the continuous growth of teachers in knowledge, skills and attitude in line with the changes in the education system and the expectations of the society (Ornstein and Levine, 2006; Afangideh, 2011).

In an academic organization, job motivation would produce an educator with high vitality. This refers the positive quality of manufacturing good products and during this case, it's good student performance. An individual who is very achievement motivated would tend to be very conscientious in his or her work and have a tendency to be skilled. Achievement motivation becomes the driving factor for future understanding and may be defined as a predisposition to strive for fulfillment. It is very important to note that, a motivated teacher will offer best in terms of achieving the expected goals in the school system (Orodho, 2013; Sava & Orodho, 2014).

Attitude is all about everything (that is psychological objects). Attitude is described as tendency for individuals to organize thought, emotions, and behaviors towards a psychological object

(Erdemir & Bakirci, 2009). Attitude towards the teaching profession is an essential issue in understanding teacher behavior, and feelings about teaching, their students and the school environment. Basically, teacher's attitudes towards their profession influence their performance, as well as on commitment to their roles and responsibilities.

Teachers develop negative attitudes and/or leave the profession for various reasons. Basically, teachers' attitudes towards their profession influence their performance, as well as on their commitment to their roles and responsibilities. It has been suggested that a teacher with a good disposition full of hope, faith and enthusiasm, reflects and disposes a positive attitude towards teaching. Stronge (2002), Williams (2003), Gourneau (2010), and Adu and Ade-Ajayi (2015) argued to some extent that there is a strong relationship between teachers' attitudes towards the teaching profession and effectiveness.

In the study made by Marroquin (2014), she found that teachers' attitudes can help or hurt student motivation, achievement and well-being. Negative teacher attitudes can impair academic achievement and increase students' psychological disorders and physical symptoms of stress. Teachers who use humiliation or sarcasm can leave a toddler feeling belittled. Discipline by fear and intimidation are often harmful to the student's future success. Teachers who are harsh in their display of authority or are indifferent toward their students or lessons can leave a lingering feeling of negativity with the scholar. Negative teacher attitudes also can damage students' psychological well-being.

Teacher commitment has been considered as a passion to the work. Passion is at the core of effective education. Day (2004) argues that zeal may be a need for a high-quality education. Passion encourages teachers to act because it is source of motivation (Vallerand, 2007). For that reason, passionate teachers can create excitement for learners to realize better. Hargreaves (1997) points out that without passion all pedagogical approaches fail. Therefore, the effect of passion on learner achievement is widely known. Hansen, 2001, in his plan to define passionate teacher states that passionate teachers can encourage learners to become more willing and attain better. Fink (2003) stresses that learners achieve better if they care and are enthusiastic for learning.

Professional development programs for teachers include supervision, in-service training, capacity building, seminars, workshops, conferences, fellowship programs, study leave, retraining and skill upgrading courses (Afangideh, 2011). These development programs also include teachers' meetings, study circles, training sessions, peer assistance and review, mentoring, book clubs, teachers' network and curriculum materials design (Nnabuo and Onyeike, 2007). Professional teacher development program has been found to have significant impact on pupils learning outcomes (Adesanya & Adesina, 2014) and teachers' productivity (Abokwara, 2000).

The researcher aimed to identify the Levels of Productivity among Elementary Mathematics Teachers in Zone III, Division of Zambales focusing on their attitude towards teaching mathematics, performance, and innovations in teaching. In relation to this, some related factors were considered like age, sex, civil status, position, years in service, highest degree obtained to

determine one's productivity.

2. STATEMENT OF THE PROBLEM

The study was conducted to determine the Levels of Productivity among Elementary Mathematics Teachers in Zone III, Division of Zambales.

Specifically, the study answered the following questions:

1. What is the profile of the respondents in terms of: age; sex; civil status; position; years in service; and highest degree obtained?
2. How may the level of productivity among Elementary Mathematics Teachers be described in terms of:
Teacher's attitude towards teaching mathematics;
Teacher's performance; and Teacher's innovations in teaching?
3. Is there a significant difference in the productivity level among Elementary Mathematics Teachers when grouped according to their profile variables?
4. Is there a significant difference on the productivity level among Elementary Mathematics Teachers as cited in problem number 2?

3. MATERIALS AND METHODS

The study utilized the descriptive-survey design. This method involves observing and describing the level of productivity among Elementary Mathematics Teachers in Zone III, Division of Zambales. In descriptive method, Calmorin (1994) as cited by Bagayana (2006), the study should focus on the present condition. The purpose is to seek out new truth, which can be available in different forms like increased quantity of data, a replacement generalization, or increased insights into factors, which are operating, the invention of a replacement causal relationship, a more accurate formulation of the matter to be solved and lots of others.

The survey questionnaire was the main instrument for data collection. The contents of the questionnaire were adapted from DepEd RPMS-PPST tool and the modified DepEd NCBTS-TSNA evaluation form. The overall number of indicators on the instrument was restricted to thirty items.

After the validation of the instrument, the researcher prepared a letter addressed to the Schools Division Superintendent, Division of Zambales, Philippines, requesting permission to conduct the study in Zone III. Upon the approval of the request letter, the researcher prepared a letter addressed to the Public Schools District Supervisor (PSDS) and principals requesting permission to distribute the questionnaires to the elementary teachers teaching Mathematics in their respective school. The teacher-respondents were requested for their voluntary participation in the study after they were given a copy of the survey-questionnaire and were given enough time to answer the questionnaire. The data gathered were tallied, tabulated, analyzed, and interpreted using descriptive statistics (percentage, frequency counts, and mean), and inferential statistics (ANOVA).

4. RESULTS AND DISCUSSIONS

Profile of the Respondents

Table 1. Distribution on the Respondents’ Profile Variables

Profile Variables		Frequency	Percentage
Age Mean = 40.03 or 40 years old	over 59	3	1.22
	55 – 59	29	11.84
	50 – 54	23	9.39
	45 – 49	32	13.06
	40 – 44	49	20.00
	35 – 39	41	16.73
	30 – 34	24	9.80
	25 – 29	29	11.84
	under 25	15	6.12
Sex	Male	55	22.45
	female	190	77.55
Civil Status	Single	52	21.22
	married	193	78.78
Position/ Designation	Master Teacher II	7	2.86
	Master Teacher I	14	5.71
	Teacher III	29	11.84
	Teacher II	49	20.00
	Teacher I	146	59.59
Years in the Service Mean = 12.95	over 34	2	0.82
	30-34	20	8.16
	25-29	18	7.35
	20-24	37	15.10
	15-19	29	11.84
	10-14	43	17.55
	5-9	36	14.69
	0-4	60	24.49
Highest Degree Obtained	With Doctoral Units	2	0.82
	Master’s Degree	19	7.76
	With Masteral Degree	119	48.57
	Bachelor’s Degree	105	42.86
Total		245	100.00

Age. The mean age of the respondents is 40.03 or 40 years old. Sex. Out of 245 total teacher-respondents, 55 or 22.45% are males and 190 or 77.55% are females. Civil Status. Out of 245 total teacher-respondents, 193 or 78.78% are married and 52 or 21.22% are single. The results revealed that majority of the teacher-respondents are married. Position/ Designation. Out of 245 total teacher-respondents, 7 or 2.86% are Master Teacher II; 14 or 5.71% are Master Teacher I; 29 or 11.84% are Teacher III; 49 or 20.00% are Teacher II; and 146 or 59.59% are Teacher I. Years in the Service. Out of 245 total teacher-respondents, 2 or 0.82% had served for over 34 years; 20 or 8.16% had served for 30 – 34 years; 18 or 7.35% had served for 25 – 29 years; 37 or 15.10% had served for 20 – 24 years; 29 or 11.84% had served for 15 – 19 years; 43 or 17.55% had served for 10 – 14 years; 36 or 14.69% had served for 5 – 9 years and 60 or 24.49% had served for 0 – 4 years. The mean years in the service of teacher-respondents are 12.95 years. Highest Degree Obtained. Out of 245 total teacher-respondents, 2 or 0.82% are with Doctoral units; 19 or 7.76% are master’s degree holder; 119 or 48.57% are with master’s units and 105 or 42.86% are Bachelor’s degree holder.

Level of Productivity of the Respondents

Table 2 Summary of Mean Rating on the Level of Productivity of the Respondents

Productivity	AWM	Descriptive Equivalent	Rank
Teachers’ Attitude Towards Teaching Mathematics	3.48	Extremely Productive	1
Teachers’ Performance	3.30	Extremely Productive	2
Teachers’ Innovations in Teaching	3.22	Very Productive	3
Overall Weighted Mean	3.33	Extremely Productive	

Presented in Table 6 are the Levels of Productivity of the teacher-respondents. Teachers’ attitude towards teaching mathematics obtained the highest overall weighted mean of 3.48, rank 1, with descriptive equivalent of extremely productive. Teachers’ performance (OWM = 3.30, rank 2) interpreted as extremely productive and Teachers’ Innovations in Teaching (OWM = 3.22, rank 3) interpreted as very productive respectively.

The grand mean of Level of Productivity of the respondents is 3.33, extremely productive as descriptive equivalent.

Significant Difference on the Level of Productivity of the Teacher-Respondents when grouped according to Profile Variables

Teachers’ Attitude Towards Teaching Mathematics

Table 3 Analysis of Variance to Test the Significant Difference of Level of Productivity of the Respondents in terms of Teacher’s Attitude Towards Teaching Mathematics when Grouped to Profile Variables

Source of Variation		Df	F	Sig.	Decision/ Interpretation
Age	Between Groups	8	1.15	0.33	Accept Ho Not Significant
	Within Groups	236			
	Total	244			
Sex	Between Groups	1	0.02	0.89	Accept Ho Not Significant
	Within Groups	243			
	Total	244			
Civil Status	Between Groups	1	4.65	0.03	Reject Ho Significant
	Within Groups	243			
	Total	244			
Position/ Designation	Between Groups	4	3.03	0.02	Reject Ho Significant
	Within Groups	240			
	Total	244			

Years in the Service	Between Groups	7	0.76	0.62	Accept Ho Not Significant
	Within Groups	237			
	Total	244			
	Between Groups	3	6.15	0.00	

Results shows that the significant values for age (0.33); sex (0.89); years in the service (0.62) are higher than 0.05 alpha level of significance. Therefore, the null hypothesis is accepted. There is no significant difference on the level of productivity in terms of teachers’ attitude as to age, sex, and years in the service profile variables.

The significant value for civil status (0.03); position/ designation (0.02); highest degree obtained (0.00) are lower than 0.05 alpha level of significance. Therefore, the null hypothesis is rejected. There is a significant difference on the level of productivity in terms of teachers’ attitude as to civil status, position/ designation, and highest degree obtained profile variables.

Teachers’ Performance

Table 4 .Analysis of Variance to Test the Significant Difference of Level of Productivity of the Respondents in terms of Teacher’s Performance when Grouped to Profile Variables

Source of Variation		Df	F	Sig.	Decision/ Interpretation
Age	Between Groups	8	0.87	0.54	Accept Ho Not Significant
	Within Groups	236			
	Total	244			
Sex	Between Groups	1	0.02	0.88	Accept Ho Not Significant
	Within Groups	243			
	Total	244			
Civil Status	Between Groups	1	4.17	0.04	Reject Ho Significant
	Within Groups	243			
	Total	244			
Position/ Designation	Between Groups	4	4.18	0.00	Reject Ho Significant
	Within Groups	240			
	Total	244			
Years in the Service	Between Groups	7	0.54	0.80	Accept Ho Not Significant
	Within Groups	237			
	Total	244			
Highest Degree Obtained	Between Groups	3	9.31	0.00	Reject Ho Significant
	Within Groups	241			
	Total	244			
	Total	244			

Results shows that the significant values for age (0.54); sex (0.88); and years in the service (0.80) are higher than 0.05 alpha level of significance. Therefore, the null hypothesis is accepted. There is no significant difference on the level of productivity of the respondents in terms of teachers’ performance as to age, sex, and years in the service profile variables.

The significant values for civil status (0.04); position/ designation (0.00); and highest degree obtained (0.00) are lower than 0.05 alpha level of significance. Therefore, the null hypothesis is rejected. There is a significant difference on the level of productivity in terms of teachers' performance as to civil status, position/ designation, and highest degree obtained profile variables.

Teachers' Innovations in Teaching

Table 5 Analysis of Variance to Test the Significant Difference of Level of Productivity of the Respondents in terms of Teacher's Innovation in Teaching When Grouped to Profile Variables.

Source of Variation		Df	F	Sig.	Decision/ Interpretation
Age	Between Groups	8	0.53	0.83	Accept Ho Not Significant
	Within Groups	236			
	Total	244			
Sex	Between Groups	1	0.89	0.35	Accept Ho Not Significant
	Within Groups	243			
	Total	244			
Civil Status	Between Groups	1	0.17	0.68	Accept Ho Not Significant
	Within Groups	243			
	Total	244			
Position/ Designation	Between Groups	4	3.83	0.00	Reject Ho Significant
	Within Groups	240			
	Total	244			
Years in the Service	Between Groups	7	0.71	0.67	Accept Ho Not Significant
	Within Groups	237			
	Total	244			
Highest Degree Obtained	Between Groups	3	3.70	0.01	Reject Ho Significant
	Within Groups	241			
	Total	244			
	Within Groups	241			
	Total	244			

Results showed that the significant values for age (0.83); sex (0.35); civil status (0.68); and years in the service (0.67) are higher than 0.05 alpha level of significance. Therefore, the null hypothesis is accepted. There is no significant difference on the level of productivity of the respondents in terms of teachers' innovation in teaching as to age, sex, civil status, and years in the service profile variables.

The significant value for position/ designation (0.00) and highest degree obtained (0.01) are lower than 0.05 alpha level of significance. Therefore, the null hypothesis is rejected. There is a significant difference on the level of productivity in terms of teachers' innovation in teaching as to position/ designation and highest degree obtained profile variables.

Significant Difference on the Level of Productivity among Elementary Mathematics Teacher's in terms of Teacher's Attitude, Teacher's Performance, and Teacher's Innovations in Teaching

Table 6 .Analysis of Variance to Test the Significant Difference on the Level of Productivity among Elementary Mathematics Teacher’s in terms of Teacher’s Attitude Towards Teaching Mathematics, Teacher’s Performance, and Teacher’s Innovations in Teaching

SUMMARY				
<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Teachers' Attitude	245	853.60	3.48	0.18
Teachers' Performance	245	807.40	3.30	0.20
Teachers' Innovations in Teaching	245	788.60	3.22	0.20

The computed p value of 0.00 is lower than 0.05 alpha level of significance. Hence, the null hypothesis is rejected. There is a significant difference on the level of productivity among elementary mathematics teachers in terms of teachers’ attitude, teacher’s performance, and teacher’s innovations in teaching.

In line with an acceptance that students will need new skills to deal with and prosper within the new changing world of data technology there's now an increasing body of research that indicates what it's about teachers’ attributes and skills that's learner- oriented cause desirable student outcomes. Darling-Hammond (2000) notes that teaching quality is one of the most important factors contributing to student achievement, more significant than just mere one-way transference of information.

5.CONCLUSIONS

Based on the findings obtained in the study, the researcher concluded that:

- 1.Majority of the teacher-respondents are forty years old, female, married, permanent, Teacher I, more than twelve years in service, and with master’s units.
- 2.The teacher – respondents’ level of productivity is extremely productive in terms of teachers’ attitude towards teaching mathematics and teachers’ performance and very productive in terms of teachers’ innovation in teaching. In general, the respondents’ level of productivity is extremely productive.
- 3.There is no significant difference on the level of productivity in terms of teachers’ attitude as to age, sex, and years in the service profile variables. There is a significant difference on the level of productivity in terms of teachers’ attitude as to civil status, position/ designation, and highest degree obtained profile variables.

When it comes to teachers’ performance, there is no significant difference on the level of productivity of the respondents in terms of teachers’ performance as to age, sex, and years in the service profile variables. However, there is a significant difference on the level of productivity in terms of teachers’ performance as to civil status, position/ designation, and highest degree obtained profile variables.

When it comes to teachers’ innovation in teaching, there is no significant difference on the level of productivity of the respondents in terms of teachers’ innovation in teaching as to age, sex, civil status, and years in the service profile variables. There is a significant difference on the level of productivity in terms of teachers’ innovation in teaching as to position/ designation and

highest degree obtained profile variables.

4. There is a significant difference on the level of productivity among elementary mathematics teachers in terms of teachers' attitude, teacher's performance, and teacher's innovations in teaching.

6. RECOMMENDATIONS

Based on the findings and conclusions, the researcher offers the following recommendations to increase the level of teacher's productivity:

1. Teachers should perform their duties in the highest degree of excellence.
2. Teachers need to study the lessons in advance to have an outstanding result in the teaching and learning process.
3. Teachers may apply ranges of teaching strategies to develop critical and creative thinking, as well as other higher order thinking skills.
4. Teachers have to select, develop, organize and use appropriate teaching and learning strategies.
5. Teachers may develop modules, self-learning kit (SLK) and implements strategic intervention materials to improve the mathematics performance of the learners.
6. The conduct of follow up study that would include a wider scope (e.g. Schools in other Zones in the Division of Zambales) for validation purpose is highly recommended.

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