

COACHING STRATEGIES OF MATHEMATICS BASIC EDUCATION TEACHERS

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Abstract. This study aimed to determine the profile and coaching strategies of elementary and secondary mathematics teachers in the Province of Sorsogon. The data was gathered through the use of survey questionnaire and interview guide formulated by the researcher. This study used the quantitative and qualitative method of research. This method is also called the mixed method of research which provides strengths that offset the weakness of both quantitative and qualitative research. The respondents of this study were the coaches of mathematics competitions both in elementary and secondary schools in the different schools in the Division of Sorsogon. The profile of the elementary and secondary Mathematics coaches varies in terms of highest educational attainment, length of experience and trainings attended on coaching. These differ also in terms of the level of competition attended by the coaches such as school level, district level, division level and regional level. There were varied coaching strategies employed by the teachers in coaching their contestants. These strategies affect the performance of the students in the competitions. The predictors to successful coaching depend on the skills, coaching strategies, techniques and pedagogy used by the coaches. These predictors are indicators which show how coaches affect their contestants' performance in Math competitions. There were different challenges met by the teachers in coaching Mathematics contestants. These challenges hinder the success of coaching as well as the performance of the contestants. Further. The proposed coaching handbook in Mathematics was developed to improve the coaching skills of the teachers and the performance of the contestants.

Keywords: *Coaching Strategies, Coach, Mathematics, Basic Education Teachers, Predictors*

I. INTRODUCTION

Coaching, like teaching is a process which intends to help individuals improve their performance in various domains. It enhances their personal effectiveness, personal development, and personal growth (Hamlin et.al). Indeed, coaching as a strategy improves teaching and learning across overall system.

The change in our curriculum and educational system requires a shift as well as on the strategy used for quality learning. With the implementation of the K-to-12 Curriculum, changes and enhancements were made in the delivery of instruction along the various subject areas. And foremost among these subjects were Science and Mathematics. These are now taught in a spiral progression where complexity increases as grade level progresses. In Mathematics for instance, the framework dwells on the twin goals which are critical thinking and problem solving being a subject that pervades life at any age and in any circumstance. As a subject, its value goes beyond the classroom and school and, therefore must be learned comprehensively and with much depth.

Learning Mathematics is perceived several times as the hardest subject in school. It seems to be very hard for students. To many, the subject has become the weakness of the learners who don't excel or perform well when it comes to those activities which involve numbers or arithmetic. Meanwhile, those who are blessed naturally with numerical skills, they consider the challenges inside the circle of Mathematics as a piece of cake.

One of the Mathematics competitions which is done up to the National level is the Mathematics Association of the Philippines (MTAP) competition, The Metrobank-MTAP-DepEd Math Challenge which comes with the aim of developing mathematical skills among students. Participated in by a variety of students with different capabilities of winning the challenge, this competition creates excellence in the numerical skills of the participants.

Joining a competition requires a skilled individual who shows abilities, talents and passion. In addition, a participant should be well trained and taught by professional educators called coaches. On the other hand, a coach is

the one who does teaching, instructing, coaching, mentoring and facilitating. Overall, coaches' contributions may lead to the success of the participant.

As Chris Confer (2006) stated, "our goal as Math coaches is not to add a little spice, salt, or pepper to the stew of Mathematics instruction, but instead to alter the menu entirely". A coach doesn't only require students to memorize formulas and skills about Math. A good coach will let the student incorporate those skills and formulas in the real life situation.

The Division of Sorsogon has met challenges in terms of excelling in Mathematics competitions. These are manifested in the experiences of the Mathematics coaches and their perceptions on the challenges met. A concrete example of this is in joining the Metrobank-MTAP-DepEd Math Challenge. For many years of joining the competitions, few made it to the top. Some reached the regional level, however, some did not achieve the required score.

As shown in the previous results, the highest scores obtained for grades 6 and 10 during the School Year 2017-2018 were 31 and 35. School Year 2018-2019 recorded 32 and 28 while the record for School Year 2019-2020 showed 32 and 47. These scores are noticeably low, though these scores qualified for the regional competition since the cut off score is fifty percent of the perfect score which is 60 points. Notice however that in the School Year 2018-2019, Grade 10 top scorer did not qualify in the regional competition since the cut off score is 30 points. Grade 10 top scorer is only 28 points which is below fifty percent of the perfect score of 60 points.

With the above mentioned scenario and situation, it is the main objective of the researcher to determine profile and predictors to successful Mathematics coaching in the Division of Sorsogon. This aimed to formulate policy that will help improve the performance of the participants as well as their coaches.

II. OBJECTIVES OF THE STUDY

Generally, this study aimed to determine the profile and coaching strategies of Mathematics teachers. Specifically, it determined the profile of the elementary and secondary Mathematics coaches in terms of Highest educational qualification, Length of experience as coach, and trainings attended on coaching. In addition, it also determined the coaching strategies the elementary and secondary Mathematics coaches and the predictors to successful coaching. Moreover, this identified the challenges met by elementary and secondary Mathematics coaches in coaching Mathematics contestants.

III. METHODS

This study used the quantitative and qualitative method of research to determine the profile of elementary and secondary Mathematics coaches in terms of highest educational attainment, length of experience as coach and the trainings attended on coaching. Furthermore, the coaching strategies and the predictors to successful coaching were also determined. Likewise, it also determined the challenges met in coaching mathematics contestants. An interview guide and a survey questionnaire were used to gather the needed data. The data gathered was subjected to different measures such as frequency count, percentage and ranking. Frequency count and percentage were used to determine the profile of the respondents along the identified variables. The challenges met by the coaches and the strategies were analyzed through the use of ranking. To determine the significance of the profile of the respondents, the number coaching strategies used and the trainings attended by the respondents to the predictors to successful coaching, logistic regression analysis was used.

IV. RESULTS AND DISCUSSION

Profile of the Elementary and Secondary Mathematics Coaches.

Table 2.1

Profile of Elementary Mathematics Coaches

Profile	Highest Level of Competition Participated								Over-all	
	School		District		Division		Regional			
	f	%	f	%	f	%	f	%	f	%
Educational Attainment										
Doctorate Degree	0	0	0	0	0	0	0	0	0	0
Doctoral Units	0	0	0	0	3	1.4	0	0	3	1.4
Master's degree	0	0	9	4.1	6	2.8	2	0.9	17	7.8

Masteral Units	19	8.7	72	33.0	45	20.6	2	0.9	138	63.3
Bachelor Degree	10	4.6	36	16.5	13	5.9	1	0.5	60	27.5
Total	29	13.3	117	53.7	67	30.7	5	2.3	218	100
Number of Years as Coach										
Less than 1	6	2.8	0	0	0	0	0	0	6	2.8
1 year	4	1.8	5	2.3	0	0	0	0	9	4.1
2 years	0	0	7	3.2	2	2.3	0	0	9	4.1
3 years	5	2.3	20	9.2	2	2.3	0	0	27	12.4
4 years	4	1.8	10	4.6	4	1.4	0	0	18	8.3
5years and above	10	4.6	75	34.4	59	27.1	5	2.3	149	68.3
Total	29	13.3	117	53.7	67	30.7	5	2.3	218	100
Number of Trainings Attended										
None	26	11.9	101	46.3	52	23.8	5	2.3	184	84.4
1 -2 trainings	3	1.4	13	6.0	14	6.4	0	0	30	13.8
3-4 trainings	0	0	3	1.4	1	0.5	0	0	4	1.8
5 -6 trainings	0	0	0	0	0	0	0	0	0	0
More than 6 trainings	0	0	0	0	0	0	0	0	0	0
Total	29	13.3	117	53.7	67	3.7	5	2.3	218	100

The data revealed that in terms of educational attainment, 138 (63.3%) have masteral units, 60 (27.5%) have bachelor degree and 12 (7.8%) have master's degree out of 218 elementary Mathematics coaches. On the other hand, as to the number of years as coach, 144 (68.3%) have rendered 5 years and above, 27 (12.4) have 3-year experience as coach, 18 (8.3%) have 4 years, 9 (4.1%) have less than 1 year and 2-year experience and 6 (2.8%) have less than 1 year. Also, in terms of trainings attended, 184 (84.4) have not attended trainings related to coaching and 30(13.8%) have attended 1-2 trainings.

This implied that educational attainment, length of experience and training attended by the coaches affect the number of winning in Mathematics competitions. Moreover, obtaining post graduate degree help teachers for their professional growth, as they indulge themselves in higher education they can acquire skills and upgrade themselves with the new trends in education through the help of experts and even their colleagues. Likewise, attending trainings especially on coaching can improve their abilities to train contestants and transfer their skills for them to win in Mathematics competitions. These implications are supported by the statements of the respondents who are coaches in Mathematics competitions.

“Trainings about content and pedagogy as well as coaching strategies can be of great help in improving the performance of the pupils in Mathematics competition”, mentioned by Teacher A. She also added that *“the length of experience and the expertise of the coach is one of the factors that affect the performance of the pupil in Mathematics competition”*.

For secondary mathematics coaches, in terms of educational attainment 166 (65.4%) have masteral units, 63 (24.8%) have bachelor's degree (14 (5.5%) have obtained master's degree and 11 (4.3%) have doctoral units. In terms of the number of years as coach, 125(49.2%) have 5 years and above experience, 32 (12.6%) have 2 years and 3 years, 28(11%) have rendered less than 1 year, 22 (8.7) have 4-year experience and 15 (5.9%) have 1-year experience as coach. As to the number of trainings attended, 230 (90.5%) out of 254 respondents have not attended trainings, 17 (6.7%) have 1-2 trainings and 7 (2.8%) have attended 3-4 trainings.

The findings implied that some of the factors which impact the success in Mathematics competitions are the educational attainment of the coaches, the length of experience and the trainings attended. These definitely influence the number winning in a contest and affect the competencies of the teachers to coach their contestants. Although majority of them have 5 years and above experience as coach, they did not attend trainings in the regional or national level. Equipping the coaches with the necessary skills and pedagogy in coaching is vital in achieving higher level of winning. Furthermore, having the initiative from the coaches to pursue their graduate studies is also

helpful and an indication that they are willing to upgrade themselves with the new skills, strategies and coaching techniques.

**Table 2.2
Profile of the Secondary Mathematics Coaches**

Profile	Highest Level of Competition Participated								Over-all	
	School		District		Division		Regional			
	f	%	f	%	F	%	f	%	f	%
Educational Attainment										
Doctorate Degree	0	0	0	0	0	0	0	0	0	0
Doctoral Units	1	0.4	1	0.4	7	2.8	2	0.8	11	4.3
Master's degree	0	0	5	2.0	5	2.0	4	1.6	14	5.5
Masteral Units	25	9.8	68	26.7	58	22.8	15	5.9	166	65.4
Bachelor Degree	19	7.5	31	12.2	12	4.7	1	0.4	63	24.8
Total	45	17.7	105	41.3	82	32.3	22	8.7	254	100
Number of Years as Coach										
Less than 1	17	6.7	11	4.3	0	0	0	0	28	11.0
1 year	6	2.4	8	3.1	1	0.4	0	0	15	5.9
2 years	5	2.0	19	7.5	8	3.1	0	0	32	12.6
3 years	5	2.0	14	5.5	13	5.1	0	0	32	12.6
4 years	3	1.1	9	3.5	9	3.5	1	0.4	22	8.7
5years and above	9	3.5	44	17.3	51	20.1	21	8.3	125	49.2
Total	45	17.7	105	41.3	82	32.3	22	8.7	254	100
Number of Trainings Attended										
None	43	16.9	88	34.6	79	31.1	20	7.9	230	90.5
1 -2 trainings	1	0.4	13	5.1	2	0.8	1	0.4	17	6.7
3-4 trainings	1	0.4	4	1.6	1	0.4	1	0.4	7	2.8
5 -6 trainings	0	0	0	0	0		0	0	0	0
More than 6 trainings	0	0	0	0	0		0	0	0	0
Total	45	17.7	105	41.3	82	32.3	22	8.7	254	100

Coaching Strategies

The data revealed that the top five strategies mostly utilized by the elementary Mathematics teachers are asking questions to test the student's understanding which has a frequency of 138 in rank 1 followed by the scheduling practice with a frequency of 114 that is ranked 2. Similarly, there are 112 teachers using the strategy of focusing the review on topics in which the students are weak in rank 3 and show and tell with 110 teachers using this strategy in rank 4. Then, in rank 5, the use of exchange of ideas strategy by 103 teachers came out as ranked 5.

**Table 3.1
Coaching Strategies of Elementary Mathematics Teachers**

Strategies	Highest Level of Competition Participated								Over-all	
	School		District		Division		Regional			
	f	Rank	f	Rank	f	Rank	f	Rank	f	Rank

Concept Attainment Strategy	10	6.5	43	8.5	43	3	2	10.5	98	8
Concept Formation Strategy	10	6.5	53	5	36	9	2	10.5	101	7
Conducting Speed Test	13	4	45	7	41	4.5	3	3.5	102	6
Show and Tell	14	3	57	2.5	37	7.5	2	10.5	110	4
Leverage prior knowledge	5	12	35	10	24	13	1	13	65	13
Scheduling Practice	15	1.5	56	4	41	4.5	2	10.5	114	2
Ask question to test understanding	15	1.5	74	1	47	1	2	10.5	138	1
Focusing on weaker topics	9	8	57	2.5	44	2	2	10.5	112	3
Instill cooperation	12	5	31	12.5	32	10	2	10.5	77	10
Exchange of Ideas	8	9.5	52	6	39	6	4	1	103	5
Sharing responsibilities	4	13	31	12.5	37	7.5	3	3.5	75	11
Talk time	6	11	33	11	28	11	3	3.5	70	12
Providing feedback	8	9.5	43	8.5	27	12	3	3.5	81	9

This implied that employing the appropriate strategies is beneficial to the performance of the students in the competitions. Coaching strategies can produce positive outcomes and can help develop the skills of the contestants. Choosing what to employ will depend on the level of capacity and needs of the students. If the students have mastered some topics, they have to focus on a weaker one. Focusing on the least learned competencies based on the result of the test can improve their performance for the next competitions.

“I believe that there is no better way to learn and remember Math topics than to know their significance in real-life situations. Also, since most Mathematics competitions are time-pressured, it is important to train students to answer questions quickly but carefully. It is also very important that the students learn and practice the concept of repetitive learning since encountering a specific topic repetitively helps them remember how to solve it”, Teacher I said.

**Table 3.2
Coaching Strategies of the Secondary Mathematics Teachers**

Strategies	Highest Level of Competition Participated								Over-all	
	School		District		Division		Regional			
	f	Rank	f	Rank	f	Rank	f	Rank	f	Rank
Concept Attainment Strategy	14	8.5	35	9	44	7	14	6.5	107	7.5
Concept Formation Strategy	14	8.5	46	6	33	10	14	6.5	107	7.5
Conducting Speed Test	15	7	45	7	53	2	14	6.5	127	5
Show and Tell	17	5.5	36	8	35	9	15	4	103	9

Leverage prior knowledge	10	11.5	27	12.5	23	13	8	13	68	13
Scheduling Practice	21	2.5	67	2	53	2	14	6.5	155	2
Ask question to test understanding	24	1	68	1	52	4	18	1	162	1
Focusing on weaker topics	21	2.5	52	3	46	5	16	3	135	4
Instill cooperation	10	11.5	27	12.5	36	8	12	11	85	10
Exchange of Ideas	19	4	51	4	53	2	17	2	140	3
Sharing responsibilities	9	13	31	11	30	11	13	9	83	12
Talk time	13	10	33	10	26	12	12	11	84	11
Providing feedback	17	5.5	48	5	45	6	12	11	122	6

From the table presented, the secondary Mathematics teachers used varied strategies in coaching. Among them, the top 5 are the following; Rank 1 is asking questions to test understanding with a total number of 162, rank 2 with a frequency of 155 is the scheduling practice strategy and exchange of ideas in rank 3 which has 140 frequencies. Rank 4 is focusing on weaker topics with 135 and rank 5 is conducting speed test with a total of 127.

The results implied that utilizing effective strategies can both improve the performance of the contestants and coaches. Coaches should employ strategies which they know are best for their students. By testing the ability of the contestants, they will know where to start and what to give. Moreover, rigid review and appropriate planning on the coaching mechanism can make them succeed in a competition. Winning cannot be achieved easily in just one phase, rather it is a long and challenging endeavor that needs ample time to prepare, coupled with determination and the application of various strategies.

“To improve the performance of participants in Math competitions, they must be given longer time to prepare. Coaches must be able to provide varied review materials. Aside from the support of the school, the guidance of the contestant’s family can influence the students to strive harder”, added by Teacher D.

Predictors to Successful Coaching

Table 4.1

Predictors to successful coaching (Elementary coaches)

Level of Competition	School	District	Division	Regional
Constant	Baseline Data	-1.316 (0.887)	-5.631 (1.113)	-78.511 (11590.281)
Educational Attainment		0.479 (0.391) * 0.221	0.423 (0.280) * 0.131	0.844 (0.701) * 0.228
No. of years as coach		0.529 (0.151) * 0.000	0.751 (0.211) *0.000	14.636 (2318.056) * 0.995
Trainings Attended		0.114 (0.392) * 0.771	0.012 (0.212) * 0.954	-16.582 (4282.193) *0.997
No. of Coaching strategies Used		-0.008 (0.080) *0.922	0.119 (0.048) * 0.014	0.075 (0.131) * 0.567
Coefficient Of Determination (R²)		0.159	0.230	0.193
No. of Observations		146	213	218

Legend: (-) - Significant Error* - Significant Value

It shows that there were 146 total observations from the respondents that have coached the school up to the district level. The computed value for educational attainment, number of years as coach, trainings attended and number of coaching strategies used were 0.479, 0.529, 0.114 and -.0008 respectively. The coefficient of determination was 0.159 or 15.9%. For the division level, a total of 213 total observations from the respondents that have coached the school, district and up to the division level were all included. The computed value for educational attainment is 0.423, 0.751 for the number of years as coach, 0.012 for the trainings attended and 0.119 for the number of coaching strategies used. The coefficient of determination for this level was 0.230 or 23.0%. In the regional level, the computed values were 0.844, 14.636, -16.582 and 0.075 for educational attainment, number of years as coach, trainings attended and number of coaching strategies used respectively. The coefficient of determination is 0.193 or 19.3%.

The data means, that the predictor that mainly contributes to successful coaching in the district level which has a value of 0.529 or 52.9% was the number of years as a coach. This model has a coefficient of determination of 0.159 or 15.9% of the observations was attributed to the predictor. For the division level the predictors for successful coaching at this level were number of years as a coach and the number of coaching strategies used with the p-value of 0.000 and 0.014, respectively. This model has a coefficient of determination of 0.230 or 23.0% of the observations attributes to these predictors. There were no predictors identified among the respondents who successfully coached the regional level since there were only 5 participants at this level from a total of 218 participants. The sample size at this level will results to over-fitting of model.

The results implied that not all of the profile of coaches contributes to successful coaching. This can be seen in the district level coaches where only their number of years as coaches contributes to successful coaching. There are other factors that influence the educational attainment of coaches in this level. Therefore, a single profile of coaches may result to successful coaching in the different levels of competitions.

Table 4.2
Predictors to successful coaching (Secondary coaches)

Level of Competition	School	District	Division	Regional
Constant	Baseline Data	-1.426 (0.704)	-4.387 (0.712)	-15.940 (5.416)
Educational Attainment		0.468 (0.371) * 0.207	0.896 (0.275) * 0.001	0.941 (0.357) * 0.008
No. of years as coach		0.334 (0.120) * 0.005	0.459 (0.110) *0.000	2.215 (1.026) * 0.031
Trainings Attended		0.154 (0.232) * 0.507	0.607 (0.287) * 0.035	-0.086 (0.307) *0.079
No. of Coaching strategies Used		-0.098 (0.064) *0.124	0.087 (0.046) * 0.057	0.180 (0.068) * 0.008
Coefficient Of Determination (R²)		0.152	0.271	0.340
No. of Observations		150	232	254

Legend: (-) - Significant Error* - Significant Value

The table shows that there are 150 total observations from the respondents that have coached the school and district level. The computed value for educational attainment, number of years as coach, trainings attended, and number of coaching strategies used were 0.468, 0.334, 0.154 and -.0098 respectively. The coefficient of determination is 0.152 or 15.2%. For the division level, a total of 232 total observations from the respondents that have coached the school, district and the division level. The computed value for educational attainment is 0.896, 0.459 for the number of years as coach, -0.67 for the trainings attended and 0.087 for the number of coaching strategies used. The coefficient of determination for this level is 0.271 or 27.1%. In the regional level, the computed values were 0.941, 2.215, -0.086 and 0.180 for educational attainment, number of years as coach, trainings attended and number of coaching strategies used respectively. The coefficient of determination is 0.340 or 34.0%.

The results implied that the number of years as coach attributed to the predictors of successful coaching. The experience of the teachers in coaching greatly influences the success of the mathematics contestants thus, enable them to become successful coach as well.

Table 4.3

Predictors to successful coaching
(Combined Elementary and Secondary coaches)

Level of Competition	School	District	Division	Regional
Constant	Baseline Data	-1.298 (0.537)	-4.50669 (0.54615)	-14.711 (4.735)
Educational Attainment		0.426 (0.261) * 0.103	0.67425 (0.18627) * 0.00029	0.908 (0.301) * 0.003
No. of years as coach		0.425 (0.089) * 0.000	0.50021 (0.091) *0.000	1.917 (1.923) * 0.038
Trainings Attended		0.148 (0.197) * 0.453	-0.291 (0.155) * 0.059	-0.331 (-0.383) *-0.388
No. of Coaching strategies Used		0.057 (0.049) *0.241	0.101 (0.033) * 0.002	0.148 (0.058) * 0.010
Coefficient Of Determination (R²)		0.161	0.224	0.247
No. of Observations		296	445	472

Legend: (-) Significant Error*- Significant Value

The table for combined elementary and secondary coaches shows that a total 296 observations for the respondents that have coached the school and district level. The computed value for educational attainment, number of years as coach, trainings attended, and number of coaching strategies used are 0.426, 0.425, 0.148 and 0.057 respectively. The coefficient of determination is 0.161 or 16.1%. For the division level, a total of 445 total observations from the respondents that have coached the school, district and the division level. The computed value for educational attainment is 0.67425, 0.50021 for the number of years as coach, -0.291 for the trainings attended and 0.101 for the number of coaching strategies used. The coefficient of determination for this level is 0.224 or 24.4%. In the regional level, the computed values are 0.908, 1.917, 0.331 and 0.148 for educational attainment, number of years as coach, trainings attended and number of coaching strategies used respectively. There were 472 total observations were observed and the coefficient of determination in this level is 0.247 or 24.7%.

The results implied that both in elementary and secondary level, the number of years as coach is the main predictor to successful coaching. Experience matters and it has a huge impact on the performance of the contestants particularly in improving skills and students' capacity.

In addition, the respondents identified the attitudes, habits and skills developed among the coachee. From the data gathered it can be inferred that improving the skills and students' capacity emerged as the top predictor to successful coaching which was identified by 350 teachers in rank 1. The development of independent learning among contestants was picked by 341 coaches ranked 2. Likewise, the 302 teachers chose the changing the student behavior or attitudes towards competition in rank 3. The development of student's habit in learning which has a frequency of 288 which is ranked 4 while improving the performance in the contest was identified by 273 teachers in rank 5. Then, in rank 6 was the increasing the level of performance in National Standardized test with frequency of 176.

The findings implied that coaches should possess the skills in coaching and capacitate themselves in order to improve the performance of the students in competitions. Possessing the appropriate skills and pedagogy in coaching can develop students to become competitive as well as increase the level of performance in contests and even the national standardized test.

Moreover, the attitude of the students is also influenced by the coaching skills of the teachers. The changed in student behavior or attitudes towards competition is indeed an indicator of successful coaching.

Challenges met in Coaching Mathematics Contestants by Elementary and Secondary Teachers

The data revealed that the five most challenges met are the lack of training with a frequency of 156 in rank 1 followed by the time constraint/insufficient time for coaching with frequency of 137 ranked 2. Then, study habits of the contestants were met by 132 coaches in rank 3. In addition, insufficient materials became a challenge by 121 coaches in rank 4. Also, the heavy teaching load of the coaches has a frequency of 119 which is rank 5.

This implied that without proper trainings, coaches could hardly develop competitive students. It is a fact that trainings can effectively capacitate and upgrade the knowledge, pedagogy and techniques of the teachers in coaching. The result has also an implication, that contestants should be provided with review materials for them to be motivated and will have a variety of learning resources. Coaches may also be given lesser teaching loads and other designations so that they can focus and will have enough time to coach their contestants.

Table 5.1

Table 5. Challenges Encountered by the Mathematics Coaches (Elementary)

Challenges	Highest Level of Competition Participated								Over-all	
	School		District		Division		Regional			
	f	Rank	f	Rank	f	Rank	f	Rank	F	Rank
Lack of training	19	2	88	1	44	2	5	1	156	1
Lack of long term program in Mathematics	5	8	46	6	27	6	2	6.5	80	6
Insufficient materials for review	17	3.5	68	3	34	5	2	6.5	121	4
Budget and resourcing constraints	7	6	41	7	19	7	3	3.5	70	7
Lack of support from school	2	9.5	6	10	2	10	0	10	10	10
Time constraint/insufficient time for coaching	21	1	67	4	45	1	4	2.5	137	2
Teaching load of the coaches	14	5	65	5	37	4	3	3.5	119	5
Personal motivation	6	7	13	9	7	8	1	8.5	27	8
Study habits of the contestants	17	3.5	73	2	38	3	4	2.5	132	3
Criticisms after the contests	2	9.5	14	8	6	9	1	8.5	23	9

According to Teacher I, “the fact that I have other duties as a teacher and that the students have other academic requirements to accomplish makes it challenging for us to conduct reviewsessions. There is also significantly lesser time and opportunities for us to prepare for the competition”. On the other hand, Teacher C said that “the challenges met in coaching were the attitude of the contestant, lack of time and lack of review materials”.

It can be gleaned from the data below, that in the secondary level, the top 5 challenges met are the following; Lack of training with 191 frequencies ranked 1, followed by time constraints/ insufficient time for coaching with a frequency of 190, and rank 3 is insufficient materials with 165. Another challenge encountered is the teaching loads of the coaches in rank 4 with a frequency of 132 and rank 5 is the study habits of the contestants with 129 frequencies.

This is an implication that coaches and contestants should be both willing to be trained. In addition, parents should also be involved in terms of students’ activities at home. They have to guide them on their school tasks so that even at home, there will be continuous review and practice. This factor can help them survive or win on the competitions. In doing so, the process of coaching will become effective because both of them are motivated to learn and re-learn.

Table 5.1
Challenges Encountered by the Mathematics Coaches (secondary)

Challenges	Highest Level of Competition Participated								Over-all	
	School		District		Division		Regional			
	f	Rank	f	Rank	f	Rank	f	Rank	F	Rank
Lack of training	35	1	79	1	60	2.5	17	2	191	1
Lack of long term program in Mathematics	14	7	38	6.5	37	7	14	4	103	7
Insufficient materials for review	30	2	60	3	61	1	14	4	165	3
Budget and resourcing constraints	21	4	38	6.5	56	4	13	6	128	6
Lack of support from school	2	10	9	10	13	9.5	5	10	29	10
Time constraint/insufficient time for coaching	26	3	75	2	60	2.5	29	1	190	2
Teaching load of the coaches	16	6	50	5	52	5	14	4	132	4
Personal motivation	9	8.5	19	8	13	9.5	7	8	48	8
Study habits of the contestants	20	5	51	4	47	6	11	7	129	5
Criticisms after the contests	9	8.5	11	9	15	8	6	9	41	9

“To improve the performance of participants in Mathematics competitions, they must be given longer time to prepare. Coaches must be able to provide varied review materials. Aside from the support of the school, the guidance of the contestant’s family can influence the students to strive harder”, added by Teacher D.

V. CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of the study, these conclusions were formulated. The profile of the elementary and secondary Mathematics coaches varies in terms of highest educational attainment, length of experience and trainings attended on coaching. These differ also in terms of the level of competition attended by the coaches such as school level, district level, division level and regional level. There were varied coaching strategies employed by the teachers in coaching their contestants. These strategies affect the performance of the students in the competitions. The predictors to successful coaching depend on the number of years as coach, educational attainment, and trainings attended by coaches. Likewise, attitudes, skills, coaching strategies, techniques and pedagogy used by the coaches are indicators which show how coaches affect their contestants’ performance in Mathematics competitions. There were different challenges met by the teachers in coaching Mathematics contestants. These challenges hinder the success of coaching as well the performance of the contestants. Proposed coaching handbook in Mathematics was developed to improve the coaching skills of the teachers and the performance of the contestants.

In the light of the forgoing conclusions, the following recommendations were offered: The coaches may initiate to finish their post graduate studies to upgrade their skills and for professional growth as well. The school or division may conduct trainings on coaching to capacitate the teachers. Coaches should upgrade their coaching strategies based on the needs of the contestant and manner of competitions. Coaches should employ techniques in order to achieve desired results in a competition. Review materials may be supplied so that they can use these in coaching and training the contestants. Distribution and utilization of the coaching handbook for mathematics coaches may be done to improve coaching skills.

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