

PEACE EDUCATION STRATEGY IN TEACHING MATHEMATICS

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ABSTRACT

This study integrated peace education in Mathematics using cooperative learning activities and determined its effect to the Knowledge, Skills, and Attitude (KSA) of the first year students at Mindanao State University -Maguindanao Integrated Laboratory Science High School (MSU-Mag. ILSHS). A quasi-experimental research involving one (1) group pretest-posttest was used as a design of this study. Results showed that the pre-assessments of the KSA were generally fair while the post-assessments were generally satisfactory. The results of the prepared test showed that majority passed and very good in the post-assessment from a very low performance in the pre-assessment. Moreover, results of the mean showed that there is a significant improvement between the pre-assessment and post-assessments of students' KSA. The mean results of the academic achievement of students in the prepared test also showed a significant improvement. The differences in the means of the pre-assessment and post-assessment of the KSA and the students' performance in the prepared test are also significant using paired sample t-test. The improvement of the results of KSA as well as the performance of students in Mathematics through the prepared test using peace education intervention will help in strengthening peace education programs. Results also imply that peace education intervention using these cooperative learning activities is a strategy to help students bring behavioural change and enhance academic performance. Permanent behavioural change in children and adults only happens over the course, hence, effective peace education is necessarily a continuous method, not a temporary intervention. It is then recommended to be used all throughout high school curriculum particularly in the areas where threat of conflict and violence is present affecting the teaching and learning process.

Keywords: peace education, knowledge, skills, attitudes, mathematics performance, K-12 Philippines

INTRODUCTION

In some countries, efforts are made to elevate the quality of education particularly in Mathematics where most of the students do not perform well. In the Philippines, commencing the K-12 program needs teacher training to improve the teaching methodologies of mathematics teachers. Trainings include a focus on skills on using of interactive and participatory teaching methods, organizing cooperative group work, facilitating group discussions and the introduction of Information Technology. The usage of these types of teaching methodologies is essential to quality basic education, and permits teachers to take values of cooperation, respect for the opinions of the child, and appreciation of individual differences. Hands-on teaching and cooperative learning strategies can be used throughout the curriculum, and are a needed component of efforts to promote peace. This has been the aims of the peace programs of the United Nations International Children's Emergency Fund (UNICEF). However, linking different discipline to peace education is quite difficult because of the limited resources and research studies.

According to D'Ambrosio (1991), Mathematics plays a significant part in reaching the high humanitarian standards of this new civilization with equity, justice and dignity for the entire human regardless of race, gender, beliefs and cultures. He further states that it should be natural for mathematics educators to give some thought to the role of Mathematics education in achieving a better social order and more dignifying quality of life. This should give way to people understand how greatly connected Mathematics and human behaviors are.

Hicks (1985) said that teaching peace is a privilege, partaking the chance to facilitate positively intense thoughts, exercise listening skills, understand people with conflicting insights and listen with an open heart. Teaching peace is about the process of assisting a just and balanced discussion, making sure that all voices are recognized and respected. UNICEF views peace education as an essential component of quality basic education. This paper defines peace education as the process of promoting the knowledge, skills, and attitudes needed to bring about behavioral changes of the learners that will guide them to prevent violence and be a good individual. Given that conflict and war is a byproduct of culture, by way of reform of basic social beliefs, everyone can be part in producing a culture of peace.

With this relationship between Mathematics and peace, and how to apply it in a local setting in the Philippines, it is worthwhile to consider the aims found in UNICEF peace program (Peace Education in UNICEF, 1999) to make better changes in teachers' teaching methodology, students' performance and students' behavior. The aims of UNICEF peace program were then revised and assessed in this study using peace education intervention in Mathematics using the researcher-made module. These are commonly expressed as Knowledge, Skills and Attitudinal aims (KSA). The focus on behavioral change in the UNICEF definition of peace education in this three category might be significantly overlapping.

Mindanao State University -Maguindanao Integrated Laboratory Science High School is one of the schools of Peace in Mindanao under the Act for Peace Program. It is located south of the Philippines where most of the localities face poverty, children are less privileged, and conflicts happen most of the time in nearby municipalities where students are coming from. These conflicts are brought by some lawless elements, tribal clashes and oftentimes misunderstanding. These factors all contribute to low academic performance of students in the province and region. Schools of Peace should then reinforce the

academic, ethical and peace foundation of every learner by integrating peace in various discipline such as Mathematics in the curriculum.

The ways of peace have been taught in some public schools and incorporated in teacher education as part of the government's initiative to build and nurture a climate conducive to peace through education. The change to K-12 curriculum will further suggest that the peace education will be needed more than before particularly in community affected by conflict. This peace education advanced as the Department of Education (DepEd) bound by other agencies and civil representatives in the signing to realize the rules and regulation of institutionalizing Peace Education in Basic Education and Teacher Education.

There were also Non-Government Organizations that helped implement this culture of peace by aiding schools to integrate peace education. Some of these are Growth with Equity in Mindanao (GEM) and the Act for Peace Program. The latter provided trainings in Peace Education toward the establishment of "schools of peace." Although the time frame for these organizations to conduct peace education initiatives had already concluded, their efforts to monitor schools of peace and peace-related affairs are still continuing.

It was with this integration of peace education in Mathematics using these participatory and cooperative learning activities in Mathematics, although limited to the KSA categories of the UNICEF, that this study was deemed significant.

STATEMENT OF THE PROBLEM

This study aimed to integrate peace education in Mathematics' learning activities and to determine its effect to the Knowledge, Skills, and Attitudes (KSA) of first year students in Mindanao State University -Maguindanao Integrated Laboratory Science High School of School Year 2015-2016.

Specifically, the researcher sought answers to the following questions:

1. What are the pre and post assessments of students in terms of Knowledge, Skills and Attitudes?
2. What are the pretest and posttest performances of the students in the prepared test?
3. Are there significant differences in the means of the pre and post assessments in terms of Knowledge, Skills and Attitudes of the students; and the prepared test?

LITERATURE REVIEW

The Autonomous Region in Muslim Mindanao (recently changed to BARMM), was an autonomous region of the Philippines, found in the Mindanao group of islands, that consisted of predominantly Muslim provinces and cities. Maguindanao is one of the provinces where conflict is an issue and peace is a struggle. This issue on conflict and violence result to poor academic performance of students. The National Achievement Test results of the region, for example, are always below the national mean score (Philippine Information Agency, 2018). Efforts on how to uplift academic performance to students and equip them with necessary knowledge, skills and attitudes to become instruments of peace are then encouraged. However, there are limited to unavailable resources that can be used to promote peace education in the classroom worldwide.

It is UNICEF's position that peace education has a place in all societies not only in countries undergoing armed conflict or emergencies. Because permanent behaviour change in children and adults only occurs over time, effective peace education is necessarily a continuous process, not a short term strategy. While often based in schools and other learning environments, peace education should ideally involve the entire community.

Peace education as defined by United Nations International Children's Emergency Fund (UNICEF) refers to the 'process of promoting the knowledge, skills, attitudes and needed to bring about behavior changes that will enable children, youth and adults to prevent conflict and violence, both overt and structural; to resolve conflict peacefully; and to create the conditions conducive to peace, whether at an intrapersonal, interpersonal, intergroup, national or international level.' This definition signifies an inclusion of ideas that have been recognized through the practical involvements of UNICEF peace education programs in developing countries. It is also a reflective of the rational of a number of theorists in this peace education work that has been distributed out in industrialized countries.

The way that peace has been taught in public schools in the Philippines and incorporated in teacher education as part of the government's initiative build and nurture a climate conducive peace education. This develops as the Department of Education (DepEd) of the country joined other agencies and civil representatives in the signing of the implementing rules and regulation institutionalizing Peace Education in Basic Education and Teacher Education. With the transition to K-12 curriculum program in the Philippines by virtue of Republic Act 10533 on May 15, 2011, Filipino children now have access to initial childhood education. At five years of age, children begin to school and are given the support to gradually adapt to formal education. The K-12 program comprises the Kindergarten and the twelve years of fundamental schooling aimed at providing enough time for ideas, skills and employment opportunities for the students. The program supports instruction to students in a way that it will be comprehended by the native in the community. The K-12 program is a typical competence-based and made all-inclusive around the basics of the learners and the society (Official Gazette of the Philippines).

Mathematics education is particularly concerned with the education enterprise because of its role in meeting the requirements of national development. It aims at Mathematics consciousness, effective participation as a contributor to the needs of Mathematics and to development of mathematical and technological manpower. Mathematics in itself is a language, and it is a tool toward understanding other fields. Thus, this concerned with the formation of curriculum in Mathematics and more importantly those who implement the curriculum are tasked with stimulating students to learn the subject. In order to develop mathematical and technological manpower, educators must also realize that moral training is necessary in order to improve the study habits, discipline and character of children. Character formation is the most essential elements in ensuring effective learning and acquiring the necessary knowledge, skills and attitudes on the part of the students.

The aims found in UNICEF peace programs were expressed and categorized as Knowledge, Skills and Attitudes. The Knowledge includes awareness of own needs, self-awareness, understanding nature of conflict and peace, ability to identify causes of conflict and non-violent means of resolution, conflict analysis, enhancing knowledge of community, mechanisms for building peace and resolving conflict, mediation process, understanding of rights and responsibilities, understanding interdependence between individuals and societies, awareness of cultural heritage, and recognition of prejudice. Skill includes communication skills: active listening, self-expression, paraphrasing, reframing; assertiveness, ability to cooperate, critical thinking, ability to think critically about prejudice, ability to deal with stereotypes, dealing with emotions, problem-solving, ability to generate alternative solutions, constructive conflict resolution, conflict prevention, participation in society on behalf of peace and ability to live with change. Lastly, Attitude which includes self respect, positive self-image, strong self-concept, tolerance, acceptance of others, respect for differences, respect for rights and responsibilities of children and parents, bias awareness gender equity empathy reconciliation, solidarity, social responsibility, sense of justice and equality, and joy in living.

Hypotheses

- Ho 1: There is no significant difference in the means of Pre and Post Assessment of the Students' Knowledge.
- Ho 2: There is no significant difference in the means of the Pre and Post Assessment of the Students' Skills.
- Ho 3: There is no significant difference in the means of the Pre and Post Assessment of the Students' Attitudes.
- Ho 4: There is no significant difference in the means of the Pretest and Posttest of the Students' Performance in the Prepared test.

METHODOLOGY

Research Design

This study is a quasi-experimental research involving one (1) group pretest-posttest design (Langdridge and Hagger-Johnson, 2013). Because the research design is not strictly experimental and there was no control group, the inference is not certain and the difference may be due to extraneous variables.

Research Respondents

The researcher included all freshmen students from first year sections A and B of MSU-Maguindanao Integrated Laboratory Science High School of the School Year 2015-2016. A total of 81 students were given researcher-made modules and were considered the respondents of this study.

Data Gathering Procedure

The following activities were undertaken in the process of gathering relevant data which the study needs. First, permission was sought from the principal of MSU-ILSHS and parents of the respondents for the researcher to conduct the study. After the approval, the researcher administered an instrument for the pre-assessment (pretest) of the knowledge, skills and attitudes of students in Mathematics. Then, post assessment (posttest) was administered after the six-week time frame of the intervention. It was the researcher who handled the intervention to student respondents.

Statistical Treatment of Data

After gathering the data; tabulation, computation and interpretation followed. Research Questions on the pre and post assessment of students on the Knowledge, Skills and Attitude (KSA) were treated with mean; and the prepared test was treated with descriptive statistics. Descriptive equivalents of the assessment mean for the items on KSA were used based on a 5-point Likert Scale (1932) which was weighted as follows: 5 – excellent, 4 – satisfactory, 3 – fair, 2 – poor and 1- very poor. The next scale was then used to interpret the students' assessment on their Knowledge, Skills and Attitudes: 4.50-5.00= excellent, 3.50-4.49 = satisfactory, 2.50-3.49 = fair, 1.50-2.49= poor, and 1.00-1.49 =very poor.

The dependent sample t-test was used to determine if there would be significant differences in the means of pre and post assessment of students, and the pretest and posttest of the prepared test. The hypotheses were tested using 0.05 and 0.01 levels of significance.

The data were processed using the Statistical Package for Social Sciences as verified also in the Data Analysis of Microsoft Excel.

Instrumentation

To gather information for the study, questionnaire containing items under knowledge, skills, and attitude based on the UNICEF aims was used to assess the students' knowledge, skills, and attitude in Mathematics before and after peace education strategy is applied. A Cronbach Alpha of 0.73 was obtained using this revised KSA questionnaire administered to thirty (30) student selected randomly in the second year of MSU-ILSHS of the given school year.

The researcher using a Table of Specification (TOS), constructed the test instrument (prepared test) for the pretest and posttest of the students with peace concepts. This was based on the researcher-made module which covers the Second Grading Period of Grade 7 Mathematics. To test the validity of the prepared test, it was presented to the MSU-ILSHS Math coordinator and Math teachers for comments and suggestions. To test its reliability, the test-retest was given first to thirty (30) students in the second year of the MSU-ILSHS selected at random. A Cronbach alpha of 0.78 was obtained.

Preparation of the Module

The researcher collected ideas on how algebraic expressions, polynomials and inequalities were presented from different learning materials. These topics are the contents for the Second Grading Period in Grade 7 Mathematics patterned and based on the existing Grade 7 Mathematics used in the country and being distributed by the Department of education. As guided by the participatory and cooperative learning approach, the researcher made activities from these topics with the aid of peace-oriented learning materials. The researcher was also guided by the knowledge from the different peace-oriented seminar and conference handouts. It took two (2) months for the researcher to completely finish the module. This was then checked and approved by people with expertise on Peace and Mathematics to be used as a learning tool. However, the content of the module is only limited to the topics being taught in the Second Grading Period of the school year. The researcher had developed two types of the module: the students' reference copy and the teacher's manual.

RESULTS AND DISCUSSION

Table 1: Mean Distribution of Pretest Performance of Students in Terms of Knowledge.

Knowledge Performance	Mean	SD	Description
Self –awareness of needs in Math	2.90	0.94	fair
Understanding easily challenging topics	2.88	0.99	fair
Showing solution with accuracy	2.91	1.00	fair
Applying topics to real life	3.06	0.93	fair
Evaluating what has learned in Mathematics	2.94	0.85	fair
Grand Mean	2.94	0.94	fair

Table 1 shows the mean distribution of the pretest performance of students in terms of Knowledge. The data further revealed that students rated themselves as fair in the self-awareness of needs in Math, understanding easily challenging tasks/topics, showing solution with accuracy, applying topics to real-life and evaluating what has learned in Mathematics. In general, the students pre-evaluation in their Knowledge development is fair as indicated by the grand mean of 2.94 with standard deviation of 0.94. This implies that students are doing the items under the Knowledge category not most of the time. This result has attributed with the low performance of students in Mathematics.

Table 2: Mean Distribution of Pretest Performance of Students in Terms of Skills

Attitude Performance	Mean	SD	Description
Active listening during discussion	3.36	0.96	fair
Self-expression during discussion	3.0	0.87	fair
Assertiveness to answer	2.94	1.00	fair
Ability to cooperate with classmates	3.22	1.08	fair
Critical thinking when solving problems	3.11	1.11	fair
Ability to deal with what is known and unknown	2.81	0.98	fair
Ability to generate alternative solutions	2.94	1.20	fair
Constructive conflict resolution with opposing classmates	2.67	1.16	fair
Conflict prevention during discussion/activity	2.74	1.19	fair
Ability to accept mistakes	3.36	1.40	fair
Grand Mean	3.015	1.09	fair

Table 2 shows the mean distribution of the pretest performance of students in terms of Skills. The data further revealed that students rated themselves as fair in active listening during discussion, self-expression during discussion, assertiveness to answer, ability to cooperate with classmates, critical thinking when solving problems, ability to deal with what is known and unknown, ability to generate alternative solutions, constructive conflict resolution with opposing classmates, conflict prevention during discussion/activity and ability to accept mistakes. In general, the student's pre-evaluation in their Attitude development is fair as indicated by the grand mean of 3.015 with standard deviation of 1.09. This implies that students are doing the items under the Skills category not most of the time. The lack of these skills affects student's ability to generate rational thinking in relation to their mathematical ability.

Table 3: Mean Distribution of Pretest Performance of Students in Terms of Attitudes

Skills Performance	Mean	SD	Description
Self-respect	3.54	1.26	satisfactory
Positive self image	3.33	1.10	fair
Enthusiastic in completing works with Math	3.0	1.17	fair
Respect for differences of answers with classmates	3.44	1.13	fair
Understand/ apply gender equity	3.04	1.14	fair
Sense of justice and equality with classmates	2.89	1.15	fair
Joy in living with Mathematics	3.47	1.19	fair
Interested to learn Mathematics	3.54	1.37	satisfactory
Grand Mean	3.28	1.19	fair

Table 3 shows the mean distribution of the pretest performance of students in terms of Attitude. Students evaluated themselves as satisfactory both in having self respect and interest to learn Mathematics as indicated by the mean of 3.54. The data further revealed that students rated themselves as fair in positive self image, enthusiastic in completing works with Math, respect for differences of answers with classmates, and understand/apply gender equity, sense of justice and equality with classmates and joy in living with Mathematics. In general, the student's pre-evaluation in their Attitude development is fair as indicated by the grand mean of 3.28 with standard deviation of 1.19. This implies that students are doing the items under the Attitude category not most of the time. The lack of these behavior aspects of students is an indication of problems involving community, family and personal self.

Table 4: Pretest Performance of Students in the Prepared Test

Scores	Frequency	Percentage
0-4	27	33.33
5-9	41	50.62
10-14	11	13.58
15-19	2	2.47
20-24	0	0
25-29	0	0
30-34	0	0

N=81
 Mean: 6.31
 SD: 3.17

Perfect score: 30
 highest score: 16
 Lowest score: 2

Table 4 shows the descriptive statistics of the pretest performance of students in the prepared test. It had a mean score of 6.31 with standard deviation of 3.17. It further shows that out of eighty one (81), only two (2) or 2.47% of the students got scores greater than or equal to half of the total items. Only two students got scores above the median in which the highest score is 16. This result shows a very low performance of the students in the pretest.

Table 5: Mean Distribution of Post-test Performance of Students in Terms of Knowledge

Knowledge Performance	Mean	SD	Description
Self-awareness of needs in Math	4.19	0.74	satisfactory
Understanding easily challenging topics	4.19	0.64	satisfactory
Showing solution with accuracy	4.02	0.76	satisfactory
Applying topics to real life	4.33	0.57	satisfactory
Evaluating what has learned in Mathematics	4.22	0.65	satisfactory
Grand Mean	4.19	0.67	satisfactory

Table 5 shows the mean distribution of the post-test performance of students in terms of Knowledge. The data further revealed that students were satisfied in their self-awareness of needs in Math, understanding easily challenging tasks/topics, showing solution with accuracy, applying topics to real-life and evaluating what has learned in Mathematics as indicated by their means

4.19, 4.19, 4.02, 4.33, and 4.22 respectively . In general, the students post-test in their Knowledge development is satisfactory as indicated by the grand mean of 4.19 with standard deviation of 0.67.

Table 6: Mean Distribution of Post-test Performance of Students in Terms of Skills

Attitude Performance	Mean	SD	Description
Active listening during discussion	4.37	0.70	satisfactory
Self-expression during discussion	4.17	0.74	satisfactory
Assertiveness to answer	4.02	0.79	satisfactory
Ability to cooperate with classmates	4.52	0.71	excellent
Critical thinking when solving problems	4.12	0.70	satisfactory
Ability to deal with what is known and unknown	4.09	0.75	satisfactory
Ability to generate alternative solutions	4.20	0.74	satisfactory
Constructive conflict resolution with opposing classmates	4.05	0.81	satisfactory
Conflict prevention during activity	4.19	0.85	satisfactory
Ability to accept mistakes	4.56	0.88	excellent
Grand Mean	4.23	0.77	satisfactory

Table 6 shows the mean distribution of the pretest performance of students in terms of Skills. The data further revealed that students were satisfactorily rated themselves in active listening during discussion, self-expression during discussion, assertiveness to answer, critical thinking when solving problems, ability to deal with what is known and unknown, ability to generate alternative solutions, constructive conflict resolution with opposing classmates and conflict prevention during discussion and activity. On the other hand, students showed excellence in ability to cooperate with classmates and ability to accept mistakes.

In general, the students post-test in terms of their Skills Development is satisfactory as indicated by the grand mean of 4.23 with standard deviation of 0.77.

Table 7: Mean Distribution of Post-test Performance of Students in Terms of Attitudes.

Skills Performance	Mean	SD	Description
Self –respect	4.73	0.61	excellent
Positive self image	4.46	0.65	satisfactory
Enthusiastic in completing works with Math	4.19	0.60	satisfactory
Respect for differences of answers with classmates	4.51	0.65	excellent
Understand/ apply gender equity	4.19	0.71	satisfactory
Sense of justice and equality with classmates	4.36	0.71	satisfactory
Joy in living with Mathematics	4.48	0.82	satisfactory
Interested to learn Mathematics	4.75	0.62	excellent
Grand Mean	4.46	0.67	satisfactory

Table 7 shows the mean distribution of the post-test performance of students in terms of Attitude. It showed that students evaluated themselves as excellent in having self respect, respect for differences of answers with classmates and having the interest to learn Mathematics as indicated by the means 4.73, 4.51 and 4.75 respectively. The data further revealed that students rated themselves as satisfactorily in having positive self image, enthusiastic in completing works with Math, respect for differences of answers with classmates, understand/apply gender equity, sense of justice and equality with classmates and joy in living with Mathematics.

In general, the students' post-evaluation in their Attitude development is satisfactory as indicated by the grand mean of 4.46 with standard deviation of 0.67.

Table 8: Post-test Performance of the Prepared Test

Scores	frequency	Percentage
0-4	0	0
5-9	1	1.23
10-14	9	11.11
15-19	35	43.21
20-24	31	38.27
25-29	5	6.17
30-34	0	0

N=81
Mean: 18.86
SD: 3.76

Perfect score: 30
Highest score: 28
Lowest score: 9

Table 8 shows the descriptive statistics of the post-test performance of students in the prepared test. It had a mean score of 18.86 with standard deviation of 3.76. It further shows that out of eighty one (81), seventy one (71) or 87.65% of the students got scores greater than or equal to half of the total items. This means that majority passed and nearly 100% passing rate.

The post-test result of the prepared test administered to the students showed a noticeable improvement and was very good after the strategy had been used by the researcher. This implies that the strategy has been effective in enhancing the students' performance in the given topics in Mathematics.

Table 9: Paired Sample t-test of the Pretest and Posttest results of the KSA and Prepared Test

Variables	Mean Pretest	Mean Posttest	df	t-value	p-value
Knowledge	2.94	4.19	80	11.15**	p<0.001
Skills	3.01	4.23	80	12.11**	p<0.001
Attitude	3.28	4.46	80	12.44**	p<0.001
Prepared Test	6.31	18.86	80	27.95**	p<0.001

** significant at 0.01 level (two-tailed)

Using paired sample t-test, the differences in the means of the pretest and posttest results of the Knowledge, Skills, and Attitude were determined. It shows that Knowledge, $t(80)=11.15$, $p<0.001$. This implies that the difference in the means is significant. Hence, H_01 is rejected suggesting that there is a significant difference in the means of pre and post assessments of students' Knowledge. In Skills, $t(80)=12.11$, $p<0.001$, implies that the difference in the means is significant. Hence, H_02 is rejected suggesting that there is a significant difference in the means of pre and post assessments of students' Skills. In Attitude, $t(80)=12.44$, $p<0.001$ implies that difference in the mean is significant. Hence, H_03 is rejected suggesting that there is a significant difference in the means of pre and post assessments of students' Attitudes. In the prepared test, $t(80)=27.95$, $p<0.001$, implies that the difference in the means is significant. Hence, H_04 is rejected suggesting that there is a significant difference in the means of pre and post assessments of students' performance in the prepared test.

SUMMARY AND IMPLICATION

The significant improvement of the Knowledge, Skills and Attitudes of students after the intervention will determine that a strategy involving peace education has positive effect in the behaviour of students. Even academic performance was enhanced by the strategic intervention. This is another backup to the Positive Behavioral Interventions and Supports (PBIS) that is "one whole-school prevention strategy" transforming the learning atmosphere by producing supplemented actions and practices to inspire upright variations in students and teachers' performances (Barrett, S., Bradshaw, C., & Lewis-Palmer, T. 2008).

Mathematics education is focused with the education initiatives because of its role in meeting the requirements of national development in the Philippines particularly at present wherein the curriculum has been changed to cater the need of the learners and community. It aims at also Mathematics consciousness, effective participation as a contributor to the needs of Mathematics and to the development of mathematical initiatives. Character formation is the most necessary foundations in insuring effective learning and gaining skills on the part of the students. The intervention of peace education helps not just students but also to the character enhancement of teachers themselves. The realization by the learners of what they ought to be would give them an idea of their responsibilities and obligations ahead.

Indeed, peace education concepts can be processed and integrated into the teaching of Mathematics and increase students' academic development aside from the values it imposes and teaches to them. The current local educational condition of Maguindanao suggests further that it needs to strengthen peace education more than anywhere else in the country. It should then be noted to apply this peace education intervention although it becomes a challenge to teachers. The significant results of the pre-assessment and post-assessments in the students' Knowledge, Skills and Attitudes as well as in their performance in the prepared test would imply that there is a need to include peace education as a tool in the development of this K-12 program in the province of Maguindanao. Acceptance of the peace education values must be a local goal. It helps not just academically, but most importantly in the values formation and in peace advocacy. Hence, the campaign of culture of peace must be uplifted and that initiatives to motivate students and teachers to collaborate for a better teaching and learning process through shared activities, skills and goals which encourage human values and communal spirit should be advanced. This will then give positive impact to the teaching and learning process.

In particular, this study gives impact to the following:

1. The United Nations International Children's Emergency Fund (UNICEF)

Peace Education promotes peace and order in which a number of UNICEF country offices over the past decade are trying to uphold across the globe. This study will indeed give information worldwide on the effects of peace education in teaching Mathematics to the displaced students in Maguindanao which will eventually help UNICEF on its future plans on upgrading education to the third world countries.

2. The K to 12 Transition Program of the Philippines/Curriculum Planners

The Philippines is currently on curriculum transition giving way to the K to 12 programs. This study will be considered by the curriculum planners of the program to integrate peace education particularly in the displaced area of the country where students feel depressed and do not show good academic standing.

3. Mathematics Department of Mindanao State University-Maguindanao

Encouraging the use of interactive, learner-centered methods by the Math- teachers is a priority in the promotion of quality basic education in this university. Individual Math teachers will also integrate Peace Education in the subject they are teaching to help students manage their anxiety and perceive life as meaningful.

4. General Bank of Knowledge

Knowledge on Mathematics may have sufficient materials already but on Mathematics and Positive education, there may still be dearth of materials. This study is therefore hoped to contribute to the general bank of knowledge on Mathematics, Peace and Values Education.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations are formulated:

1. Similar study concerning the effects of peace education in teaching disciplines should be conducted for further exploration of how best peace education strategy will be in other fields.
2. More instructional materials as peace modules should be developed and produced not only in Mathematics but also with other fields which will aid in the teaching and learning process strengthening Peace Education.
3. More strategies should be developed by other researchers to enhance the Knowledge, Skills and Attitude development of the students. This gives way to a peaceful community that every individual is aspiring for, and behavioral development of our learners that may lead to a more productive society.
4. Permanent behaviour change in children and adults only happens over the course, hence, effective peace education is necessarily a long-term process, not a short-term intervention. It is then recommended to be used all throughout high school curriculum particularly in areas where threat of conflict and violence is present affecting students' academic performance.
5. Government, schools and the local society must remain open to change in order to serve the needs of the learners and adapt to the progressively fast-paced world where conflict is still an issue.

REFERENCES

- Andaya, O. (2016) Factors that Affect the Academic Performance of Indigenous people (IP) Students of Philippine Normal University- North Luzon Asia Pacific Journal of Research Vol: 2. Issue XXXVII, March 2016
- Arguelles, A. (2010) Development and Use of the Module in College Algebra. Notre Dame University- Cotabato City. Unpublished thesis.
- Barrett, S., Bradshaw, C., & Lewis-Palmer, T. 2008. "Maryland statewide PBIS initiative: Systems, evaluation, and next steps". *Journal of Positive Behavior Interventions*. 10 (2): 105–114. <https://doi.org/10.1177/1098300707312541>
- D'Ambrosio, U. (1991). Ethnomathematics and its place in the history and pedagogy of mathematics. In Harris, M. (ed.) *School mathematics and work*, London: Falmer Press, p.
- D'Ambrosio, U. (2003): *Mathematics and Literature: Alvyn White (Ed.) Essays in Humanistic Mathematics*, Washington, DC. The Mathematical Association of America, pp. 35–47.
- Fateem, Elham, 1993. 'Concepts of Peace and Violence: focus group discussions on a sample of children, parents, teachers and front-line workers with children'. Cairo: The National Center for Children's Culture (Ministry of Culture) and UNICEF.
- Fredrickson, B. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *The American Psychologist*, 56(3), 218-226. <http://dx.doi.org/10.1037/0003-066X.56.3.218>
- Fredrickson, B., & Branigan, C. (2005). Positive emotions broaden the scope of attention and thought-action repertoires. *Cognition and Emotion*, 19(3), 313-332. <http://dx.doi.org/10.1080/02699930441000238>
- Hicks, D. (1985). *Education for Peace: Issues, Dilemmas and Alternatives*. Lancaster: St. Martin's College.
- Langdrige, Hagger-Johnson (2013) *Introduction to Research Methods and Data Analysis in Psychology*, 3rd Edition. Pearson Education Limited
- Lewis, T., Powers, L., Kelk, M., & Newcomer, L. (2002). "Reducing problem behaviors on the playground: An investigation of the application of schoolwide positive behavior supports". *Psychology in the Schools Special Issue: Development, Evaluation, and Treatment of Students with Behavior Disorders*. 39 (2): 181–190.
- National Council of Educational Research and Training (2006). *Position Paper National Focus Group on Education for Peace*. New Delhi: National Council of Education Research and Training. Retrieved 25th May, 2014, from http://www.ncert.nic.in/new_ncert/
- Philippine Information Agency. (BPI-ARMM) ARMM Students Catching up with other regions in NAT scores. Hp. Online. <https://pia.gov.ph/news/articles/1010278>. 12 July 2018
- Seligman, M.E.P. (2002) *Authentic happiness: using the new positive psychology to realize your potential for lasting fulfillment* (New York, Free Press).

- UNICEF (1999). *Peace Education in UNICEF*. New York: United Nations Children’s Programme Publications. Retrieved 16 May, 2018 from <http://www.unicef.org/education/files/peaceeducation.pdf>
- UNICEF (1999). ‘The Future Global Agenda for Children - Imperatives for the Twenty- First Century’, E/ICEF/1999/10. (Executive Board Document)
- UNICEF (1999). ‘Progress, Challenges and Future Strategies in Basic Education’, E/ICEF/1999/14. (Paper tabled at June 1999 Executive Board session)
- Waters, L.** (2014). Balancing the Curriculum: Teaching Gratitude, Hope and Resilience. In H. Sykes (Ed.) *A love of Ideas*. pp. 117–124. Future Leaders Press
- What is K to 12 Program. Hp. Online. GovPh. Available: <https://www.officialgazette.gov.ph/k-12/> .15 April 2018.

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