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EXPLORING THE TEACHING EXPERIENCES OF MILLENNIAL SECONDARY MATHEMATICS TEACHERS IN PALAWAN

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ABSTRACT

Teaching mathematics requires a great deal of passion, much like other disciplines. While Education 4.0 emphasizes the importance of students becoming self-sufficient, it also highlights the need for life skills training. This study aimed to explore the teaching experiences of millennial secondary mathematics teachers in Palawan. Specifically, it examined their perspectives on the meaning of mathematics, their goals in teaching, their experiences in the classroom, and their inspirational messages for fellow mathematics teachers. This is a descriptive study that employed non-probability sampling to categorize the upper and lower 40% of the class, who were selected as participants for comparison to determine whether both groups of teachers shared similar perspectives. The researcher carried out various tasks, including administering a final examination designed to include a questionnaire relevant to the topic at hand. The themes that emerged regarding the meaning of mathematics for the participants included life skills, aesthetic appreciation, and mathematics as a discipline. These themes aligned with their goals of teaching mathematics to help students apply their mathematical literacy in everyday life, appreciate the beauty of mathematics and develop positive attitudes and virtues, all aimed toward problem-solving and critical thinking skills in learners. The participants viewed themselves as highly competent, creative, very confident, expert, technologically adept, and effective in assessing their students through performance-based assessments. The participants' perspectives, measured using a semantic differential scale, were analyzed using chi-square (X^2) testing, which showed no significant difference in their perceptions ($p > .05$). The data gathered was insufficient to conclude that performance in the final examination contributed to the respondents' perspectives. Finally, the inspiring messages were synthesized as follows: Mathematics is for everyday life, should be taught with passion, and should instill virtues and aesthetic appreciation. Therefore, teaching mathematics must be aimed at living a wonderful life!

KEYWORDS: Math Teaching Experiences

INTRODUCTION

Mathematics has long been a fundamental component of educational curricula worldwide. It is universally regarded as a discipline that is definite, logical, and objective, addressing the task of solving problems, problems that are akin to the challenges individuals face in everyday life. The process of

solving these problems involves defining the issue, formulating a hypothesis as a potential solution, testing the hypothesis, and ultimately arriving at a conclusion (Corpuz, et al., 2006). Given this, mathematics teachers must maintain a clear and definitive perspective on what mathematics is and their objectives in teaching it.

The primary goals of teaching mathematics are to impart foundational concepts essential for quantitative thinking, foster logical reasoning abilities, cultivate an understanding of relationships, and promote functional thinking. These aims aim to encourage students to recognize that mathematics is pervasive in the world around them, appreciate its usefulness, power, and beauty, and develop patience and persistence when solving problems.

However, despite the importance of mathematics, many students display a lack of enthusiasm or confidence in the subject. As mathematics professors at Palawan State University Graduate School, where one of the Master of Education majors is Mathematics, we sought to explore whether millennial teachers in Palawan remain passionate about teaching mathematics and whether their teaching practices align with contemporary standards. This study examines their perspectives on the nature of mathematics, their teaching goals, and their inspirational messages for fellow educators, alongside their performance in the final examination for the course "The Teaching of Secondary Mathematics."

In recent years, there has been a growing recognition of the need to bridge the gap between 19th-century teaching methods and the needs of 21st-century learners. Education 4.0 has emerged as a solution to address the demands of post-millennial students, emphasizing the integration of life skills into education. Education 4.0 encourages non-traditional approaches to teaching, developed in response to Industry 4.0, and aims to produce professionals who are equipped to thrive in a globalized, digital-driven world.

This study involved 22 mathematics teachers from across Palawan who were enrolled in the course Education 678: The Teaching of Secondary Mathematics during the First Summer Term of the 2019-2020 school year at Palawan State University Graduate School.

Existing literature suggests that the aims of teaching mathematics include helping students recognize its pervasive influence on the world, appreciating its power and beauty, and developing persistence and patience in problem-solving. Additionally, the study of mathematics fosters an appreciation for the beauty of geometric forms in nature, art, and industry, as well as the logical structure, precision of thought, and reasoning skills it cultivates. Mathematics also plays a pivotal role in the advancement of civilization and science.

Research from various international studies, such as the Taiwanese high school students' perspectives on effective mathematics teaching behaviors, highlights the association of mathematics with daily life, the importance of mathematical comprehension, and the role of teacher expertise in fostering effective

teaching (Bryan, Wang, Perry, Wong & Cai, 2007; Kaiser & Vollstedt). Similarly, studies conducted in European countries have revealed varied beliefs about mathematics teaching, with some countries emphasizing formalism and others focusing on pragmatic, applied approaches. These perspectives shed light on the diverse beliefs regarding mathematics and its teaching across different cultures.

Considering these findings, this study aims to investigate whether the participants' perspectives on teaching mathematics influence their performance in the course. Specifically, it hypothesizes that the participants' views on the nature of mathematics, their teaching objectives, and their beliefs about the learning process may correlate with their final exam performance in "The Teaching of Secondary Mathematics."

METHODOLOGY

This study employed a descriptive research design, which is defined as a research method aimed at describing the characteristics of the population or phenomenon under investigation. Specifically, the survey method was utilized among the Master of Arts in Education (Mathematics Major) millennial students enrolled in the course *Educ 287: The Teaching of Secondary Mathematics*. The study focused on exploring their perspectives on teaching mathematics. It is a mixed-methods approach, combining both qualitative and quantitative research, as the participants' views were gathered alongside their performance in the subject.

Out of the 24 students officially enrolled in the course, eight were excluded as they were no longer considered millennials, leaving a total of 16 participants. A non-probability/purposive sampling technique was employed to select the participants, as they were specifically chosen based on their relevance to the study.

A questionnaire developed by the researchers was distributed to the participants. The questionnaire included a semantic differential scale, rated from one to seven, with bipolar sets of adjectives designed to capture their perspectives on teaching mathematics. Given that the data were not assumed to be normally distributed, a chi-square (X^2) statistical test was used to compare the variables and test the formulated hypothesis. Data processing was conducted using the Statistical Package for Social Sciences (SPSS) Version 25.

RESULTS AND DISCUSSIONS

Table 1.1: Participants’ Definition of Mathematics

Respondent	“Meaning of Mathematics to me”
A	D: Mathematics as a discipline.
B	L: Math is everything, it explains the universe.
C	D: a discipline of accuracy to be taught.
D	<i>A: beauty of patterns.</i>
E	<i>D: Instrument to learn such as the problem-solving skills.</i>
F	<i>D: A faithful subject.</i>
G	<i>L: Deals with our own problems in daily life.</i>
H	<i>L: A weapon to problems we encounter in our daily life.</i>
I	<i>D: Math is not easy, but it can be.</i>
J	<i>L: A tool/instrument in life hated by many.</i>
K	<i>L: Math is life. It’s a key to other fields.</i>
L	<i>D: Math is a discipline that trains our mind to be logical and inquisitive.</i>
M	<i>L: Mathematics requires not only the mind but also the heart. It’s the foundation of the universe</i>
N	<i>L: Mathematics is the language used by God to create the universe.</i>
O	<i>L: Mathematics is part of my life.</i>
P	L: Math is the language of the universe. It’s everywhere

Legend: Related to- Life Skills: L; As a Discipline: D; and Aesthetic/beauty: A

Table 1.1 reveals that among the three themes that sprouted as participants’ meaning of mathematics (9/16) or 56.25% is related to Life Skills; (6/16) or 37.5% to Mathematics as a discipline; and (1/16) or 6.25% only for Aesthetic/beauty appreciation.

Table 1.2: Participants’ Goal in Teaching Mathematics

Respondent	“My Goal in Teaching Mathematics”
A	<i>L: Encourage learners to become logical and rational thinkers to find balance in life, and to go beyond the superficial</i>
B	<i>L: help my studs to be Problem Solver and Critical Thinker</i>
C	<i>P: help sets of new generations of learners</i>
D	<i>A: help studs appreciate the beauty of understanding</i>
E	<i>A: for my students to see its beauty and importance in Life</i>
F	<i>L: teach students to be problem thinker</i>
G	<i>L: I want my learners to use their knowledge in mathematics.</i>
H	<i>P: to create/mold quality students when it comes to mathematics but with enough values within themselves.</i>
I	<i>L: help the learners develop skills which will help them in their everyday</i>
J	<i>P: help students love math, to make them realize that math is not difficult, help them to become problem solver</i>
K	<i>P: Teach math with love and care.</i>
L	<i>L: Train students’ mind to think and cope up with life’s struggles.</i>
M	<i>A: Inspire learners for the beauty of Math.</i>
N	<i>A: Make my students appreciate the beauty of Math</i>
O	<i>P: Mold students who are not afraid of Mathematics</i>
P	<i>L: Make a learner who is a problem solver and a critical thinker.</i>

Legend: Related to- Life Skills: L; As Positive Attitude: P; and Appreciation of/beauty: A

The participants’ goals to teach mathematics are to help students apply their mathematics literacy in everyday life (7/16) or 43.75%, appreciate the beauty of mathematics (4/16) or 25%, develop positive attitudes and virtues (5/16) or 31.25%, holistically making them problem-solvers and critical thinkers.

Table 1.3 Participants’ Inspiring Messages

Respondent	Inspiring Messages
A	<i>When you teach be sure of your aim, if it's for math as a discipline or for the entirety of life.</i>
B	<i>Students must be trained to love problem -solving.</i>
C	<i>Teaching is leading students to be honest and to love mathematics.</i>
D	<i>Teaching mathematics is for applications in life as well as knowledge.</i>
E	<i>Students appreciate arts and the beauty of patterns in Algebra.</i>
F	<i>Mathematics is life.</i>
G	<i>Math teaches us to be genuine in loving problem-solving.</i>
H	<i>Everything on earth is mathematics.</i>
I	<i>To love math is my greatest dream.</i>
J	<i>Mathematics is beautiful with the designs in Geometry.</i>
K	<i>Encourage students to feel safe in loving math.</i>
L	<i>Motivate students to persevere in problem-solving.</i>
M	<i>Math teaching is a balance bet being terror and showing love and concern for students.</i>
N	<i>Problem-solving is a skill you will love solving as you get more correct answers.</i>
O	<i>Problem-solving requires loving how to think deep.</i>
P	<i>Love critical thinking, and you won't be lost for God is love.</i>

Participants' inspiring messages fall on four themes such as:

1. values formation as honing students who should be honest, genuine and math lovers- (8/16) or 50.0%;
2. discernment of definite goal in teaching math-as a discipline or entirety of life -(4/16) or 25.0%;
3. arts and aesthetic appreciation – (2/16) or 12.5%; and
4. understanding that everything can be explained by mathematics-(2/16) or 12.5%. Hence, Mathematics Teaching must be for everyday life.

This confirms Bryan, Wang et al (2007) findings that there is a common view especially in international arena regarding an efficient mathematics teaching such as its association with daily life. As also supported by the Germany teachers who considers the pragmatic and applied mathematics.

Table 2: Participants’ Perspective in Teaching Mathematics (Semantic Differential Scale)

Excellent (E): 6.4-7.0
 Almost excellent (AE): 5.5-6.3
 Very Positive (VP): 4.6- 5.4
 Positive (P): 3.7-4.5
 Almost Positive (AP): 2.8-3.6
 Almost Negative (AP): 1.9-2.7
 Negative (N): 1.0-1. 8

Perspective Respondents	C	E	S	MG	IM	A	Mean	Description
A	5	4	5	4	4	4	4.3	Positive
B	6	5	5	4	7	5	5.3	Very Positive
C	6	5	5	5	6	7	5.7	Almost excellent
D	6	5	5	6	5	4	5.2	Very Positive
E	6	5	5	6	5	6	5.6	Almost excellent
F	5	6	6	5	6	5	5.6	Almost excellent

G	5	5	4	4	4	4	4.3	Positive
H	6	5	5	5	6	4	5.2	Very Positive
I	5	5	6	6	6	4	5.3	Very Positive
J	6	4	4	4	5	5	4.7	Very Positive
K	4	4	4	5	3	4	4	Positive
L	6	6	6	6	6	6	6	Almost excellent
M	7	4	6	6	5	5	5.5	Almost excellent
N	4	3	4	5	4	4	4	Positive
O	5	5	4	4	6	4	4.7	Very satisfactory
P	6	6	7	6	5	4	5.7	Almost excellent
Mean	5.5 (AE))	4.8	5.1	5.1	5.1	4.7	5.1	Very Positive

Legend: C- Competency; E- Engagement; S- Teaching Strategy; MG- Making Generalization; IM- Instructional Materials; A: Assessment

Table 2 generally reveals that the respondents have Very Positive perspective of their mathematics teaching. This is particularly in the following dimensions: Competency, rated as 5.5 interpreted as almost excellent; and the rest such as: the use of Instructional Materials, Engagement, Strategy used in teaching, and making Generalization; with ratings ranging from 4.7 to 5.1 or Very Positive.

Table 3. Distribution of the Respondents

Class Performance	Frequency	Percentage (%)
Very satisfactory (24 – 31)	4	25.0
Satisfactory (17 – 23)	9	56.2
Fair (9 – 16)	3	18.8
Total	16	100.0%

Legend: Excellent (32 – 40); Very satisfactory (24 – 31); Satisfactory (17 – 23); Fair (9 – 16); Poor (1 – 8)

Table 3 shows that majority of the respondents had satisfactory performance as revealed by 9/16 or 56.2%. Others are respondents who had very satisfactory performance; 4/16 or 25.0%; 3/16 or 18.8% had fair performance and no one had excellent or poor performance.

Table 4 Test (X²) between Respondents’ Perspectives of Math Teaching and their Performance in Education 268: The Teaching of Secondary Mathematics

n = 16

Perspectives Performance	Almost Excellent 5.5-6.3	Very Positive 4.6- 5.4	Ppositi ves 3.7-4.5	Total	Chi Square (X ²)
Very satisfactory (24 – 31)	1	3	1	5	=1.71
Satisfactory (17 – 23)	4	3	1	8	df = 4
Fair (9 – 16)	1	1	1	4	p-value
Total	6	7	3	16	=.881

Table 4 shows the test (Chi-square: χ^2) of association between the respondents’ perspective of their math teaching and course performance. Computed X^2 of 1.71, with the degrees of freedom (df) of 4 and the corresponding p-value of .881 indicate that the respondents’ perspective of their math teaching is not significantly associated with their course performance. Whether a respondent performs almost excellently or only fairly, his/her course performance does not significantly affect her perspective of Math teaching.

CONCLUSIONS

The study shed light on the following:

1. The participants perceived themselves as very competent, creative, very confident, expert, very technologically adept, and assessed their student's employing performance based-assessment.
2. The participants' perspectives employing semantic differential scale and when chi-square (X^2) was employed to test did not show significant difference in their perceptions ($p > .05$). The data gathered is not sufficient to tell that performance in the final examination is contributory to the respondents' perspectives.
3. Finally, the inspiring messages were synthesized as Mathematics is for everyday life, that it should be taught with passion inculcating virtues, and aesthetic appreciation.

RECOMMENDATIONS

There is a need to shift traditional math teaching to a more student-focused approach that includes technology and emphasize skills like critical thinking, problem-solving, teamwork, and real-world applications to prepare students with the necessary math skills to face complex problems in various fields and jobs and to address the issue of ensuring equal access and participation for all students.

REFERENCES

- Blausten, H., Gyngell, C., Aichmayr, H., & Spengler, N. (2020). Supporting mathematics teaching for mastery in England. In F. M. Reimers (Ed.), *Empowering teachers to build a better world: How six nations support teachers for 21st Century education* (pp. 29-49). Singapore: Springer.
- Cai, J., & Zenger, L. (2021). Future themes of mathematics education research: An international survey before and during the pandemic. *Educational Studies in Mathematics*, 107(1), 1-24. <https://doi.org/10.1007/s10649-021-10049-w>
- Clarkson, P., Bishop, A., & Seah, W. T. (2020). Mathematics education and student values: The cultivation of mathematical well-being. In T. Lovat & R. Toomey (Eds.), *International handbook on values education and student well-being* (pp. 111- 136). NY: Springer.
- Coomes. M. D., & DeBard, R. eds. (2020). *Serving the millennial generation*. San Francisco. Jossey-Bass.
- Corpuz, Brenda B. et al (2018). *Principles and Strategies of Teaching 2*. LORI MAR Publishing Incorporated, Philippines: 2018.
- Davidson, C. N. (2020). "We can't ignore the influence of digital technologies. " *Education Digest*, 73 (1), 15-18.
- Dede, C. (2020). "Planning for the new millennial learning styles: Implications for investments in technology and faculty."15.1 - 15.22 in *Educating the Net Generation*. Oblinger, D. G. and Oblinger, J. L. eds., an EDUACAUSE eBook.

- Dindyal, J., Choy, B. H., Schack, E. O., & Sherin, M. G. (Eds.) (2021). *ZDM - Mathematics Education: Mathematics teacher noticing: Exploring and expanding the terrain*. Springer Nature.
- Domingues, N. S., & Borba, M. de C. (2021). Digital video festivals and mathematics: Changes in the classroom of the 21st century. *Journal of Educational Research in Mathematics*, 31(3), 257-275.
- Dong, L., Seah, W. T., Cao, Y., & Clarke, D. (2019). Student talk in large-size mathematics classrooms: a case study of a sequence of ten consecutive lessons in China. *Asia Pacific Education Review*. 449-466.
- Drury, H. (2019). 'Teaching math mastery is not a quick fix'. Retrieved from <https://www.tes.com/news/teaching-maths>
- Elam, C., Stratton, T. & Gibson, D. D. (2021). "Welcoming a new generation to college: The millennial students." *Journal of College Admission*, 20 -25
- Frاند, J.L. (2020). "Information age mindset: Changes in students and implications for higher education." *Educause Review*, 35, 16 -24.
- Gooya, Z., & Gholamzad, S. (2021). The Covid-19 pandemic: A challenge for values in school mathematics in Iran. *Journal of Educational Research in Mathematics*, 31(3), 379-392.
- Ham, Y. & Hwang, J. (2021). Mathematical Literacy and Collaborative Problem-Solving: Comparison between Korean and U.S. Students in PISA2015. *Journal of Educational Research in Mathematics*, 31(3), 299-320.
- Hattori, Y., Fukuda, H., & Baba, T. (2021). Development of socio-critically open-ended problems for critical mathematical literacy: A Japanese Case. *Journal of Educational Research in Mathematics*, 31(3), 357-378.
- Hill, J. L., Kern, M. L., Seah, W. T., & van Driel, J. (2020). Feeling good and functioning well in mathematics education: Exploring students' conceptions of mathematical well-being and values. *ECNU Review of Education*, 3(2), 1-27. doi:10.1177/2096531120928084
- Lee, N. H., Lee, J., & Wong, Z. Y. (2021). Preparing students for the Fourth Industrial Revolution through mathematical learning: The Constructivist Learning Design. *Journal of Educational Research in Mathematics*, 31(3), 321-356.
- Li, Y. (2019). Should what works in successful countries be implemented in other countries? In M. Graven, H. Venkat, A. A. Essien, & P. Vale (Eds.), *Proceedings of the 43rd conference of the international group for the Psychology of Mathematics Education (Vol. 1, pp. 67-72)*. PME.