



GUILD OF EDUCATORS IN TESOL INTERNATIONAL

# MAGAZINE

Equity and  
Inclusion in  
STEM Education

Global  
Collaboration in  
STEM

Community  
Engagement and  
Outreach

Success Stories



in the context of

**BUILDING A SUSTAINABLE  
FUTURE: BRIDGING LANGUAGES  
IN STEM EDUCATION**

# GET INTERNATIONAL RESEARCH JOURNAL

GUILD OF EDUCATORS IN TESOL INTERNATIONAL INSTITUTE

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**GUILD OF EDUCATORS IN TESOL INTERNATIONAL INSTITUTE** is a progressive knowledge generating institution that is internationally -recognized for quality English language trainings, seminar, workshops, and conference. It aims to provide relevant, quality, and accessible seminar; to deliver innovative, and interactive workshops, and, to produce highly competitive and functional trainings for teachers and other professions. GET International Research Journal aims to promote English language education to educators across all disciplines, to provide excellent training in language education through open learning, seminars and workshops, to enable the educators to be expert in the teaching of English to speakers of other languages and to be a leading center of excellence in the continuing professional development for teachers and other professions locally and internationally.



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## GET INTERNATIONAL RESEARCH MAGAZINE EDITOR'S NOTE

Welcome to our latest edition of the magazine, where we embark on a captivating journey through the multifaceted realm of education. In this issue, we invite you to delve into the rich tapestry of experiences that shape the lives of teachers and students alike – a tapestry we like to call "Educational Landscapes."

Through the power of the written word, we aim to provide a platform for teachers to explore, express, and celebrate their profound connection with the world of education. Within these pages, you will encounter a diverse collection of pieces that offer a vivid glimpse into the hearts and minds of educators, as they navigate the joys and challenges of their noble profession.

Poetry, with its ability to evoke emotions and provoke introspection, finds its place in our magazine. Poems penned by teachers will capture the essence of their journeys – the moments of inspiration, the weight of responsibility, the connections formed with students, and the profound impact that education can have on shaping young minds and futures.

In the spirit of inquiry and knowledge, our pages will also be adorned with thought-provoking essays. Here, teachers will candidly share their personal experiences and reflections on the triumphs and trials they face within the classroom. Expect to find honest discussions on the strategies that work, the lessons learned, and the ongoing quest for improvement in the noble pursuit of education.

But our exploration doesn't end there. As we strive to remain at the forefront of educational discourse, we shall present research paper abstracts that shed light on current trends and issues shaping the educational landscape. This unique blend of academic rigor and practical application will ensure that our readers gain valuable insights into the latest developments in the field of education.

We believe that by embracing the diversity of voices within the education community, we can gain a deeper understanding of the beauty and complexity of the teaching profession. Through this magazine, we hope to foster a sense of community, providing a forum for educators to share, learn, and grow together.

So, dear readers, prepare to be inspired, challenged, and enlightened as we traverse the "Educational Landscapes" in the pages that follow. We encourage you to open your hearts and minds to the stories, ideas, and experiences that await you.

Thank you for joining us on this captivating journey, and we look forward to embarking on many more with you in the future.

# CONTENTS

## Featured Story

<b>A Journey Through Physics and Math: A Life Dedicated to STEM Education</b>	<b>1</b>
Daisy Mae R. Bongtiwon, MAT	
<b>Bangon Pilar, Bagong Pilar</b>	<b>6</b>
Jennifer P. Benliro, DPA	
<b>SUBIC TRANSFORMED!</b>	<b>8</b>
Pamela Reyes- Gatdula, EdD	

## About the Authors

<b>Daisy Mae R. Bongtiwon, MAT</b>	<b>12</b>
<b>Aicel L. Arogante, MAED</b>	<b>12</b>
<b>Roel P. Balayan, EdD</b>	<b>13</b>
<b>Imelda G. Guyon, PhD</b>	<b>14</b>
<b>Sherrilyn B. Quintos, PhD EdD</b>	<b>15</b>
<b>Dennis D. Mangubat, MAT</b>	<b>15</b>
<b>Joseph T. Moraca, EdD</b>	<b>16</b>
<b>Florinda D. Bautista, MPA</b>	<b>16</b>
<b>Ronald F. Domingo, EdD</b>	<b>17</b>
<b>Cynthia A. Manalad, DPA</b>	<b>17</b>
<b>Conrad Blando, EdD</b>	<b>18</b>
<b>Pamela Reyes-Gatdula, Ed.D.</b>	<b>18</b>
<b>Benjamin G. Haboc</b>	<b>19</b>
<b>Grigorios L. Kyriakopoulos, EdD</b>	<b>20</b>

## Best Practices

<b>Project BARKO: Basura Ko Responsibilidad Ko</b>	<b>21</b>
Ronald F. Domingo, EDD	

# CONTENTS

## Articles

<b>A Day in the Life of a Physics Teacher</b> Derick O. Peralta, MPA	<b>24</b>
<b>Teacher in the Community: Nurturing Minds, Building Bridges, and Empowering Communities through Livelihood Initiatives</b> Joseph T. Moraca, EdD	<b>27</b>
<b>What Do We Do Next?</b> Daisy Mae R. Bongtiwon, MAT	<b>32</b>
<b>Harmony Unveiled: The Intrinsic Value of Forests Within Our Communities</b> Imelda Guyon, PhD	<b>36</b>
<b>A Nova Success Story</b> Daisy Mae R. Bongtiwon, MAT	<b>40</b>
<b>The Role of Mathematics in Fostering a Sustainable Future</b> Roel P. Balayan, EdD	<b>41</b>
<b>Embracing Technological Solutions: A Revolutionary Approach to Biodiversity Conservation through Advanced Waste Management Systems</b> Eleonor T. Salvador, EdD	<b>47</b>
<b>Navigating the Path from Idea to Impact: The Role of Technology in Business Entrepreneurship</b> Cynthia Manalad, DBA	<b>49</b>
<b>Contemporary Challenges and Future Perspectives of Secondary Education in the edge of Industry 4.0 meta-era</b> Grigorios L. Kyriakopoulos, EdD	<b>51</b>
<b>POV: You've Just Invested Thousands in Curriculum</b> Leena Bakshi McLean, PhD	<b>54</b>
<b>Embracing the Nothingness: A Reflection on the Inherent Meaninglessness of Life</b> Aicel L. Arogante, MAED	<b>56</b>
<b>The Periodic Table of Elements: Tracing the Past, Present, and Future</b> Guillerma E. Hebron	<b>58</b>



# CONTENTS

## Articles

<b>Mathematics: The Architect of Technological Progress and Societal Transformation</b>	<b>60</b>
Yvonne O. Carandang, EdD	
<b>Illuminating the Teacher’s Impact: Empowerment, Community Building, Heroism, and Innovation in Education Leadership</b>	<b>62</b>
Sherrilyn B. Quintos, PhD EdD	

## Poems

<b>The Ballet of Math</b>	<b>68</b>
Roel P. Balayan, EdD	
<b>Community Engagement of Teacher in the Community</b>	<b>69</b>
Joseph T. Moraca, EdD	
<b>Adapting To Challenges</b>	<b>70</b>
Florinda D. Bautista, MPA	
<b>Champions Of Innovation</b>	<b>72</b>
Florinda D. Bautista, MPA	
<b>Educational Pillars</b>	<b>72</b>
Florinda D. Bautista, MPA	
<b>Lifelong Impact</b>	<b>73</b>
Florinda D. Bautista, MPA	
<b>Protecting our Biodiversity through Technology</b>	<b>74</b>
Benjamin G. Haboc, MAEd	
<b>From Idea to Impact Technology of Business Entrepreneur</b>	<b>75</b>
Cynthia Manalad, DBA	
<b>Teacher as an Entrepreneur</b>	<b>76</b>
Evangeline Romano	
<b>STEM ang Pag-asa ng Kabataan Ngayon Bagong Panahon</b>	<b>77</b>
Dennis D. Mangubat, MAT	
<b>Lifelong Impact</b>	<b>78</b>
Florinda D. Bautista, MPA	
<b>My Teacher is a Living Hero</b>	<b>79</b>
Conrado B. Blando, EdD	

# CONTENTS

## Poems

### **A Teacher is a Community Leader**

Conrado B. Blando, EdD

**80**

### **Edukasyon Tungo sa Kaunlaran at Magandang Pamayanan**

Dennis D. Mangubat, MAT

**81**

# FEATURED STORY





## **A JOURNEY THROUGH PHYSICS AND MATH: A LIFE DEDICATED TO STEM EDUCATION**

### **DABY MAE R. DONGIWON, MAT**

My journey in the world of physics and mathematics has been marked by a relentless pursuit of knowledge, a passion for understanding the intricacies of the universe, and an unwavering commitment to academic excellence. From the early years of my education to the present, my love for these disciplines has shaped not only my academic achievements but also my identity as a scholar and STEM enthusiast.

#### **Elementary and High School Years:**

The foundation of my academic journey was laid in my formative years, where I excelled in both physics and mathematics. In Castillejos

Elementary school, I was honored to receive the title of salutatorian, a testament to my dedication and aptitude for learning. As I transitioned to high school, Saint Nicholas Academy, my commitment to excellence in these subjects persisted, earning me an honorable mention during graduation in 1995. The recognition for Best in Math and Best in Physics further fueled my passion and set the stage for my academic pursuits in the years to come.

#### **College Years – DOST-SEI Scholarship at Philippine Normal University:**

The next chapter of my academic journey unfolded at the Philippine Normal University, where I was privileged to be a recipient of the prestigious DOST-SEI scholarship. This scholarship not only provided financial support but also opened doors to a world-class education in physics, with a specific focus on preparing me to become a teacher in the field. Pursuing a Bachelor of Science in Physics for teachers, I delved into the complexities of the subject, honing my skills and expanding my understanding of the fundamental principles that govern the physical world.

In 1999, I proudly graduated cum laude, a recognition of my dedication to academic excellence and my commitment to contributing meaningfully to the field of physics education. Armed with knowledge and enthusiasm, I embarked on a mission to inspire the next generation of physicists and mathematicians.



### Further Academic Achievements – MAT Mathematics Graduate:

My academic journey did not stop with a bachelor's degree; instead, I continued to explore the vast landscape of mathematical knowledge. At the Philippine Normal University, I pursued a Master of Arts in Teaching Mathematics (MAT) and successfully graduated in 2002. This advanced degree not only broadened my understanding of mathematics but also equipped me with the pedagogical tools necessary to convey complex mathematical concepts effectively.



### Ongoing Pursuit of Excellence – MS Physics at De La Salle University:

I am currently engaged in the pursuit of a Master of Science in Physics at De La Salle University. This ongoing journey is a testament to my enduring passion for physics, as I seek to delve deeper into the intricacies of the subject and contribute to the ever-expanding pool of knowledge within the field. The pursuit of a master's degree signifies my commitment to continuous learning and my desire to make meaningful contributions to the world of physics.

### Teaching at Philippine Normal University and Ifugao Provincial Science High School:

My journey in education continued with a five-year tenure at the prestigious Philippine Normal University, where I taught both Mathematics and Physics under the College of Science. The academic environment at PNU allowed me to contribute to the development of aspiring educators and scientists. Following this, I spent three fulfilling years at the Ifugao Provincial Science High School, where I not only taught but also served as the Math MTAP Challenge coach, further emphasizing my commitment to nurturing students' intellectual curiosity and competitive spirit.

### EARIST Manila – A Decade of Contribution to Applied Physics:

From 2010 to 2019, I found a home at the Eulogio "Amang" Rodriguez Institute of Science and Technology (EARIST) in Manila, where I served as an Instructor in the BS Applied Physics Program under the College of Arts and Sciences. During this period, I contributed to the academic and personal development of students, sharing my passion for applied physics and inspiring a new generation of physicists.

### STEM Education Advocacy and Research Development:

My dedication to STEM education reached new heights in 2022, as I initiated a series of impactful initiatives. Beginning with an online webinar titled "Get Inspired with STEM



Education" in April 2022, I expanded my reach with a STEM Camp for students in August. The launch of "Weekend Teachers Training," a seminar in partnership with STEM4Real, further solidified my commitment to empowering educators.

Simultaneously, I delved into research, elevating my expertise in STEM, physics, and mathematics education. Membership in the National Science Teacher Association provided me with opportunities to attend webinars and participate as a peer reviewer for research papers and conferences. In 2023, I honed my research and writing skills through seminars on scientific research paper writing, culminating in a series of successful projects based on the theses of my students.

Research Endeavors in 2020 to 2023:

My commitment to research and mentoring is exemplified through a diverse range of ongoing projects, each dedicated to addressing real-world challenges through rigorous scientific inquiry. I am grateful to the BSAP students and BSE-Science Batch of 2022 for choosing me as their adviser for these research endeavors.

- |                               |   |
|-------------------------------|---|
| 1.Heated Towel                | 5.Briquette Production                    |
| 2.Pyrolysis                   | 6.Coco-fiber Tiles                        |
| 3.Lightning Protection System | 7.Fish Scale-Based Plastic                |
| 4.Streetlight System          | 8.Learning Materials Made by 3-D Printers |

Nurturing STEM Dreams: Influential Figures Who Shaped My Path

The journey into the world of Science, Technology, Engineering, and Mathematics (STEM) is often a tapestry woven by the guidance and inspiration of remarkable individuals. In my pursuit of knowledge and passion for STEM, several influential figures have played pivotal roles in shaping my perspective and fueling my aspirations. Among these trailblazers are Leena Bakshi McLean, PhD, Grigorios Kyriakopoulos, Engr. Antonio Lizada each contributing a unique and invaluable influence on my understanding and appreciation of STEM disciplines.

Leena Bakshi McLean, PhD: A Champion of STEM Education

Leena Bakshi McLean, PhD's journey from studying Integrative Biology at UC Berkeley to becoming a professor of pre-service teacher candidates underscores her profound dedication to STEM education. Her teaching credential from Claremont Graduate University paved the way for her impactful role as a professor, where she imparts knowledge in STEM Methods and Universal Design for Learning. Leena's diverse experience as a former math and science teacher, instructional coach, and county office administrator brings a wealth of practical wisdom to her teachings. Her commitment to education is further reflected in her role as a professor, where she continues to inspire future educators. Her influence on my



understanding of STEM extends beyond the theoretical to the practical, instilling in me the importance of bridging academic knowledge with real-world applications such as social justice.

#### Grigorios Kyriakopoulos: A Multidisciplinary Luminary

Grigorios Kyriakopoulos stands as a testament to the power of multidisciplinary expertise. Holding two Ph.Ds, one in Low Carbon Economy and another in Chemical Engineering, as well as a diverse array of qualifications in economics, environmental science, environmental design, Hellenic culture, and theology, Kyriakopoulos embodies the interdisciplinary nature of STEM. His vast knowledge base extends from

engineering to economics, creating a bridge between seemingly disparate fields. As someone who aspires to explore the intersections of STEM disciplines, Grigorios Kyriakopoulos has been an influential figure in shaping my belief in the importance of holistic and interconnected learning.

#### Engr. Antonio Lizada: Pioneering Innovation in Engineering

Engr. Antonio Lizada's role as a faculty member in the Engineering Department at EARIST-Manila serves as a testament to the transformative impact of innovation in STEM fields. With a specialized focus on Electrical and Communications Engineering, coupled with expertise in robotics, systems design, and 3-D printing, he stands as a pioneering figure in applied technology. Engr. Lizada has played a crucial role in helping me conceptualize and actualize ideas for STEM education and relevant inventions for research projects.

#### Nurturing Entrepreneurial Dreams: Mentors Who Paved the Way

Embarking on the entrepreneurial journey is a venture profoundly influenced by the wisdom and mentorship of those who believe in one's potential. In my quest to establish and expand my business, Dr. Jennifer P. Benliro has been instrumental, offering essential guidance, insightful perspectives, and unwavering support. Her expertise, encouragement, and dedication to fostering entrepreneurship have proven invaluable, laying a solid foundation for my business, particularly during the seminar on Science, Technology, STEM, and Livelihood Projects.

#### My Journey to STEM Education

My journey through physics and math has been an exciting adventure. Excelling in school, earning scholarships, and maintaining a genuine love for learning have been constants from my early years to my current pursuit of a master's degree. From my roots as a tutor to my present role as a STEM education advocate, I've relished the diverse experiences shaping my professional identity. I find joy in helping others enjoy learning and eagerly explore new

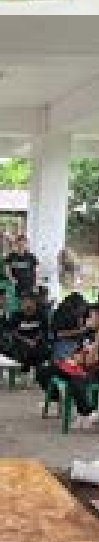
facets of STEM. Anticipating both challenges and opportunities in the future, I am enthusiastic about continuing to learn and make a meaningful impact in the community through STEM education and Livelihood projects.



**STEM EDUCATION LEADS TO BRIGHTER CAREERS AND A PROMISING FUTURE**  
-DM DONGSIWON



# FEATURED STORY



## **BANGON PILAR, BAGONG PILAR**

### **JENNIFER P. BENLIRO, DPA**

The Bangon Pilar Artists celebrated the grand inauguration of "Sining Payag" on November 16, 2023, establishing a vibrant haven for artists and art enthusiasts. Mayor Arnold Perez played a pivotal role in championing this initiative, demonstrating unwavering support for the advancement of Culture, Arts, and Development in the Municipality of Pilar, Capiz.



This artistic sanctuary, generously funded by the Local Government Unit of Pilar, Capiz, stands as more than just a physical space. It is envisioned to be an exhibition center and a dynamic venue for activities meticulously dedicated to promoting arts and culture, with a specific emphasis on empowering and showcasing the talents of local artists.

The inauguration witnessed the participation of Mr. PG "Boyet" Zoluanga, a revered Music and Art Icon from Iloilo. Serving as the resource speaker, he shared his expertise through a workshop with the Guban Handuraw Group, bringing together students from Capiz State University and pupils from Sinamongan Integrated School in Pilar, Capiz.

The Pilar Community Rondalla group, led by Mr. Daniel Demafeliz and Mrs. Adora Delfin of the Department of Education's Pilar Elementary School, captivated the audience with their musical renditions, adding a harmonious touch to the celebratory atmosphere.

Further enriching the event, the DepEd Sinamongan Integrated School SPA Class, under the guidance of Mr. Marvy Balgame and Mr. Elmer Patricio, showcased their dance and theatrical prowess, infusing dynamic elements that added vibrancy to the occasion.

Dr. Evelyn B. Bogronia, the Cultural Affairs Coordinator at Capiz State University Pilar Campus, and Mr. Deony P. Dolor, the Guban Handuraw of CAPSU Pilar Council Adviser, attended the ceremony with their students, symbolizing the collaborative spirit within the academic community. They were joined by CAPSU Satellite College Director Dr. Jennifer Perez-Benliro.





Representing Honorable Mayor Arnold Perez, Mr. Reggie Joey G. Benliro, Executive Assistant IV, and Atty. Criselda Heredia, the Municipal Administrator, actively participated in this enriching one-day activity. The launching and ribbon-cutting ceremony drew a diverse and influential audience, including SB Member Per Ian Perez, Tourism Officer

Teresita Argame, MENRO Focal Person Val Piape, Guban Handuraw VP Junar Bantillo, CAPSU Pilar Satellite College Director Dr. Jennifer P. Benliro, Dr. Evelyn Borgonia, Municipal Administrator Atty Criselda Heredia, Executive Assistant Mr. Reggie Joey Benliro, LGU Staff, DEPED, CAPSU faculty, students, pupils, parents, and various stakeholders, signifying widespread community support for this significant cultural and artistic endeavor.

The Bangon Pilar Artists inaugurated the "Sining Payag" on November 16, 2023, with the unwavering support of Mayor Arnold Perez, promoting Culture, Arts, and Development in Pilar, Capiz. The artistic hub, funded by the Local Government Unit, will serve as an exhibition space and venue for activities promoting local arts and culture. Renowned artist Mr. PG "Boyot" Zoluanga led a workshop, engaging participants from Capiz State University and Sinamongan Integrated School. The event featured performances by the Pilar Community Rondalla group, DepEd Sinamongan Integrated School SPA Class, and guests from Capiz State University. Mayor Perez was represented by Executive Assistant Reggie Joey G. Benliro, and the ceremony was attended by various officials, artists, students, and stakeholders, marking a significant step in advancing the local arts scene.



## **SUBIC TRANSFORMED!** **PAMELA REYES-GATDULA, EDD**

The community's transformation originated from a visionary perspective. Former Congressman, now Mayor Jeffrey D. Khonghun, spearheaded the initiative under the tagline "Edukasyon Tungo sa Kaunlaran" (Education Towards Progress), leading to the establishment of Kolehiyo ng Subic. The pivotal moment occurred during the tenure of Mayor, now Congressman Jefferson F. Khonghun, when Kolehiyo ng Subic obtained the necessary permits from the Commission on Higher Education (CHED) and became a beneficiary of the grant outlined in RA 10931, commonly known as the Universal Access to Quality Tertiary Education Act.

Mayor Jonathan F. Khonghun further advanced the college's physical transformation, culminating in the long-awaited acknowledgment from CHED. In 2021, the college was finally granted the Certificate of Recognition, marking a significant milestone in its journey.

### Fast Facts:

#### NAME:

- "Pamantasan ng Subic" was founded under Regulatory Ordinance No. 2002-05 in September 2002 during the tenure of Former Mayor Jeffrey D. Khonghun.
- Subsequently, Regulatory Ordinance No. 2002-06 was ratified on November 20, 2002, leading to the renaming of the institution from "Pamantasan ng Subic" to "Kolehiyo ng Subic."

#### LOCATION

- During the school year 2003-2004, Kolehiyo ng Subic was situated at the FDO building in Sta. Monica Subdivision, Barangay Sto. Tomas, Subic, Zambales.
- In 2004, KNS relocated to its permanent campus in Wawandue, Subic, Zambales, adjacent to the Josephine F. Khonghun SPED Center and facing the Subic Sports Complex.

### ENROLMENT

Over the years, the institution has experienced significant fluctuations in enrollment. There was a substantial increase in enrollees from 2003, suggesting potential growth

or changes in popularity, programs, or accessibility. The trend of growth continued, with a significant rise in 2013 and 2016 possibly attributed to increased program offerings, improved facilities, or an enhanced reputation.

There was a subsequent decrease in 2020 due to the worldwide pandemic. An increase in 2021 hinted at a





potential recovery, possibly driven by adjustments in educational strategies or external factors. The positive trend persisted in 2022, indicating sustained growth or recovery from any decline observed in 2020, possibly due to effective marketing, enhanced academic programs, and positive word-of-mouth. The data for 2023 reveals a further increase, reflecting ongoing success resulting from institutional improvements, sustained success in national board examinations and increased employability. Analyzing these enrollment trends provides valuable insights, prompting the need for further investigation into specific factors to inform decision-making and strategic planning for the future.

## COURSES OFFERED

- Bachelor of Science in Elementary Education
- Bachelor of Science in Secondary Education ( Filipino, Social Studies, Mathematics, English)
- Bachelor of Science in Accountancy
- Bachelor of Science in Hospitality Management
- Bachelor of Science in Computer Science

Kolehiyo ng Subic provides a diverse array of academic programs, including a Bachelor of Science in Elementary Education for aspiring elementary school teachers and a Bachelor of Science in Secondary Education with specializations in Filipino, Social Studies, Mathematics, and English for those aiming to become secondary school teachers. The institution also offers a Bachelor of Science in Accountancy, geared towards individuals interested in accounting careers, covering principles of accounting, financial management, auditing, and taxation. The Bachelor of Science in Hospitality Management is designed for students interested in the hospitality and tourism industry, encompassing hotel and restaurant operations, event planning, and customer service. Finally, the Bachelor of Science in Computer Science focuses on computer systems, programming, and software development, preparing graduates for roles in information technology and related fields. This diverse range of programs allows students to choose a path aligned with their interests and career goals, featuring structured curricula and practical training for success in their chosen professions.

## Licensure Examinations for Teachers

Kolehiyo ng Subic generally gets higher passing percentage than the national passing rate. In 2022, 137 individuals successfully passed the LET, and 2 passed the examination for Accountancy. In the most recent data from 2023, 85 teachers attained success and 3 became Certified Public Accountants. These figures, influenced by factors such as examination difficulty and external circumstances, underscore the annual outcomes of individuals meeting the Professional Regulation Commission's standards for teacher licensure and public accountant exam urging

consideration of broader educational factors impacting these results.

### Changing the Landscape

The establishment of local tertiary education has significantly transformed the landscape of the Municipality of Subic. Year after year, since the inaugural graduating class, the municipality has been producing its own professionals who excel in various fields. These graduates contribute their expertise to the academe, business sector, and the food and hotel industry, both locally and internationally, achieving remarkable success.

The dedicated KNS team, including the College President, College Administrator, Deans, College Instructors, and the Board of Trustees, collaboratively worked to provide high-quality education and produce graduates who successfully pass board examinations, overcoming numerous difficulties and challenges. Gratitude is owed to the visionary town leaders who prioritized education and ensured access for all citizens.

Special recognition is extended to the students and parents who bravely committed to the journey, overcoming financial constraints, academic pressures, time limitations, and choosing to prioritize education despite the sacrifices. Their relentless determination and passion to graduate have led to remarkable success stories, showcasing improved lives and paving the way for a brighter future. Kudos to their unwavering commitment and achievements.

And it all started with Edukasyon Tungo sa Kaunlaran.

### Seminar on STEM, Science, Technology, and Livelihood Projects @ Kolehiyo ng Subic

Kolehiyo ng Subic stood as a vibrant and dynamic venue for the transformative seminar held on December 1 to 2, 2023, focusing on STEM (Science, Technology, Engineering, and Mathematics), as well as Science, Technology, and Livelihood Projects. The college showcased its commitment to fostering innovation and community development, marking the beginning of a new era for progressive research programs and sustainable extension projects.

In a strategic move, Kolehiyo ng Subic initiated partnerships with professors and experts from state colleges and universities, creating a collaborative platform for research and extension activities aligned with STEM disciplines and livelihood projects. This synergistic approach leverages the wealth of knowledge and experience from diverse academic backgrounds, enriching the learning environment and expanding the horizons of possibilities.

The college extended its outreach by actively inviting neighboring schools to participate in seminars and workshops. This initiative aims not only to enhance the professional development of teachers in delivering effective STEM instruction but

also to contribute to their skill set for the implementation of additional livelihood programs. Kolehiyo ng Subic recognizes the interconnectedness of education and sustainable livelihoods, and through these collaborations, it seeks to create a ripple effect that would positively impact the wider educational community.

Furthermore, Kolehiyo ng Subic is making significant strides in enhancing the research skills of both its students and professors. Through strategic collaborations with agencies such as the Department of Science and Technology (DOST), Local Government Units (LGU), and other relevant institutions, the college seeks to facilitate groundbreaking research and inventions. By tapping into external expertise and resources, the college aimed to cultivate an environment that nurtures creativity, critical thinking, and problem-solving skills among its academic community.

As a result of these initiatives, Kolehiyo ng Subic emerged not only as a hub for academic excellence but also as a catalyst for community-driven development. The seminar held on December 1 to 2, 2023, marked a pivotal moment in the college's journey, emphasizing its commitment to the holistic advancement of education, research, and community engagement. The doors of Kolehiyo ng Subic are now wide open, beckoning towards a future filled with collaborative ventures and sustainable projects that will positively impact both the academic and local communities.



# ABOUT THE AUTHORS



## About the Author



### **Daisy Mae R. Bongtiwon, MAT**

Prof. Daisy Mae R. Bongtiwon is an accomplished educator and researcher with a strong background in the field of Science education. She is a former head of the Science Department in the College of Education at Eulogio “Amang” Rodriguez Institute of Science and Technology (EARIST), Manila.

She is a Cum Laude graduate from the Philippine Normal University, where she completed her Bachelor of Science in Physics for Teachers in 1999. She further pursued her passion for Mathematics and earned a Master of Arts in Teaching

Mathematics from the same university. Throughout her undergraduate studies, she was a recipient of the esteemed DOST-SEI scholarship, which highlights her exceptional academic aptitude and dedication to her field. Additionally, she completed her academic requirements leading to an MS in Physics at DLSU-Manila, further enriching her knowledge and expertise in the subject. Currently, she holds teaching positions in multiple programs at EARIST. She imparts her expertise in major Physics subjects in the BSE Science program under the College of Education, as well as in the BS Applied Physics program under the College of Arts and Sciences. Furthermore, she teaches STS (Science, Technology, and Society) for the BSIT program under the College of Industrial Technology, showcasing her versatility and breadth of knowledge in various disciplines.



### **Aicel L. Arogante, MAED**

Aicel L. Arogante is a professional educator working with Tamnao Elementary School's kindergarten pupils. Master of Arts in Educational Management graduate. An active member of Kabalikat 385-San Andres Chapter. One of the Wood Badge holders of the Boy Scouts of the Philippines.

## About the Author



### Roel P. Balayan, EdD

Dr. Roel P. Balayan holds an academic rank of Associate Professor 4 at the Euologio Amang Rodriguez Institute of Science and Technology (EARIST), Manila. With an extensive career spanning over 25 years, he has been a trailblazer in the field of mathematics and mathematics education, contributing significantly to both undergraduate and graduate programs. Dr. Balayan has held key leadership roles within EARIST, including Director for Instruction, Dean of the College of Education, Associate Dean of the College of Arts and Sciences, and Chair of the Mathematics Department.

Dr. Balayan earned his Bachelor of Science in Mathematics (Cum Laude) and Master of Science in Mathematics from EARIST, culminating in his Doctor of Education degree from Greenville College. Notably, he holds a Professional Licensed Teacher and actively contributes as an accreditor affiliated with the Accrediting Agency of Chartered Colleges and Universities in the Philippines (AACCUP). Additionally, he serves as an esteemed officer and member of the Board of Directors of PHERC, and Chairman of the Board of Directors of the Philippine Association of Authors, Researchers, and Educators (PAARE). Driven by a profound passion for education and an unwavering commitment to excellence, Roel P. Balayan, EdD continues to shape and elevate the landscape of mathematics education in the Philippines.



### Eleonor T. Salvador, EdD

She earned her doctorate degree in Educational Management (2011), Master of Arts in Teaching major in Science (2005), and Bachelor of Science in Education major in General Science (1995) from which she graduated Cumlaude from the Euologio "Amang" Rodriguez Institute of Science and Technology (EARIST), Manila. She served as the former Program Head of Science Department in College of Education and General Education Unit, Associate Dean of EARIST, Graduate School, and Dean of the College of Education from EARIST, Manila. She is an Associate Professor at EARIST, College of Education, teaching sciences, professional education and research subjects. She is also a full-time faculty at the Graduate Studies. She has

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## About the Author



### Imelda G. Guyon, PhD

Dr. Imelda G. Guyon serves as the Program Chairperson for the BS Forestry program at the College of Agriculture and Sustainable Development, Ifugao State University, Potia Campus, Alfonso Lista, Ifugao 3608. Specializing in Forest Resources Management/Forestry, she is dedicated to advancing education in this field.

With a robust academic background, Dr. Guyon completed her BS Forestry, MS in Forestry, and earned her Ph.D. in Resource Management with a major in Forest Resources Management under the prestigious CHED-K12 scholarship in 2021.

Prior to her academic role, she gained practical experience as a Land Management Examiner at DENR Alfonso Lista, Ifugao, and served as the Record Officer of IFSU in November 2013. Dr. Guyon started her teaching career in December 2016 at Ifugao State University Potia Campus and actively engages in research on sustainability, biodiversity, productivity, and technical efficiency.



### Sherrilyn B. Quintos, PhD EdD

Sherrilyn B. Quintos is an Associate Professor at Bataan Peninsula State University. She is a graduate of Doctor of Philosophy in English Language and Literature and Doctor of Education in Educational Management. She teaches subjects in Research, English and foreign languages (French, Japanese, Korean). She is also a researcher who had articles published in CHED accredited journals and various publications. Dr. Quintos is the former Head of the Strategy Management Office. Currently, she is the Director of the Data Analytics and Knowledge Management Office of the University.

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### **Dennis D. Mangubat, MAT**

Dennis D. Mangubat, M.A., is an Instructor 3 at Eulogio “AMANG “ Rodriguez Institute of Science and Technology 's College of Arts and Sciences, Department of Languages and Literature. With a Master of Arts in Filipino from Manuel L. Quezon University and a Bachelor of Elementary Education from Philippine Normal University, he brings a strong educational background to his teaching career. With over a decade of experience and prior teaching engagements at various institutions, Dennis has honed his expertise in language and literature instruction.



### **Joseph T. Moraca, EdD**

He obtained the degree of Bachelor of Science in Secondary Education major in History at Philippine Normal University-Manila. Also, Master of Arts in History at Manuel Luis Quezon University and Doctor of Philosophy major Educational Leadership and Management at the La Consolacion University Philippines.

Dr. Moraca is also the founder of Philippine Association of Authors, Researcher and Educators Inc. (PAARE Inc.) He has author and co-author several college text books like Fundamentals of Economics, Taxation and Agrarian Reform, Values and Work Ethics in Philippine Context, Lecture Guide in Entrepreneurship: Theories

and Principles and MICROECONOMICS: A Guide Towards Progress. Rizal Life Works and Writings, Readings in Philippine History and Gender and Society: Physiological and Legal Perspectives Currently, he is a CONSULTANT of Mulat Publishing House and active member of International Organization of Educators and Researchers Inc. (IOER), Philippine Historical Association (PHA) and Philippine Association for Teacher Education (PAFTE)

## About the Author



### Florinda D. Bautista, MPA

She took up Bachelor of Science in Industrial Education major in Home Economics from Technological University of the Philippines in 2001 and holds a Master in Public Administration from Eulogio “Amang” Rodriguez Institute of Science and Technology, graduated in 2006.

She has a passion for education and her desire to inspire the next generation of aspiring professionals drove her to pursue a career in academia in 2005. She joined the faculty at the same Institution as an Instructor III in the College of Business Administration in 2005 – 2016, later joined the faculty in the College of Education in 2016 – 2018 teaching major subjects in Home Economics and Professional Education subjects to other Major courses

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Currently, she is a faculty member of the General Education Department since 2018 specializing Social Science subjects namely: Ethics, Understanding the Self, Contemporary World, and Gender and Society, where she dedicated herself to teaching and mentoring undergraduate students.



### Ronald F. Domingo, EdD

Ronald F. Domingo, EdD, a graduate of Bachelor in Business Teacher Education from Polytechnic University of the Philippines Mulanay, Quezon, holds a Master's in Educational Management from PUP-Open University and a Doctor of Education major in Educational Administration from Greenville College Pasig City, Philippines. Currently pursuing a Master in Business Administration at La Consolacion University Philippines, he boasts a 9-year teaching career in public schools, including roles as Teacher I, Teacher II, and Senior High School Master Teacher I. Recognized for his contributions, he has received accolades such as the Division Outstanding Program Implementer in DRRM, District Outstanding Teacher 2015, International Excellence Award as Senior High School Teacher, and the GAWAD de AURORA AWARD 2022 as an

Innovative Master Teacher. Active in professional organizations, Mr. Domingo is a member of ISTAR-International Society of Teachers Administrators and Researchers, LEAD-Leadership in Education Academy and Development, and Ascendens Asia International Researchers Club.



## About the Author



### Cynthia A. Manalad, DPA

Cynthia A. Manalad is a faculty member of the College of Business and Public Administration at the Eulogio “Amang” Rodriguez Institute of Science and Technology. Holds the degree of Bachelor in Accountancy at the Polytechnic University of the Philippines and Doctor of Business Administration at Eulogio “Amang” Rodriguez Institute of Science and Technology and an entrepreneur. She has fifteen years of Industry Experience in the field of Sales and Marketing as well as in the field of accounting prior to her academic profession. She also passed Civil Service Examination-professional, TESDA Events Management NC III, Housekeeping and Bookkeeping.



### Conrado B. Blando, EdD

An accomplished and dedicated educator with over three decades of experience in both local and international settings such as INTI College Sarawak, Malaysia, Haramaya University, Ethiopia, and Higher College of Technology, Sultanate of Oman. Addition to his teaching career, he had excelled as a dynamic training program specialist to General Manager in the education and training department of BPO/corporate training centers for a period of five years. He has contributed significantly to the field of language education as a conscientious curriculum

developer in ESL, TEFL, and Conversational English. He is a writer and publisher who has authored 11 esteemed books. His latest published book was Purposive Communication in English Via Blended and Hybrid Learning Approaches, Second Edition (2023).

## About the Author



### **Pamela Reyes-Gatdula, Ed.D.**

Dr. Pamela Reyes-Gatdula, Ed.D., is a distinguished professional and committed academician, presently serving as a Board Member at Kolehiyo ng Subic. Her impressive educational journey includes a Doctor of Education from Columban College, a Master's in Science Education from the same institution, and a Master of Science in Biology from Ateneo de Manila University. Demonstrating her dedication to continuous learning, Dr. Gatdula completed the Basic Management Program at the Asian Institute of Management.

Within the Department of Education, Dr. Gatdula has played pivotal roles, serving as OIC-Asst Superintendent in the DepED Division of Zambales, ICT Regional Supervisor in DepED Region III, and Science Supervisor

in the DepED Division of Zambales. Her extensive career encompasses positions such as OIC-District Supervisor in Subic District, teacher in Magsaysay Memorial College, Saint Williams and San Guillermo National High School.



### **Benjamin G. Haboc**

Mr. Benjamin G. Haboc is a professor of the College of Education, EARIST- Manila teaching major science subjects of BSE-Science program.

He finished his BSEd major in physics in Pamantasan ng Lungsod ng Maynila in 2000 and BS Nursing in Metropolitan Hospital College of Nursing in 2010.

He graduated in 2014 his MAT major in science at Manuel L. Quezon University and now presently enrolled his dissertation at Centro Escolar University taking Phd in Science Education.

## About the Author



### Jennifer P. Benliro, DPA

Dr. Jennifer Benliro started her journey as Satellite College Director of Capiz State University, Pilar Satellite College last June 28, 2019. Prior to her designation as director, she had various roles aside from being the College Nurse since 1994.

After completing her Doctor of Public Administration in 2016, she transferred thru lateral entry to the faculty position of the said University.

Her support to the operations of CAPSU Pilar led her to the various accomplishments that she had as a strength of the university.



### Leena Bakshi McLean, PhD

Dr. Leena Bakshi McLean's journey from studying Integrative Biology at UC Berkeley to becoming a professor of pre-service teacher candidates underscores her profound dedication to STEM education. Her teaching credential from Claremont Graduate University paved the way for her impactful role as a professor, where she imparts knowledge in STEM Methods and Universal Design for Learning. Leena's diverse experience as a former math and science teacher, instructional coach, and county office administrator brings a wealth of practical wisdom to her teachings. Her commitment to education is further reflected in her role as a professor, where she continues to inspire future educators. Her influence on my understanding of STEM

extends beyond the theoretical to the practical, instilling in me the importance of bridging academic knowledge with real-world applications such as social justice.



## About the Author



### **Grigorios L. Kyriakopoulos, EdD**

Grigorios Kyriakopoulos stands as a testament to the power of multidisciplinary expertise. Holding two Ph.Ds, one in Low Carbon Economy and another in Chemical Engineering, as well as a diverse array of qualifications in economics, environmental science, environmental design, Hellenic culture, and theology, Kyriakopoulos embodies the interdisciplinary nature of STEM. His vast knowledge base extends from engineering to economics, creating a bridge between seemingly disparate fields. As someone who aspires to explore the intersections of STEM disciplines, Grigorios Kyriakopoulos has been an influential figure in shaping my belief in the importance of holistic and interconnected learning.

**Evangeline Romano**

Subi National High School, Subic, Zambales

**Virginia Abano**

Marikina High School, Marikina City

# Best Practices



# **PROJECT BARKO: BASURA KO RESPONSIBILIDAD KO**

## **RONALD F. DOMINGO, EDD**

### Project Background

In response to the critical environmental issues surrounding waste management and the imperative for community engagement, Marcial B. Villanueva National High School has launched Project BARKO (Basura Ko Responsibilidad Ko). This comprehensive initiative aims to cultivate a sense of responsibility and environmental stewardship among students, teachers, and the broader community.

Located in San Francisco, Quezon, Marcial B. Villanueva National High School confronts challenges related to waste management and environmental sustainability. The escalating volume of improperly disposed waste not only impacts the immediate vicinity of the school but also poses a threat to the broader ecosystem. Recognizing the urgency of proactive measures, the school has taken the lead in addressing these concerns through Project BARKO.

### Objectives:

- Foster a heightened sense of responsibility among students and staff for the correct disposal of waste.
- Cultivate a prevailing culture of cleanliness and environmental consciousness throughout the school community.
- Broaden the project's influence beyond the school grounds by engaging the local community in endeavors aimed at waste reduction and recycling.
- Deliver educational programs and workshops on waste management, recycling, and the adverse environmental effects of improper waste disposal.
- Encourage a more profound understanding of the interconnectedness between individual actions and the overall health of the environment.
- Implement sustainable waste management practices within the school, including the establishment of recycling stations and the advocacy for reduced plastic usage.

### Project Components

Establish dedicated waste segregation and recycling stations on the school premises to promote responsible disposal practices.

Conduct awareness campaigns utilizing posters, seminars, and social media to educate students, teachers, and the community on the significance of responsible waste management.

Involve students in hands-on activities, including clean-up drives and recycling projects, to actively engage them in the initiative and empower them as catalysts for change.

### Project Outcome

Decrease in the quantity of improperly disposed waste within the school and its



vicinity.

Heightened awareness and comprehension of the environmental repercussions of waste among students and the community.

Fostering a sense of responsibility and environmental stewardship among the school's stakeholders.

Project BARKO is more than a waste management initiative; it is a transformative endeavor that aims to leave a lasting impact on the school community and beyond, instilling a dedication to environmental sustainability for current and future student generations.

#### Implications:

The multifaceted impact of Project BARKO is evident across various dimensions. Firstly, the decrease in improperly disposed waste not only within the school but also in its surroundings indicates a positive environmental impact, playing a role in mitigating potential threats to the broader ecosystem and fostering overall environmental sustainability. Secondly, the heightened awareness and understanding of the environmental repercussions of waste reflect a substantial educational impact, potentially instigating informed decision-making and sustainable practices among students and the broader community. Thirdly, the cultivation of a sense of responsibility and environmental stewardship implies a cultural shift within the school community, suggesting a long-term commitment to environmentally friendly practices and behaviors. Lastly, the project's successful engagement of the local community in waste reduction and recycling efforts signifies an impactful outreach initiative, fostering a collaborative and community-driven approach to addressing environmental challenges.

#### Conclusions

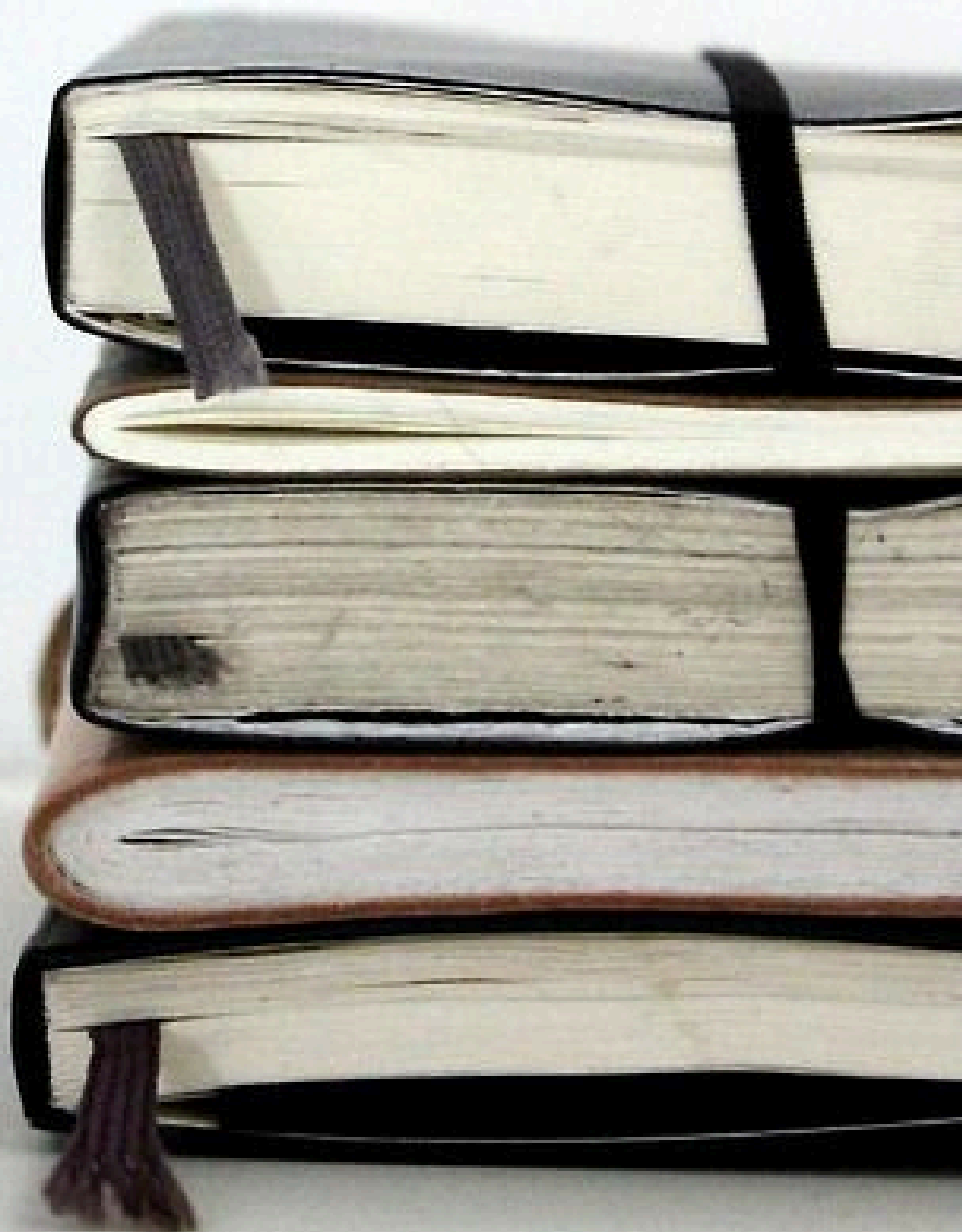
Project BARKO has emerged as a catalyst for positive change within Marcial B. Villanueva National High School and its community, evidenced by a significant reduction in improperly disposed waste and heightened environmental awareness. The success in community integration emphasizes the pivotal role of involving local residents in addressing environmental challenges, underscoring the importance of their active participation for achieving sustainable outcomes. The effectiveness of educational programs and workshops in transforming attitudes and behaviors underscores the crucial role of education as a catalyst for fostering environmental responsibility. While celebrating notable progress, the acknowledgment of the ongoing need for sustainable waste management practices and continued community engagement highlights the imperative of sustained efforts to uphold and build upon these positive outcomes in the long term.

### Recommendations

To ensure the enduring success of Project BARKO, a comprehensive strategy is recommended. Firstly, establishing a continuous monitoring and evaluation system is crucial for assessing the long-term impact of the initiative and identifying areas for improvement. Additionally, there is a need to expand educational initiatives, ensuring a sustained understanding of waste management practices and their environmental implications among students, staff, and the broader community. Community empowerment should be a priority, involving local residents in decision-making processes concerning environmental initiatives to guarantee their active participation and ownership of sustainability efforts. Collaboration with other schools or organizations is advised to share best practices, fostering scalability and enhancing the overall impact of successful waste management and environmental stewardship initiatives. Lastly, advocating for local policies supporting sustainable waste management practices is imperative to create a conducive environment for the long-term success of environmental initiatives. Through the integration of these strategic measures, Project BARKO can continue to flourish as a model for sustainable and impactful environmental change.

In summary, Project BARKO has made significant strides, and by implementing these recommendations, it can continue to be a beacon of positive change for environmental sustainability within Marcial B. Villanueva National High School and beyond.

# Articles





# A DAY IN THE LIFE OF A PHYSICS TEACHER

## DERICK O. PERALTA, MPA

### Chapter 1:

**Inception of the Quantum Dawn** In a quaint, secluded little house amidst the earthy place along Rutherford Avenue, the sun's rays peer through the curtains, signaling the start of a new day in Teacher Siony's life. Mam Siony, as she is affectionately called, is not only a loving mother but also an exemplary teacher – a Physics teacher. She begins preparing for the day ahead filled with anticipation and determination, sipping at a cup of steaming coffee, from time to time. A day where young, curious minds await in school.

### Chapter 2:

**Welcoming the Inquisitive Minds** The bustling hallway comes alive with the sound of enthusiastic chatter and shuffled feet as the school bell rings. With a beaming smile, Teacher Siony greets her students as she stands in the doorway. Her joy is sparked by their cheery features and eager emotions. It's time to start a new learning and discovery journey. With their backpacks thrown over their shoulders and their excitement and curiosity bubbling, the students enter the classroom. Mam Siony extends a cordial welcome to everyone, taking the time to get to know each person personally. She is aware of the importance of creating a kind and encouraging environment for their educational journey.

### Chapter 3:

**Unraveling the Secrets** As Mam Siony gets ready to teach the day's lesson, the classroom begins to buzz with excitement. In front of her attentive students, she reveals the mysteries of the cosmos with a passion that can move mountains. She tells rich stories of motion, light, and electricity with words that flow like a symphony. The pupils lean in as they watch the magic play out in front of them, entranced. Mam Siony uses interactive images and demonstrations to simplify difficult topics. She fosters a spirit of inquiry and critical thinking among her students by encouraging them to ask questions. The classroom transforms into a haven for intellectual discovery, where knowledge is built together and ideas are exchanged.

### Chapter 4:

**Igniting Curiosity** Mam Siony is aware that stimulating her students' interest is the key to releasing their full potential. She poses difficult questions that test their intelligence and encourage students to think outside the boundaries of textbooks. She lights a fire in their hearts with each question, inspiring them to enquire about and look for solutions in the world around them. Through thought-provoking discussions and hands-on activities, Mam Siony helps her students develop a deep appreciation for the beauty and intricacy of the physical world. She encourages

them to observe their surroundings and ponder the underlying principles governing the phenomena they encounter daily. The classroom becomes a gateway to a world of wonder and discovery.

#### Chapter 5:

**Engaging the Senses** Physics is a sensory experience, not just a subject of calculations and equations. Mam Siony creates an environment conducive to active learning in her classroom. Students carry out experiments while watching the workings of nature. They are mesmerized by the flashing flames, experience electrical hum, and hear the melodic resonance of vibrating strings. It turns into a multimodal adventure to learn. Being exposed to science firsthand creates a stronger understanding and appreciation for its concepts. Mam Siony actively encourages her students to use their senses. She leads them through experiments so they may record findings, form conclusions, and relate concepts learned in the classroom to practical uses. The classroom transforms into an environment for research and discovery.

#### Chapter 6:

**Overcoming Challenges** The road to knowledge is not always easy. Teacher Siony encounters challenges such as technical difficulties and disruptive distractions. But she overcomes these obstacles with poise and fortitude, making sure that her students' educational process is unbroken. By modifying her teaching strategies and coming up with creative ways to engage her students, she converts failures into opportunities. When a technical problem arises, Mam Siony rapidly improvises, using different materials to effectively deliver the lesson. She fosters a caring atmosphere where mistakes are welcomed as teaching opportunities, inspiring her students to continue and use their imaginations when faced with challenges. By overcoming obstacles together, her students strengthen their resilience and problem-solving abilities.

#### Chapter 7:

**Empathy and Encouragement** Teacher Siony understands that her responsibility as a teacher goes beyond the subject content. She is a tower of strength for her students, lending a sympathetic ear and encouraging words. She is aware of each person's unique talents and gently helps them overcome their inadequacies. She empathizes with others, which fosters a supportive environment where students feel appreciated and motivated to fulfill their potential. Mam Siony spends time getting to know her students' individual needs and learning preferences. She tailors her instruction to accommodate diverse abilities, ensuring that every student has an opportunity to thrive. Her words of support and faith in their abilities act as a catalyst for their development and self-assurance. The classroom transforms into a secure environment where her students can experiment and succeed.

## Chapter 8:

**The Moment of Revelation** During the class, a student had a "aha!" moment that causes their face to light up. Mam Siony sees how understanding and joy come together beautifully. It is an occasion that reinforces her purpose as a teacher. She experiences an incredible sense of success when she sees her students blossom and discover new aspects of themselves. Teacher Siony is filled with joy as the student gladly shares their newfound understanding. She congratulates them on their success and acknowledges the significant advancement they have made. The classroom is transformed into a tapestry of epiphanies, where her students gradually reveal the mysteries of the cosmos.

## Chapter 9:

**The Resonance of Eternity** As the day comes to an end, Mam Siony reflects on the difference she has made. Her students leave the classroom with hearts and minds brimming with inspiration and newfound knowledge. She is aware that she has sown the seeds of curiosity and sparked an interest in science that will flourish long after the students have left her classroom. Teacher Siony treasures the idea that her students' inquiry and learning journeys go well beyond the confines of the classroom. She hopes that they will carry the torch of scientific inquiry throughout their lives, embracing the wonders of the universe and making meaningful contributions to the world. The classroom serves as a springboard for continuing education and personal development.

## Chapter 10:

**Gratitude Renewed: Igniting the Cosmic Calling** Mam Siony is filled with a profound sense of appreciation as the sun sets and casts warmth over the empty classroom. New difficulties arise every day, but they are accompanied by a limitless amount of fulfillment and delight. Even while being a physics teacher is not always simple, the rewards are undeniable. She gets ready to welcome the next day with newfound purpose and is excited to keep forming the minds of future scientists. Mam Siony's uncompromising dedication to her profession is fueled by her love of physics and commitment to her students. Knowing that her own life is transformed just as much as her students' is by their voyage of discovery, she continues to be grateful for the chance to change the lives of her students. Mam Siony's passion for education and the glories of physics combine in the classroom to transform it into a haven, weaving a tapestry of inspiration and development.



# **TEACHER IN THE COMMUNITY: NURTURING MINDS, BUILDING BRIDGES, AND EMPOWERING COMMUNITIES THROUGH LIVELIHOOD INITIATIVES**

**JOSEPH T. MORAGA, PhD**

## **Introduction**

Education, as a dynamic force, transcends individual boundaries and resonates through the intricate tapestry of communities. Its impact extends far beyond the immediate realm of students, playing a pivotal role in shaping the collective identity, progress, and resilience of a community. Positioned at the forefront of this transformative landscape are teachers, who, beyond being conveyors of knowledge, emerge as catalysts for holistic community development. This essay explores the nuanced role of teachers as community leaders, underscoring the transformative potential of their involvement in community projects and the integration of additional livelihood opportunities to enrich both educators and the communities they serve. Traditionally confined to the role of knowledge-imparting figures within classrooms, teachers wield influence that stretches beyond these boundaries, acting as key community leaders inspiring positive change. Delving deeper, the multifaceted role of teachers gains prominence when considering the incorporation of additional livelihood opportunities. Economic challenges often hinder their full engagement with communities, making the introduction of supplementary income streams, such as workshops and mentorship programs, not only financially empowering for teachers but also enhancing their ability to contribute meaningfully to community development. This two-fold strategy not only addresses financial constraints but also unleashes the diverse skill sets possessed by teachers, fostering a symbiotic relationship where they become active contributors to both the economic and social well-being of their communities. The implementation of such livelihood initiatives requires a strategic approach, involving collaborations between educational institutions, local businesses, and governmental bodies to pave the way for mentorship programs, skill development workshops, and partnerships that mutually benefit educators and the community at large. By providing teachers with the means to pursue additional income-generating activities, we not only alleviate financial burdens but also cultivate an environment conducive to the flourishing of innovative community projects.

Of course, like any transformative initiative, challenges may arise. Limited resources, bureaucratic hurdles, and time constraints may pose obstacles to the seamless integration of additional livelihood opportunities for teachers. However, these challenges present opportunities for creative problem-solving and collaboration. By navigating these obstacles collectively, stakeholders can create an enabling environment that supports teachers in their dual role as educators and community leaders.

In essence, recognizing teachers as community leaders entails understanding and appreciating the multifaceted nature of their contributions. It involves acknowledging

their potential not only to shape young minds within the classroom but also to lead transformative initiatives that uplift the entire community. By integrating additional livelihood opportunities, we not only empower teachers but also unlock a reservoir of untapped potential for positive change, creating a more resilient, engaged, and thriving society.

#### Nurturing Minds in the Classroom

The metaphorical expression "teachers are the architects of young minds" encapsulates the profound impact educators have on the intellectual and emotional development of their students. Within the expansive classroom setting, teachers serve as pivotal figures, not just transmitting information but actively constructing the framework of a student's educational journey. Beyond the mere delivery of lessons, the foundational work involves a dynamic and interactive process where teachers foster critical thinking, creativity, and a lifelong thirst for learning. Their role as facilitators of intellectual exploration goes beyond textbooks, aiming to cultivate a holistic understanding of the world, encouraging students to question, analyze, and synthesize information. Moreover, teachers are not solely concerned with academic prowess; they become mentors and guides during the formative years, providing a supportive environment for emotional growth, self-expression, and the development of interpersonal skills. Recognizing the interconnectedness of cognitive and emotional intelligence, teachers play a crucial role in shaping not only individual identities but also the collective future as community leaders, embracing a broader vision for societal progress.

The responsibility of shaping future generations involves instilling values that go beyond academic achievements. Teachers, as community leaders, aspire to foster a sense of social responsibility, empathy, and a commitment to contributing meaningfully to the well-being of the broader community. This entails preparing students not only for personal success but also for active citizenship and positive societal engagement. Teachers become cultivators of civic virtues, nurturing a generation of individuals who understand their role in building a harmonious and prosperous community.

In essence, the metaphor of teachers as architects signifies the intentional and thoughtful nature of their work. It implies a purposeful design in shaping minds and characters, recognizing the enduring impact they have on the trajectory of individual lives and, by extension, the trajectory of communities. Teachers, in their dual role as educators and community leaders, are entrusted with the noble task of laying the groundwork for a future generation that is not only intellectually adept but also socially conscious and compassionate.

#### Building Bridges Beyond the Classroom

The concept that the influence of teachers as community leaders extends beyond



the school gates emphasizes the transformative power educators hold within the broader societal landscape. Assuming the role of community leaders, teachers play a pivotal part in bridging the gap between educational institutions and the wider community, fostering a symbiotic relationship that transcends conventional academic boundaries. Establishing connections and collaborations is at the heart of building bridges between schools and the community, and teachers, as community leaders, take the lead in initiating and nurturing these partnerships. One avenue for this is through alliances with local businesses, resulting in internships, mentorship programs, and real-world learning opportunities that enrich the educational experience and provide practical applications for academic knowledge. Teachers can also form partnerships with community organizations, leading to joint projects, outreach programs, and community service initiatives that align educational goals with community needs, fostering an engaged and socially responsible student body. Additionally, collaboration between teachers and governmental agencies is vital, as teachers, by engaging with local authorities, can advocate for policies supporting educational initiatives and community development, creating a reciprocal relationship where the needs of the community inform educational practices and vice versa.

The impact of these collaborations is not limited to educational outcomes alone. By fostering partnerships with local businesses, community organizations, and governmental agencies, teachers contribute to the strengthening of the social fabric of the community. The community becomes a dynamic ecosystem where various stakeholders work collaboratively for the common good. This not only enhances the quality of life for residents but also creates a sense of unity and shared purpose.

In essence, teachers, as community leaders, serve as catalysts for synergy between the educational system and the broader community. Their ability to build bridges and foster collaborations with local businesses, community organizations, and governmental agencies creates a holistic environment where education is not isolated but intricately woven into the fabric of community life. This collaborative approach not only enhances the educational journey of students but also contributes to the overall well-being and vibrancy of the community.

#### Empowering Communities through Livelihood Initiatives

Recognizing the multifaceted challenges faced by teachers underscores the necessity for a comprehensive approach to support their professional and personal well-being. Beyond the scope of teaching, educators frequently confront economic constraints that impede their full engagement with communities. Addressing this challenge requires an exploration of additional livelihood opportunities, serving as a practical solution to financial constraints and unlocking new possibilities for community projects beyond traditional educational boundaries. The integration of supplementary income streams benefits teachers personally by providing financial



relief, acknowledging the often unacknowledged economic strain they endure. This is pivotal for retaining skilled and dedicated teachers, ensuring their sustained commitment to the education sector. Professionally, the introduction of these income avenues transforms teachers into dynamic contributors to community development, expanding their influence beyond the classroom. Engaging in activities like community workshops, skill development programs, or entrepreneurial ventures represents a paradigm shift in the role of teachers as community leaders. Workshops and skill-building sessions not only impart valuable knowledge but also strengthen the connection between schools and the community, fostering a reciprocal learning environment. Skill development programs offer teachers opportunities to enhance their abilities, ensuring their adaptability and relevance in an ever-evolving educational landscape. Empowered with new skills, teachers can pass on this knowledge to students, fostering a continuous cycle of growth and innovation within the educational community. Exploring entrepreneurial ventures amplifies the impact of teachers as community leaders, as their business activities, aligned with their expertise, contribute not only to personal financial stability but also to the economic development of the community. These initiatives, ranging from educational startups to community-focused enterprises, create a ripple effect of economic empowerment within the community.

To fully realize the potential of teachers as economic contributors and community leaders, it is crucial to establish and support livelihood initiatives systematically. This may involve forming partnerships with local businesses, creating mentorship programs, or providing grants for community projects. These initiatives not only provide teachers with the means to generate additional income but also offer a structured framework for collaboration and support.

Partnerships with local businesses create mutually beneficial relationships, where businesses gain access to the expertise of educators, and teachers, in turn, receive financial support. Mentorship programs can connect teachers with experienced professionals who guide them in their entrepreneurial endeavors or skill development initiatives. Grants for community projects serve as a catalyst for innovative ideas, allowing teachers to address specific needs within their community and fostering a sense of ownership and commitment to the betterment of their surroundings.

### Conclusion

In conclusion, the journey towards integrating livelihood initiatives for teachers, while marked by exciting opportunities, is not devoid of challenges. The constraints of limited resources, time, and bureaucratic hurdles can pose significant obstacles to the successful implementation of such programs. However, the resilience and commitment of educators, coupled with effective collaboration among educational institutions, local authorities, and community stakeholders, can serve as a catalyst for overcoming these challenges. Through collaborative efforts, these impediments

can be mitigated, unlocking the full potential for positive change.

The role of teachers as community leaders is undeniably multifaceted and transformative, extending well beyond the traditional boundaries of the classroom. As architects of young minds and bridge builders between educational institutions and the broader community, teachers wield a profound influence in shaping the future. The integration of additional livelihood opportunities not only serves as a mechanism for personal and professional empowerment for educators but also positions them as active contributors to community projects that address local needs directly.

Recognizing teachers not solely as educators but as dynamic contributors to community development is pivotal in fostering a symbiotic relationship between educators and the communities they serve. This recognition surpasses mere economic considerations, unlocking the full spectrum of teachers' potential to initiate projects that uplift and enrich the lives of those under their care. By championing and supporting the multifaceted role of teachers as community leaders, we lay the foundation for a more vibrant, resilient, and interconnected society. In this collaborative vision, teachers emerge not only as conduits of knowledge but as architects of positive change, contributing to the ongoing evolution and prosperity of our communities. Through this collective effort, we pave the way for a future where the flourishing of educators and communities becomes mutually reinforcing, creating a harmonious and empowered society.

## WHAT DO WE DO NEXT? DABY MAE R. DONGIWON, MAT

### The Real Score

The latest findings from the Programme for International Student Assessment (Pisa) have once again cast a spotlight on the educational landscape in the Philippines. The Department of Education (DepEd) foresaw the challenges, and as expected, the average scores of Filipino students in reading, mathematics, and science did not witness any substantial improvement. The 2022 Pisa study, encompassing 690,000 students from 81 nations, revealed that the Philippines' performance in these crucial subjects remained stagnant, comparable to its standing in the 2018 assessment. Back then, the nation scored the lowest in reading and the second lowest in both math and science among 79 participating countries. Fast forward to 2022, and the scenario remains disheartening, with the Philippines ranking sixth to last in reading and mathematics, and third to last in science among the 81 participating nations.

Delving deeper into the numbers, the report underscores the challenges faced by Filipino students. The 7,193 students from 188 schools in the Philippines garnered an average score of 355 points in mathematics, a figure significantly below the Organisation for Economic Co-operation and Development (OECD) average of 472. The situation is no better in reading and science, where the Filipino students' average scores of 347 and 356 respectively fall short of the global averages of 476 and 485. This stark contrast points to a considerable gap in educational outcomes, raising concerns about the effectiveness of current teaching methodologies and curriculum frameworks.

Comparing the 2022 scores with those from 2018, the report reveals a disheartening reality – there has been no significant improvement. The average scores in mathematics, reading, and science, in 2022 (355, 347, 356), are alarmingly close to those from 2018 (353, 340, 357). This lack of progress raises pertinent questions about the strategies employed by the education system in addressing the identified weaknesses and fostering an environment conducive to academic growth.

The implications of these Pisa results extend beyond mere statistics. They underscore the urgent need for a comprehensive overhaul of the education system in the Philippines. The consistent underperformance in key subjects places the country at a disadvantage on the global stage, limiting the potential of its future workforce and impeding economic development. The education sector must now confront the root causes of these challenges and implement targeted interventions to reverse the trend.



One of the critical factors contributing to the stagnant academic performance is the need for a reevaluation of teaching methodologies. The Pisa results suggest that the traditional approaches to teaching in the Philippines might not be adequately preparing students for the demands of a rapidly evolving global landscape. There is a pressing need to adopt innovative teaching methods that promote critical thinking, problem-solving, and analytical skills. Encouraging teachers to engage in continuous professional development and incorporating modern pedagogical techniques can be instrumental in transforming the learning experience for Filipino students.

Additionally, curriculum reform is imperative to address the shortcomings revealed by the Pisa assessment. A thorough review of the existing curriculum, with a focus on aligning it with global standards and contemporary educational practices, is necessary. The curriculum should not only cover the essential subjects but also emphasize the development of skills that are crucial for the 21st-century workforce. This includes digital literacy, communication skills, and a strong foundation in science, technology, engineering, and mathematics (STEM) disciplines.

Furthermore, the educational disparities among regions within the Philippines must be addressed. The Pisa results might be indicative of systemic issues that disproportionately affect certain areas. A targeted approach, taking into account regional variations and implementing strategies to bridge the educational divide, is essential. This could involve increased investment in infrastructure, teacher training programs, and learning resources in underserved regions to ensure that every Filipino student has access to quality education.

The role of teachers cannot be overstated in the quest for educational improvement. They are the frontline facilitators of knowledge and play a pivotal role in shaping the academic trajectory of students. Enhancing teacher training programs, providing professional development opportunities, and incentivizing high-quality teaching practices can contribute significantly to elevating the overall quality of education in the Philippines.

Moreover, the integration of technology in education can be a game-changer. The digital revolution has transformed the way information is accessed and processed. Harnessing the power of technology in the classroom can make learning more interactive, engaging, and relevant. The government and educational institutions should invest in providing schools with the necessary infrastructure and ensuring that teachers are equipped with the skills to integrate technology seamlessly into their teaching methods.

Beyond these systemic changes, there is a need for a cultural shift towards valuing education. Parents, communities, and policymakers must collectively recognize the

importance of education in shaping the future of the nation. Initiatives that promote parental involvement in education, community partnerships, and awareness campaigns about the long-term benefits of education can contribute to creating a more supportive and conducive learning environment.

In conclusion, the 2022 Pisa results serve as a wake-up call for the Philippines to reevaluate its education system comprehensively. The stagnant performance in reading, mathematics, and science indicates deep-rooted issues that require a multi-faceted approach. From innovative teaching methodologies to curriculum reform, regional equity, teacher empowerment, and embracing technology, the path to improvement is multifaceted. The government, educational institutions, teachers, parents, and communities must collaborate to pave the way for a brighter educational future for Filipino students. The time for action is now, as the outcomes of the education system will inevitably shape the trajectory of the nation in an increasingly competitive global landscape.

#### Our Solution: Investing in the Future: Prioritizing STEM Education for Sustainable Philippine Development

In the pursuit of a sustainable future in the Philippines, STEM (Science, Technology, Engineering, and Mathematics) education emerges as a vital catalyst for progress. This qualitative research examines the perspectives of college students majoring in both STEM and non-STEM fields, shedding light on their perceptions of STEM education's role in shaping the nation's sustainable development. Through a combination of surveys and interviews, this research explores the awareness and knowledge of STEM among students pursuing non-STEM fields. The study reveals that some respondents express a lack of clear understanding of STEM principles in the context of their respective courses. These findings underscore the need for further investigation into how STEM education can be better integrated into diverse academic disciplines to enhance students' appreciation of its relevance and potential applications.

Furthermore, the qualitative survey and interview results shed light on various aspects of STEM education in the Philippines. STEM, which integrates science, technology, engineering, and math, is seen as essential for preparing individuals for future careers and contributing to the country's growth and competitiveness globally. Challenges include insufficient funding for STEM programs in some schools and disparities in access for different groups, such as boys and girls or rich and poor students. While recognizing the government's role, there's a call for fairer distribution of resources. The need for updated curricula and showcasing diverse role models to make STEM more appealing and accessible for everyone emerges as a key theme. The findings suggest that improving STEM education in the Philippines

requires addressing financial constraints, promoting inclusivity, and emphasizing the practical relevance of STEM in various fields.

Furthermore, it is advisable to introduce STEM education to students at younger levels, encompassing both elementary and junior high school stages. To seamlessly integrate STEM into these levels, collaboration with experts from higher education institutions is essential, ensuring that the additional subject does not become a burden for STEM teachers. Additionally, it is suggested that certain STEM subjects be incorporated into other academic strands such as ABM, HUMS, GAS, and TVL, aligning with the broader use of technology across all strands. This approach signifies the prioritization of STEM education for all students. Lastly, the insights and recommendations derived from this research are poised to offer valuable guidance to policymakers, educators, and stakeholders, shaping the trajectory of STEM education and sustainable development in the Philippines.



# **HARMONY UNVEILED: THE INTRINSIC VALUE OF FORESTS WITHIN OUR COMMUNITIES**

## **IMELDA GUYON, PhD**

Forests play an integral role in shaping the essence of a community, extending far beyond their physical presence. The significance of forests is deeply rooted in a complex web of ecological, social, and cultural aspects that contribute to the overall well-being of a community.

One of the fundamental dimensions of a forest's importance lies in its role as a biodiversity hotspot and provider of essential ecosystem services. Serving as a habitat for a diverse range of flora and fauna, forests foster ecological balance by supporting a myriad of plant and animal species. This rich biodiversity not only enhances the resilience of ecosystems but also plays a crucial role in sustaining life on Earth. Furthermore, trees within forests play a dual role by producing oxygen and absorbing carbon dioxide, making them indispensable in the global effort to mitigate climate change.

In terms of environmental sustainability, forests act as guardians of essential natural resources. They regulate water cycles, preventing soil erosion and maintaining water quality. By influencing temperature, precipitation, and weather patterns, forests contribute to local and global climate regulation, demonstrating their vital role in maintaining environmental stability.

Beyond their ecological contributions, forests offer a plethora of benefits that directly impact the social fabric of a community. The recreational opportunities provided by forests, such as hiking, camping, and bird watching, not only promote physical well-being but also contribute to mental health. The scenic beauty of forests adds an aesthetic dimension to a community, enhancing overall quality of life and fostering a sense of connection to nature.

Culturally and spiritually, forests hold a profound significance. They serve as repositories of cultural heritage, inspiring traditional practices and providing a historical context for communities. Many cultures establish spiritual connections to forests, viewing these natural spaces as sacred or symbolic, further emphasizing the deep intertwining of nature and human culture.

Economically, forests are valuable resources for communities. Timber and non-timber products, such as fruits, nuts, and medicinal plants, provide a source of livelihood, promoting sustainable economic practices. Additionally, forests attract tourists, contributing to the local economy through ecotourism initiatives.

The positive impact of forests on community well-being extends to environmental

education. Forests offer a unique learning environment, providing opportunities for people to understand ecosystems, biodiversity, and the importance of conservation. Education in these natural settings fosters a deeper connection to the environment and a sense of responsibility for its preservation.

Ultimately, the essence of a forest in a community is a multifaceted tapestry of ecological balance, cultural richness, economic opportunities, and overall well-being. To ensure a harmonious and thriving community, it is imperative to prioritize the preservation and sustainable management of forests, recognizing their profound significance in the intricate web of human-nature interactions.

### The Past, Present and Future of our Forest...

In the past, the forests of the Philippines were vast and teeming with diverse ecosystems, harboring unique flora and fauna. These lush green expanses played a crucial role in supporting indigenous communities, providing resources for their livelihoods, and sustaining the intricate balance of nature. However, historical events such as deforestation, logging, and agricultural expansion took a toll on the once-abundant forests. The Philippines witnessed a significant reduction in forest cover due to unchecked exploitation, leading to environmental degradation, loss of biodiversity, and disruptions in the delicate ecological equilibrium.

In the present day, the forests of the Philippines are at a critical juncture. Efforts have been made to address the environmental challenges of the past, with initiatives focused on reforestation, conservation, and sustainable resource management. The government and various organizations are working together to rehabilitate degraded areas, enforce stricter logging regulations, and promote community-based conservation projects. Despite these efforts, the Philippines continues to face threats such as illegal logging, mining activities, and urbanization, posing ongoing challenges to the restoration of the country's forests. The current state of Philippine forests reflects a complex interplay of conservation efforts and persistent environmental pressures.

Looking to the future, there is hope for the restoration and sustainable management of the Philippines' forests. Conservation initiatives, afforestation projects, and community engagement efforts are integral components of a vision for a greener and more resilient future. Embracing a holistic approach that involves local communities, policymakers, and environmental organizations will be essential to ensure the long-term viability of Philippine forests. The integration of modern technologies, such as satellite monitoring and data-driven conservation strategies, can aid in effective forest management. As awareness of the importance of forests for climate regulation, biodiversity conservation, and community well-being grows, there is potential for a positive shift in attitudes and practices. The future of Philippine forests hinges on the commitment to balance human needs with ecological

preservation, fostering a harmonious coexistence that benefits both present and future generations.

### Save our Forests Now!

Saving our forests demands a collective effort from individuals, communities, governments, and organizations. The first critical step is large-scale reforestation and afforestation projects. By planting native tree species in deforested or degraded areas, these initiatives play a pivotal role in restoring ecosystems, rebuilding biodiversity, and mitigating the adverse effects of climate change. Sustainable logging practices constitute another essential element in forest conservation. Regulating timber extraction to match the forests' capacity for regeneration, protecting vital habitats, and minimizing environmental impact are key components of this strategy.

Engaging local communities is indispensable for successful forest conservation. Educating them about the significance of forests in sustaining ecosystems and the benefits they offer fosters a sense of responsibility and ownership. Strengthening legal protections is equally crucial, involving measures to prevent illegal logging, land encroachment, and wildlife poaching. Collaboration between governments, law enforcement agencies, and local communities is vital for the effective implementation of these protective measures.

Promoting sustainable agricultural practices, such as agroforestry, strikes a balance between farming and forest conservation. This approach encourages the integration of trees into agricultural landscapes, preserving biodiversity and promoting soil health. Recognizing and respecting the land rights of indigenous communities is paramount, given their significant role in sustainable forest management and the valuable traditional knowledge they possess.

The creation and maintenance of protected areas are instrumental in safeguarding critical habitats and biodiversity. These areas serve as refuges for wildlife, acting as natural buffers against encroachment and deforestation. Additionally, promoting eco-tourism initiatives provides economic incentives for communities to protect forests. By showcasing the natural beauty of these areas, tourism can become a sustainable source of income, encouraging the preservation of local ecosystems.

Corporate responsibility plays a vital role in preventing deforestation driven by industrial activities. Encouraging companies to adopt sustainable sourcing policies ensures that their supply chains do not contribute to forest degradation. Lastly, global collaboration is imperative as forests are a global resource. Countries need to work together to share best practices, provide financial support for conservation projects, and address global issues such as climate change that impact forests on a large scale.



n combination, these actions contribute to a holistic and effective approach to save our forests. The key lies in a shared commitment to environmental stewardship, sustainable practices, and the recognition of forests' integral role in maintaining the health of our planet. Through these concerted efforts, we can strive towards a future where our forests thrive, benefiting both the environment and humanity.

## **A NOVA SUCCESS STORY: DAISY MAE R. DONGIWON, MAT**

Ma. Luisa Lacson visited the NOVA Job Center in Sunnyvale after a substantial career in education in the Philippines, where she worked as a caregiver and nanny. Seeking assistance in enhancing her computer skills and navigating her job search, Ma. Luisa displayed great motivation by attending all the NOVA workshops offered during her first week. She found these workshops to be universally relevant for anyone aiming to acquire new skills and secure employment.

Grateful for the personalized guidance she received, Ma. Luisa worked closely with a NOVA career advisor who helped her tailor her resume for caregiving positions. The advisor also provided job leads from the NOVA job card and recommended a caregiving agency. Reflecting on her experience, Ma. Luisa expressed, "I found the individual advising very inspiring and very appropriate."

Taking proactive steps, she reached out to two caregiving agencies, both of which responded promptly. Ma. Luisa scheduled an interview with one of them and diligently prepared by visiting the agency a day in advance. Arriving early on the interview day, she confidently handled all questions during the hour-long session. Following a brief break, she received the exciting news, "you're hired!"

Overwhelmed with joy, Ma. Luisa returned to NOVA to share her success with the advisors. She continues to speak highly of NOVA Job Center's services, stating, "I'm promoting NOVA Job Center's accomplishments to those who wish to avail themselves of its great services."

Ma. Luisa Lacson brings with her a rich background as an accomplished teacher with 48 years of experience at Dela Salle University in the Philippines.

# THE ROLE OF MATHEMATICS IN FOSTERING A SUSTAINABLE FUTURE

**ROEL P. BALAYAN, EDD**

Mathematics plays a foundational role in tertiary education in the complex web of education, fostering innovation, critical thinking, and sustainable development. As we navigate the complex challenges of the 21st century, integrating mathematics into STEM (Science, Technology, Engineering, and Mathematics) education becomes not just a necessity but a catalyst for building a sustainable future. This article explores the multifaceted landscape of mathematics in tertiary education, exploring its pivotal role in shaping minds, fostering interdisciplinary connections, and contributing to pursuing a sustainable global future.

## The Power of Mathematics in Tertiary Education

In tertiary education, mathematics transcends its traditional identity as a mere subject of study, assuming a pivotal role as a universal language. This language, intricately woven into the fabric of scientific exploration, unlocks the profound mysteries of the natural world. As students ascend to the tertiary level, the mathematical curriculum undergoes a metamorphosis, delving into abstract algebra, calculus, and differential equations. This intricate journey lays the bedrock for specialized knowledge as a gateway to the expansive landscape of STEM disciplines.

Studying advanced mathematics at the tertiary level is not merely an academic pursuit but an immersion into a language that nurtures a profound mindset. This mindset, cultivated through rigorous mathematical exploration, is characterized by more than just a mastery of formulas and theorems. It embodies logical reasoning, a keen problem-solving acumen, and a proclivity for abstraction. These qualities collectively form a cognitive framework that becomes an invaluable guiding force as students navigate the multifaceted challenges presented by the dynamic fields of science, technology, engineering, and mathematics.

As students engage with the intricacies of advanced mathematics, they acquire not only a set of skills but also a transformative way of thinking. The precision and analytical rigor honed through mathematics study empower students to approach problems with a depth of understanding that extends beyond rote memorization. This empowerment catalyzes innovation, providing students with the tools to contribute meaningfully to their chosen fields. Whether unraveling the complexities of theoretical physics, designing cutting-edge algorithms, or exploring the frontiers of data science, the power of mathematics in tertiary education is not just an academic pursuit; it is a transformative journey that shapes the intellectual landscape and fuels the progress of scientific inquiry.



### Bridging Languages in STEM Education

STEM education's heart lies in the intricate convergence of science, technology, engineering, and mathematics. Among these, mathematics emerges as the unifying language that seamlessly bridges the gaps between diverse disciplines. Beyond being a subject in isolation, mathematics becomes the vital thread that connects the various strands of knowledge within STEM education, fostering collaboration and synergy among these dynamic fields.

In the tertiary setting, where students delve into the interconnected nature of STEM disciplines, the significance of mathematics as a bridge becomes even more pronounced. The traditional boundaries that separate science from technology, engineering from mathematics, begin to blur. Mathematics becomes the versatile tool that weaves together the complex tapestry of knowledge, enabling students to navigate effortlessly between scientific inquiry, technological innovation, engineering design, and abstract mathematical concepts.

In the collaborative landscape of interdisciplinary projects, students leverage the power of mathematics to transcend disciplinary limitations. The language of mathematics allows them to model and solve real-world problems that defy confinement to individual silos. As students engage in collaborative endeavors, they discover the transformative potential of mathematics as a universal communicator, facilitating a collective approach to problem-solving that draws on the strengths of each STEM discipline.

Moreover, integrating mathematics into STEM education at the tertiary level provides a profound avenue for exploring the depths of the natural world. Through mathematical modeling and simulation, students gain insights into the intricate dynamics of systems, from the microscopic realm of subatomic particles to the macroscopic interactions within ecological ecosystems. This holistic approach, driven by the language of mathematics, equips students with a comprehensive understanding of the interconnectedness of phenomena – a perspective indispensable for addressing the nuanced challenges posed by sustainability.

In essence, the role of mathematics as a bridge in STEM education extends beyond facilitating communication; it becomes a transformative force that empowers students to unravel the complexities of the world and forge innovative solutions across the interdisciplinary spectrum. The ability to speak the language of mathematics becomes not just a skill but a key to unlocking the full potential of collaborative endeavors in the ever-evolving STEM education landscape.

### Fostering Critical Thinking and Innovation

Within the academic crucible of tertiary-level mathematics, a paramount virtue emerges — critical thinking. Beyond the realm of mathematical equations, the study of advanced mathematics challenges students to engage in intellectual rigor, demanding analytical thinking, questioning assumptions, and exploration beyond the boundaries of

existing knowledge. This cultivation of critical thinking stands as a cornerstone, especially in the context of STEM education.

In the dynamic landscape of STEM, where innovation is the lifeblood, studying mathematics becomes a catalyst for cultivating minds adept at creative problem-solving. Tertiary-level mathematics acts as a crucible that refines the ability to approach challenges with a discerning eye, deconstruct complex issues into manageable components, and synthesize innovative solutions. As we venture into an era where sustainable solutions and groundbreaking approaches are imperative, fostering a culture of innovation through the prism of mathematics becomes an indispensable linchpin in the educational narrative.

Moreover, the collaborative essence inherent in STEM fields necessitates individuals who can navigate ambiguity, solve intricate problems, and contribute meaningfully to team endeavors. Tertiary-level mathematics, emphasizing logical reasoning and structured problem-solving, transforms into a training ground. Here, individuals are honed to excel in the dynamic environments of scientific research, technological development, and engineering innovation and thrive in collaborative spaces where diverse minds converge.

In the pursuit of a sustainable future, the marriage of critical thinking and innovation becomes a symbiotic force. Tertiary-level mathematics, with its intricate challenges and intellectual demands, prepares students to decipher the complexities of the present and envision and create a future where innovation is not just a pursuit but a way of thinking. Thus, in the crucible of mathematical inquiry, minds are forged that appreciate the elegance of mathematical proofs and embody the spirit of innovation, laying the foundation for a future marked by transformative solutions and intellectual breakthroughs.

#### Contributing to Sustainable Development

In the symphony of 21st-century challenges, sustainability echoes as a clarion call, urging societies to rethink their development trajectories. Within this narrative, tertiary-level mathematics emerges not merely as an academic pursuit but as a potent instrument contributing to sustainable development across diverse fronts.

1. Environmental Sustainability. Tertiary-level mathematics stands as a linchpin in comprehending and tackling environmental challenges. Through the lens of mathematical modeling, students gain the ability to dissect intricate ecological systems. This analytical prowess extends to predicting the ramifications of climate change, allowing for informed strategies in sustainable resource management. The language of mathematics becomes a powerful tool, offering a holistic view of ecosystem relationships. Students equipped with this knowledge can craft solutions that harmonize human needs with the imperative of environmental preservation.



2. Technological Innovation for Sustainability. Mathematics, as the bedrock of technology, guides innovation towards sustainable horizons. Algorithms rooted in mathematical principles optimize energy consumption, while simulations model sustainable infrastructures. The integration of mathematics into technological innovation ensures that advancements are not only efficient but also environmentally conscious. Through this synergy, students delve into the transformative potential of mathematics in shaping a future where technology aligns seamlessly with sustainability principles.

3. Economic and Social Sustainability. The influence of tertiary-level mathematics extends into the realms of economic and social sustainability. Mathematical modeling of economic systems, statistical analysis of social trends, and optimization techniques for resource allocation provide the empirical basis for decision-making. Equipped with advanced mathematical knowledge, future leaders and policymakers navigate the complex landscape of sustainable development. Informed choices, rooted in mathematical insights, become the cornerstone for policies that foster economic resilience and social sustainability.

As the theme of sustainability reverberates, the role of mathematics in tertiary education becomes not only an academic pursuit but a transformative force. It equips students with the intellectual tools to address the pressing challenges of our time, fostering a generation that sees mathematics not just as a discipline but as a catalyst for building a future marked by environmental harmony, technological ingenuity, and socio-economic equilibrium.

#### Challenges and Opportunities

Integrating mathematics into STEM education at the tertiary level unveils a landscape brimming with potential yet lacking challenges. Among these hurdles, a formidable obstacle lies in perceiving mathematics as an insurmountable barrier, dissuading students from venturing into STEM fields. The abstract nature of advanced mathematical concepts often evokes intimidation, demanding proactive efforts to demystify the subject. There exists a need to showcase the relevance and applicability of mathematics to real-world problems, transforming it from an obstacle into a gateway for innovative solutions.

Moreover, while enriching, the interdisciplinary tapestry of STEM education poses a challenge in curriculum design and faculty collaboration. The seamless transition between mathematical concepts and their applications across diverse STEM disciplines demands a coordinated effort to dismantle silos. Embracing interdisciplinary teaching approaches becomes paramount, requiring a shift from isolated subject-centric methodologies to collaborative, holistic frameworks illuminating knowledge's interconnectedness.

Nevertheless, these challenges lie opportunities for transformative pedagogy and curriculum development advancements. Embracing technology as a facilitator,



employing interactive learning methods, and grounding mathematical principles in real-world applications can render the study of mathematics not only accessible but also engaging and relevant for students. The challenge of perception transforms into an opportunity for innovation, potentially reshaping the narrative surrounding mathematics in STEM education.

Furthermore, collaborative initiatives between mathematics departments and other STEM disciplines present avenues for enriching the educational experience. By breaking down disciplinary barriers, students gain a holistic understanding of the interconnected nature of knowledge. This interdisciplinary synergy not only addresses the challenge of fragmentation but fosters an environment where the amalgamation of mathematical insights with other STEM fields sparks new dimensions of understanding.

In navigating the challenges of perception, interdisciplinary coordination, and pedagogical innovation, STEM education at the tertiary level can seize the opportunities embedded within these challenges. By doing so, educators pave the way for a transformative learning experience, where mathematics emerges not as a hurdle but as a dynamic force propelling students toward innovative solutions and a nuanced comprehension of the interconnected tapestry of STEM knowledge.

### Summary

Mathematics is foundational in tertiary education, acting as a universal language transcending traditional subject boundaries. This language, intricately woven into the fabric of scientific exploration, unlocks mysteries of the natural world and lays the groundwork for specialized knowledge in STEM disciplines. Studying advanced mathematics at the tertiary level transforms not only into an academic pursuit but also an immersion into a language that nurtures a profound mindset. This mindset, characterized by logical reasoning, problem-solving acumen, and abstraction, becomes an invaluable guiding force as students navigate multifaceted challenges in science, technology, engineering, and mathematics.

Within this transformative journey, mathematics bridges gaps in STEM education, serving as a vital thread that connects diverse disciplines. Its significance goes beyond communication, acting as a transformative force that empowers students to contribute collaboratively to problem-solving, unveiling the interconnected nature of knowledge.

Moreover, tertiary-level mathematics fosters critical thinking, demanding intellectual rigor and cultivating minds adept at creative problem-solving. This emphasis on logical reasoning transforms mathematics into a training ground for individuals poised to excel in scientific research, technological development, and engineering innovation.

Furthermore, mathematics contributes substantially to sustainable development across various fronts. It plays a linchpin in comprehending and addressing

environmental challenges through mathematical modeling. It guides technological innovation toward sustainability, optimizing energy consumption and modeling sustainable infrastructures. Advanced mathematical knowledge in economic and social realms equips future leaders to make informed choices, fostering economic resilience and social sustainability.

While integrating mathematics into STEM education at the tertiary level poses challenges, such as overcoming the perception of mathematics as a barrier and navigating the interdisciplinary nature of STEM education, these challenges present opportunities for transformative advancements. Efforts to demystify mathematics, showcase its relevance, and embrace technology offer innovative solutions. Collaborative initiatives between mathematics departments and other STEM disciplines break down barriers, enriching the educational experience and fostering an environment where the amalgamation of mathematical insights sparks new dimensions of understanding.

In essence, mathematics emerges as an academic discipline and a dynamic force propelling students toward innovative solutions and nuanced comprehension of the interconnected tapestry of STEM knowledge.

# **EMBRACING TECHNOLOGICAL SOLUTIONS: A REVOLUTIONARY APPROACH TO BIODIVERSITY CONSERVATION THROUGH ADVANCED WASTE MANAGEMENT SYSTEMS**

**ELEONOR T. SALVADOR, MDD**

In the face of escalating environmental challenges, the urgency to protect and preserve biodiversity has become more apparent than ever. One of the key contributors to the degradation of ecosystems is improper waste management. However, with the integration of cutting-edge technology into waste management systems, there emerges a promising avenue for mitigating environmental impact and safeguarding our planet's rich biodiversity.

The Challenge:

Traditional waste disposal methods, including landfills and incineration, have proven detrimental to the environment, causing pollution, soil degradation, and loss of habitat. These issues directly impact biodiversity, as many species rely on healthy ecosystems to thrive. To address this challenge, a paradigm shift towards innovative waste management systems is imperative.

Technological Interventions:

1. **Smart Bins and Sensors:** Implementing smart bins equipped with sensors can revolutionize waste collection. These bins can automatically detect when they are reaching capacity, optimizing collection routes and reducing unnecessary emissions. This efficiency ensures timely waste removal, preventing overflow and potential contamination of surrounding ecosystems.
2. **RFID (Radio-Frequency Identification) Tracking:** RFID technology can be integrated into waste items to track their journey from disposal to recycling or landfill. This transparency enables municipalities and waste management agencies to monitor and improve waste disposal practices, ensuring that harmful materials are appropriately handled and recycled.
3. **Data Analytics for Optimization:** Harnessing the power of data analytics allows for the optimization of waste management processes. By analyzing trends and patterns, authorities can make informed decisions to reduce waste generation, enhance recycling efforts, and minimize environmental impact. This data-driven approach can significantly contribute to the conservation of biodiversity.
4. **Waste-to-Energy Technologies:** Instead of contributing to pollution through traditional incineration, waste-to-energy technologies have emerged as a more sustainable solution. These technologies convert waste into energy, reducing the reliance on fossil fuels and mitigating the environmental impact associated with traditional energy sources.
5. **Community Engagement Platforms:** Technology can facilitate community engagement by providing platforms that educate and encourage responsible waste



disposal habits. Mobile applications and online portals can offer information on recycling guidelines, local waste collection schedules, and the environmental benefits of proper waste management, fostering a sense of responsibility among community members.

#### Benefits of Technological Integration:

- 1.Reduction of Environmental Impact: Advanced waste management technologies significantly reduce the environmental footprint associated with conventional disposal methods, preserving habitats and biodiversity.
- 2.Resource Conservation: Recycling and reusing materials through technology-driven waste management systems contribute to the conservation of natural resources, reducing the need for extensive extraction and processing.
- 3.Economic Efficiency: Optimized waste management processes not only benefit the environment but also lead to economic savings through reduced operational costs and the creation of new industries focused on recycling and waste-to-energy technologies.
- 4.Public Awareness and Participation: Technology acts as a catalyst for increasing public awareness and participation in waste management practices. With information readily available, communities are empowered to actively contribute to biodiversity conservation.

Embracing technology in waste management systems is a pivotal step towards safeguarding biodiversity and creating a sustainable future. Governments, businesses, and communities must collaborate to implement and support these innovative solutions, recognizing that the health of our planet is intricately linked to the well-being of its diverse ecosystems. By prioritizing technological advancements in waste management, we pave the way for a harmonious coexistence with nature, ensuring a thriving planet for generations to come.

# **NAVIGATING THE PATH FROM IDEA TO IMPACT: THE ROLE OF TECHNOLOGY IN BUSINESS ENTREPRENEURSHIP**

**CYNTHIA MANALAD, DBA**

In the dynamic landscape of entrepreneurship, the journey from a mere idea to a substantial impact is a challenging yet rewarding adventure. In today's digital age, technology plays a pivotal role in shaping and accelerating the trajectory of businesses. This article explores how entrepreneurs leverage technology to transform their ideas into impactful ventures, highlighting key stages of the entrepreneurial process.

## **1. Conception of Ideas: Innovation Catalyst**

In this scenario, the entrepreneur employs artificial intelligence (AI) algorithms to scrutinize market trends, consumer behavior, and existing products. Through the discernment of patterns and identification of gaps, the entrepreneur envisions a unique app tailored to address a specific need more efficiently and user-friendly. The broader discussion emphasizes how technology, particularly AI, empowers entrepreneurs by facilitating the analysis of extensive datasets. This process not only extracts meaningful insights but also serves as the cornerstone for generating innovative ideas. Here, AI acts as a catalyst, converting raw data into actionable inspiration, ultimately leading to the development of a groundbreaking product.

## **2. Market Research and Validation: Comprehensive Insights**

Harnessing social media monitoring tools and data analytics, a startup adeptly gauges real-time consumer sentiments, uncovering a burgeoning demand for sustainable products. This technological prowess empowers entrepreneurs to pivot their business model promptly, aligning with eco-friendly practices in response to dynamic market feedback. Technology not only enhances market research but also enables swift validation and adaptation of ideas, ensuring that business offerings resonate with ever-evolving consumer preferences and needs.

## **3. Digital Prototyping and Development: Accelerated Development**

Utilizing 3D modeling software, a product designer crafts a digital prototype for a novel wearable device. This approach empowers the entrepreneur to visualize and enhance the product's design before committing to physical prototypes, thus streamlining the development process. In the broader context, the discussion underscores the accelerated pace facilitated by digital prototyping. This virtual experimentation not only preserves valuable time and resources but also cultivates innovation through swift iterations and improvements, emphasizing the efficiency and agility gained in the product development journey.

## **4. Funding and Crowdsourcing: Democratized Access**

Opting for a departure from conventional venture capital avenues, a tech startup

initiates a crowdfunding campaign on platforms like Kickstarter. Through this strategy, the startup garners support from a diverse array of backers worldwide, each contributing modest amounts that collectively fund the project. The broader discussion highlights how technology has democratized funding access, enabling entrepreneurs to showcase their ideas directly to a global audience. Crowdfunding platforms emerge as a transformative alternative to traditional financing methods, empowering entrepreneurs to secure capital inclusively and fostering a more diverse and widespread support network.

#### 5. E-Commerce and Digital Marketing: Global Reach

Establishing an e-commerce store, a small artisanal business successfully extends its reach to customers worldwide, facilitated by the capabilities of e-commerce platforms. Fueled by analytics, digital marketing campaigns strategically target specific demographics, amplifying the impact of advertisements and contributing to a surge in global sales. The synergy between e-commerce and digital marketing not only transcends geographical boundaries but also enhances precision in audience targeting, ensuring that promotional endeavors resonate effectively with the intended global audience.

#### 6. Operational Efficiency: Streamlined Operations

By incorporating an ERP system, an established company strategically improves operational efficiency through the seamless streamlining of its supply chain and inventory management. This integration not only mitigates manual errors but also promotes enhanced communication between different departments, fostering a collaborative work environment. Moreover, it empowers the company with data-driven decision-making capabilities. In a broader perspective, this discussion underscores the pivotal role played by technology in optimizing daily operations. Entrepreneurs in diverse industries leverage advanced tools such as ERP and CRM to refine processes, reduce costs, and heighten the overall effectiveness of their business operations, showcasing the transformative impact of technology on modern business management.

#### 7. Scalability through Cloud Computing: Flexible Solutions

Employing cloud computing services, a startup efficiently hosts its software, and as the user base expands, the business effortlessly scales by adjusting its cloud resources. This adaptable approach mitigates the necessity for substantial upfront investments in physical infrastructure, providing a cost-effective and dynamic solution. In a broader discussion, cloud computing emerges as a transformative force, granting entrepreneurs the flexibility and scalability required to meet evolving demands without the limitations imposed by traditional IT systems. This exemplifies how businesses can embrace a more agile and responsive technological infrastructure, aligning seamlessly with the fluid nature of the contemporary digital landscape.



#### 8. Data Security and Privacy: Advanced Protection

Utilizing advanced encryption and secure payment gateways, an e-commerce platform prioritizes the protection of customer information. Regular security audits and monitoring tools are employed to ensure the ongoing security of sensitive data, cultivating a sense of trust among users. In the broader context, this discussion underscores the critical role of technology in safeguarding valuable data in an era where privacy is paramount. Entrepreneurs, recognizing the significance of data security, conscientiously implement encryption measures and utilize monitoring tools, thereby establishing and sustaining trust with both customers and stakeholders in the ever-evolving landscape of digital transactions.

#### 9. Adaptation to Emerging Technologies: Staying Competitive

At the forefront of innovation, a tech company leads the charge in integrating blockchain technology into its supply chain, fostering heightened transparency and traceability. This strategic move not only establishes the company as an industry trailblazer but also ensures a competitive edge, keeping it ahead of rivals. The broader discussion emphasizes the proactive approach of successful entrepreneurs who remain competitive by staying abreast of emerging technologies pertinent to their industry. Whether incorporating AI, blockchain, or IoT, the integration of these technologies positions businesses for sustained growth and a lasting competitive advantage in the dynamic landscape of technological advancements.

#### 10. Measuring Impact and Iteration: Data-Driven Improvement

Utilizing analytics tools, a software company meticulously measures user engagement, feature usage, and customer feedback, leveraging this data to iteratively enhance its software. This data-driven approach ensures a continuous improvement cycle, allowing the company to stay aligned with user needs and preferences. Technology, through key performance indicators (KPIs) and analytics, empowers entrepreneurs to gauge the impact of their ventures, fostering adaptability and sustained growth in response to evolving market dynamics. The iterative processes driven by technology play a crucial role in the ongoing success and relevance of businesses in the digital age.

# **CONTEMPORARY CHALLENGES AND FUTURE PERSPECTIVES OF SECONDARY EDUCATION IN THE EDGE OF INDUSTRY 4.0 META-ERA**

## **GRIGORIOS L. KYRIAKOPOULOS, PhD**

During the last decade of educational reforms nationally and globally the secondary education system has proven a fundamental pillar to the education of people in the majority of contemporary societies worldwide. Educated people are equally considered as qualified and cultured personalities, who foster the global economic growth, support the solidarity of their local communities, and strengthen the family relations among the family members. Nevertheless, the secondary education system encounters numerous, diversified, even competitive, roles that has to be reconciled with. Such indicative topics in which the secondary education has to be adapted are the diversified perspectives between students and teachers, the teachers' need to learn more about students' experiences and ideas about education, the kind of curriculum coherence and the features of coherence-making activities that education policy makers need to develop and perform, as well as the development of knowledge management in line to knowledge acquisition, knowledge conversion, knowledge application, and knowledge protection. In parallel, the secondary education system should be actually a flexible system that is not merely oriented to educate young people. Contrarily, its role should be expanded from its spatial limitations of a school unit, making an opening to the society by educating responsible people in promoting health, civil and life skills. In parallel, practitioners and curriculum developers should be encouraged to cooperate with students for the purposes and the objectives of project-based learning, setting realistic and feasible goals. Therefore, a successful education system should be oriented in equipping young people with both life skills and learning programs that confront dropout, increase participation, and enable schools to become agents of tackling health and social issues.

To this end, indicative educational tools that should reinforce the socialization of citizens are the counselling services and the participatory design strategies. The provision of counselling services in the secondary education addresses the learning opportunities in school subject departments, finding the reasons of why learning opportunities are different for student teachers in separate school departments. In parallel, participatory design is a strategy for taking student perceptions into account in instructional (re)design. This approach is used for initiating and structuring the discussion between the teacher and his/her students, enabling them to actively contribute in courses' structuring.

Conclusively, a contemporary educational reform should be adaptive to the knowledge and to the social challenges of tomorrow. Therefore, while each educational system in secondary education reflects the cultural and social values of its nation, an indicative globally-oriented modeling of the “global school” of the future should consider, among others, the following issues: a) Philosophical thinking and collaborative writing, b) Laboratory-based learning and innovation, c) Project-based learning, d) genders’ differences in secondary education, and e) psychological needs and motivation. Finally, the challenges, the limitations, the opportunities, and the future orientations of the aforementioned pedagogical issues are also playing a decisive role to the education systems of the future, positioning the humanitarian values and capabilities in the center of any educational reform and planning.



## **POV: YOU'VE JUST INVESTED THOUSANDS IN CURRICULUM LEENA BAKSHI MCLEAN, PhD**

Open the world of social media and you can see what teachers have to say about the curriculum they are using:

- "Terrible, boring, dry, not user friendly. Kids hate it. Teachers hate it. Run!"
- "It is awful. I only have 4 more years to retirement...but it's going to be a long four years."
- "We just got ----- this year and I'm not enjoying it. It may just be me but it's rather boring and jumps all over. I do a great deal of supplementing"
- "I hate hate hate -----. It's awful and it's overly complicated when it doesn't need to be or it's too handwavy when kids need more."
- "That's how I feel about -----. How is it possible that there is so much terrible curriculum out there?"
- "I also use ---. I had to structure it to make sense and as many have stated I have to supplement so much! If you taught straight from the workbook and then gave the test they also make, no kid would ever pass!"
- "----- is the worst curriculum for science."
- "----- is awful- boring and ridiculous real life scenarios. No, I will not in fact be teaching my students about fecal transplants
- "NO to -----. Too many repetitions, ELA centered. My district adopted it but I do not use it as well as many others!"
- "Redundant, boring, no engagement on kids side, lots of repetitive readings, seems to miss key concepts"
- "My school is "requiring" me to use it to improve our test scores. I would agree that it is an ELA curriculum trying to squeeze some form of science. I am fighting hard to not be required to use it"

Whew! Those were tough to read and that was just two social media posts. Now, I know social media is not the best place to obtain researched-based survey data. But, I couldn't help but take note of these comments. These teachers sound miserable. The sad part is that schools and districts invested a LOT of money into these curriculum companies only to have their teachers feeling like this.

We recommend that schools and districts steer away from social media and use the NGSS TIME Toolkit (Toolkit for Instructional Materials Evaluation). We modified the tool to be more culturally responsive and to prioritize equity.

I share all of these comments because I want to highlight that teachers are desperate for content that will be meaningful to their students. One of the best ways to provide resources for our teachers is to look at instructional methods that meet all of their students' needs and create content that is culturally responsive to their students' daily lives and lived realities. That is why STEM4Real has the Connect>Create>Cultivate framework. Boxed curriculum is good as a supplement, but never a replacement for good teaching. We have 3 spots remaining for the Spring 2024 semester and we would love to implement a lesson study cycle at your school or district. Each of our professional learning cycles comes with 1:1 coaching so that we can lay some of these comments to rest and provide real-time support that will truly meet the needs of our students. Happy Teachers = Happy Students.

Most importantly, we want to achieve equity in science and these comments won't be getting us there. Let's talk about how we can create a comprehensive professional learning plan for your site. [www.stem4real.org/partner](http://www.stem4real.org/partner)

# EMBRACING THE NOTHINGNESS: A REFLECTION ON THE INHERENT MEANINGLESSNESS OF LIFE

## AICEL LOPEZ AROGANTE

Life, with all its complexity and chaos, often prompts us to ponder the profound question of its meaning. Yet, as we delve into the depths of existential contemplation, we may find ourselves face to face with the disconcerting notion of the nothingness of life. This article aims to explore the philosophical concept of life's inherent meaninglessness and how, paradoxically, embracing this nothingness can lead to a profound understanding of existence.

Existentialist philosophers, such as Albert Camus and Jean-Paul Sartre, have grappled with the idea of the absurdity of existence. They argue that life is inherently devoid of any predetermined purpose or meaning. In a universe indifferent to our existence, we are thrust into a world where our search for meaning appears futile.

Camus, in his essay "The Myth of Sisyphus," likens human existence to the eternal punishment of Sisyphus, who is condemned to roll a boulder up a hill, only to watch it roll back down, perpetuating an endless cycle. Similarly, our pursuits and achievements may seem insignificant in the grand scheme of an indifferent cosmos.

Instead of succumbing to existential despair in the face of life's nothingness, existentialists propose embracing the absurd. Accepting that life lacks inherent meaning liberates us from the burden of seeking an elusive purpose. Sartre argues that we are condemned to be free, implying that the responsibility for creating meaning rests solely on our shoulders.

In this paradigm, the absence of inherent meaning becomes an opportunity for individual freedom and self-determination. Rather than being disheartened by the void, we can revel in the freedom to define our own purpose and values.

Existentialism encourages individuals to confront the nothingness of life and engage in authentic living. Authenticity involves acknowledging the absurdity of existence while actively shaping our lives in accordance with our values and passions. By living authentically, we create a subjective meaning that resonates with our innermost selves.

Creativity and passion emerge as powerful tools in navigating the nothingness of life. Engaging in creative endeavours allows us to transcend the mundane and construct personal meaning. Whether through art, literature, or any form of self-expression, we can imbue our existence with significance, even if the larger cosmic context remains indifferent.



The nothingness of life, when approached with an existential perspective, need not be a source of nihilistic despair. Instead, it invites us to embrace the absurdity of existence, freeing ourselves from the quest for universal meaning. In this freedom, we find the power to shape our lives authentically, infusing our existence with personal significance. Life's nothingness, paradoxically, becomes the canvas upon which we paint the masterpiece of our own subjective meaning.

# THE PERIODIC TABLE OF ELEMENTS: TRACING THE PAST, PRESENT, AND FUTURE

**GUILLERMA E. HEBRON**

The Periodic Table of Elements stands as one of the most iconic and fundamental tools in the field of chemistry, guiding scientists in their exploration of the building blocks of matter. As we delve into its past, examine its current state, and speculate about its future, we uncover a rich tapestry of scientific discovery and innovation.

## The Past: A Historical Odyssey

The journey of the Periodic Table began in the early 19th century when chemists sought to organize the increasing number of known elements. Dimitri Mendeleev, a Russian chemist, is credited with creating the first recognizable periodic table in 1869. Mendeleev arranged the elements based on their atomic masses and predicted the existence and properties of undiscovered elements. His visionary work laid the foundation for the periodic table we use today.

The early 20th century saw the refinement of the periodic table with the discovery of isotopes, elements with the same number of protons but different numbers of neutrons. This led to the modern arrangement based on atomic number, where elements are ordered by the number of protons in their nuclei. The advent of quantum mechanics further enhanced our understanding of atomic structure, solidifying the periodic table as a cornerstone of chemical knowledge.

## The Present: A Dynamic Landscape

Today, the periodic table comprises 118 confirmed elements, from the familiar hydrogen to the more recently discovered and synthesized elements like oganesson. Advances in technology, particularly in spectroscopy and particle accelerators, have facilitated the discovery and confirmation of these elements.

The periodic table serves not only as a reference for the properties of elements but also as a guide for predicting their behavior and interactions. This information is crucial in fields ranging from medicine to materials science, influencing everything from drug development to the design of new materials with unique properties.

The International Union of Pure and Applied Chemistry (IUPAC) plays a key role in maintaining and updating the periodic table, ensuring that it remains an accurate and reliable resource for scientists worldwide. The periodic table continues to evolve as scientists explore the properties of superheavy elements and expand our understanding of the underlying principles of matter.

## The Future: Uncharted Territories

Looking forward, the periodic table is poised to undergo further expansion and refinement. The quest for new elements, particularly in the yet-to-be-charted region

of superheavy elements, continues. Scientists are pushing the boundaries of our understanding, exploring exotic forms of matter and challenging the limits of stability for heavy nuclei.

The development of advanced technologies, such as improved particle accelerators and computational methods, will likely play a pivotal role in future discoveries. The potential applications of these elements, especially in fields like nuclear physics and materials science, could open up new avenues for scientific exploration and technological innovation.

Moreover, the periodic table may see modifications or extensions to accommodate hypothetical elements, challenging our understanding of the fundamental forces that govern the universe. Theoretical frameworks, such as string theory and quantum gravity, might offer insights into the nature of matter that could reshape the way we organize and interpret the periodic table.

#### Conclusion:

The Periodic Table of Elements stands as a testament to the relentless pursuit of knowledge and the collaborative efforts of scientists across centuries. From its humble beginnings in the 19th century to its current status as a bedrock of chemistry, the periodic table has witnessed remarkable transformations. As we stand at the brink of the unknown, the periodic table continues to guide us into uncharted territories, where the mysteries of matter are waiting to be unraveled. The past, present, and future of the periodic table tell a story of scientific curiosity, discovery, and the ever-expanding frontiers of our understanding of the natural world.



# **MATHEMATICS: THE ARCHITECT OF TECHNOLOGICAL PROGRESS AND SOCIETAL TRANSFORMATION**

## **YVONNE O. CARANDANG, PhD**

The foundation of technology rests squarely upon the principles of mathematics. Key mathematical concepts such as logic, algebra, and calculus provide the essential framework for coding algorithms and designing intricate systems. These principles ensure the coherence, efficiency, and reliability of technological innovations, whether in the development of software applications or the creation of complex hardware systems.

Mathematics shines as a problem-solving tool in the realm of technology, offering pragmatic models employed to dissect and solve intricate problems. In fields like data analysis, optimization, and algorithmic development, mathematics provides a systematic and analytical approach to problem-solving, enabling professionals to unravel complexities and address challenges inherent in the ever-evolving technological landscape.

At the core of computer science and programming lies the indispensable role of mathematics. Algorithms, the building blocks of software development, are essentially mathematical instructions for solving specific problems. Programming languages, with their syntax and semantics, are deeply rooted in mathematical concepts, providing the logical rigor necessary for the creation of efficient, scalable, and reliable software systems.

In the realm of cybersecurity, mathematics assumes a pivotal role in developing robust encryption techniques. Mathematical algorithms create cryptographic systems that safeguard sensitive information, with concepts such as number theory and abstract algebra crucial in designing encryption protocols. This ensures the security and integrity of digital communication and transactions.

Mathematics is indispensable in engineering and design, guiding processes from the construction of physical structures to the development of intricate systems. Equations, formulas, and mathematical principles ensure precision and efficiency, enabling engineers to create solutions that meet the complex requirements of modern technological challenges.

In the era of big data, mathematics, particularly statistics, plays a vital role in extracting meaningful insights. Statistical methods rooted in mathematical principles enable professionals to discern patterns, trends, and correlations within large datasets, guiding decision-making processes across various fields.

As the language of science, mathematics is integral to scientific research, providing a systematic way to express and understand natural phenomena. Mathematical models play a crucial role in formulating hypotheses, conducting experiments, and analyzing results, influencing scientific discoveries and technological breakthroughs.

Mathematical modeling is extensively used in economics and finance to analyze markets, predict trends, and make informed decisions. Concepts such as calculus and probability provide the mathematical framework for understanding economic systems and financial markets, enabling accurate predictions and risk assessments.

Mathematics serves as a universal language that transcends disciplinary boundaries, facilitating communication and collaboration among professionals in diverse fields. The ability to express complex ideas mathematically fosters interdisciplinary approaches to problem-solving, encouraging the synthesis of knowledge from different domains.

Finally, mathematics emerges as a driving force behind innovation, powering the continuous advancement of technology. Whether in the development of cutting-edge technologies, the creation of efficient algorithms, or the optimization of existing systems, mathematics is the catalyst for transformative progress, shaping the trajectory of societal advancement and opening new avenues for exploration and discovery. In summary, the role of mathematics in a technological world and society is pervasive and profound, influencing and enabling progress across a wide spectrum of disciplines and applications. Beyond academic settings, mathematics profoundly impacts the way we live, work, and interact with the increasingly complex technological landscape, shaping the future of human civilization.

# **ILLUMINATING THE TEACHER'S IMPACT: EMPOWERMENT, COMMUNITY BUILDING, HEROISM, AND INNOVATION IN EDUCATION LEADERSHIP**

## **SHERILYN B. QUINTOS, PHD EDD**

Teachers are individuals who often go unnoticed in our communities, yet they play a crucial and influential role that extends well beyond the confines of the classroom. They serve as the creators of knowledge, the mentors of young minds, and the advocates for a more promising future. In the subsequent discourse, we will examine the multifaceted role of teachers as leaders within their communities, exploring the profound impact they have on the realm of education, the cohesion of localities, and the overall welfare of society. As community leaders, teachers are central figures in the cultivation and molding of not only students, but also the very essence of our communities. They empower their students, contribute to the establishment of a resilient community, are revered as heroic figures, and actively seek avenues for enhancing and revolutionizing the field of education.

The notion of an empowered educator, as examined by O'Sullivan (2015) and Balyer et al. (2017), centers on endowing instructors with the agency to engage in decision-making procedures pertaining to educational goals and instructional approaches. This process of empowerment entails granting teachers the opportunity to access information and resources, so enabling them to modify their instructional approaches in order to cater to the distinct requirements of their students. According to Frances Bolin (1989), teachers who are empowered are provided with the necessary support and encouragement to undertake professional risks and participate in Continuous Professional Development (CPD), all of which are crucial for achieving educational success.

The concept of teacher empowerment encompasses the provision of adequate resources and autonomy to ensure the delivery of a high-quality education to each student. In the absence of this empowerment, educators encounter difficulties in tailoring their instructional approaches to meet the specific needs of each student, hence prompting students to pursue expensive individualized tutoring services (O'Sullivan, 2015).

The importance of empowering teachers is underscored by its influence on teacher motivation, problem-solving skills, and its function in bestowing empowerment upon teachers, thereby augmenting educational achievements. According to a study conducted by Dee, Henkin, and Duemer (2002), there is evidence to support a positive relationship between teacher empowerment and motivation, as well as the promotion of collaboration among instructors. These factors have been found to have a beneficial impact on student accomplishment. Bogler and Somech (2004) underscore the correlation between teacher empowerment and student



achievement, whereas Hatcher (2005) posits that teacher empowerment facilitates leadership within a non-hierarchical framework that fosters collaborative learning. The factors that contribute to teacher empowerment, as identified by Kirby, Wilmperberg, and Keaster (1992), encompass teacher quality, background, personality, expectations, and the instructional programs implemented within a school setting. According to Irwin (1991), educators who are empowered exhibit several characteristics, including self-confidence, a comprehensive comprehension of the educational system, a high level of dedication to their profession, and a polite demeanor towards their colleagues and pupils.

Even more, teacher empowerment is proven to be related to many different management strategies. In some aspects, teachers can be empowered by providing decision-making opportunities for their profession's growth, improving their status, developing their self-efficacy, supporting their autonomy, improving social attractiveness, trustworthiness, and communication, and employing them as assistant principals.

According to Balyer et al. (2017), it is crucial to involve educators in several aspects of the education system's decision-making process, including financial management, teacher recruitment, curriculum creation, and student evaluation. This involvement holds great importance and should not be underestimated. Klecker and Loadman (1998) emphasize the importance of teacher engagement in these processes, whereas Short and Greer (1997) highlight the significance of careful consideration when identifying the specific areas in which teachers can actively participate. Accordingly, when teachers are given significant authority in making important decisions, it not only enhances the quality of their professional contributions but also guarantees that their perspectives are heard in all aspects of their responsibilities, thereby fostering the empowerment of educators.

In the similar study, Bayler et al. (2017) found that the majority of teachers express satisfaction with the consideration their recommendations receive from administrators when it comes to empowering teachers through involving them in decision-making. However, a portion of teachers feel that their opinions are not consistently sought when administrative decisions are made. This situation challenges the conventional perception of school administrators employing a classical management approach, suggesting that administrators place trust in teachers and value their input in decision-making. This aligns with In'am's findings (2015), which support the idea that involving teachers in decision-making can be a source of empowerment. Similarly, Kimwarey, Chirure, and Omondi (2014) argue that collaborative decision-making processes can enhance teachers' problem-solving abilities.

Regarding the enhancement of teacher status as a form of empowerment, many teachers believe that school administrators play a role in elevating their status, both financially and in terms of career progression. However, a significant number of teachers in our survey express feelings of vulnerability, both within the school environment and in society at large, highlighting a need for ongoing support from both school administrations and society as a whole. In line with this, improving the social attractiveness of schools by fostering trust, promoting effective communication, and addressing issues through social activities is a common practice among school principals. Particularly, younger administrators make efforts to cater to teachers' needs, establish strong relationships, and organize events outside of school. However, there is recognition that administrators cannot solely drive these efforts, as their roles have limitations, and government policies should play a significant role (Balyer et al., 2017).

In terms of teachers' self-efficacy, the prevailing sentiment among teachers is that administrators do not actively contribute to its development. There is a hope that school principals will provide more substantial support, as merely being a teacher is insufficient. This support should encompass addressing teachers' shortcomings, facilitating social and motivational activities, offering in-service training and presentations, and bridging the gap between theory and practice.

Regarding the promotion of teacher autonomy, most participants express the view that their autonomy is not adequately supported. They feel restricted from engaging in certain activities to enrich their classrooms. Interestingly, some teachers are unfamiliar with the concept of "autonomy." The consensus among participants is a desire for more responsibility in their classrooms, particularly regarding teaching methods, testing, and the selection of class materials. These findings align with the argument put forth by Lee and Nie (2015) that the traditional administrative roles of school leaders have evolved into leadership roles requiring greater managerial competence. Moran (2015) further emphasizes the need for administrators to empower and encourage teachers to enhance their teaching practices.

The significance of Boyd-Dimock and McGree's (2015) observations and Lieberman, Saxl, and Miles' (1988) research becomes more pronounced when considering the development of resilient communities. Robust communities, whether they exist within educational institutions or in the wider society, are contingent upon the presence of proficient leadership and the fostering of collaborative efforts among their constituents. In order to engage in productive collaboration with their colleagues, lead instructors recognized the necessity of acquiring a diverse range of leadership abilities through practical application. These included:

First and foremost, trust serves as the fundamental basis for fostering a resilient



community. Similar to educators, community leaders and members must prioritize the establishment of trust and rapport in order to enhance their effectiveness. Trust enables open communication and collaboration, vital ingredients for community cohesion. Additionally, it is vital to comprehend the current circumstances and dynamics when establishing a connection with a community. It is imperative for community leaders to conduct an evaluation of the prevailing demands, challenges, and opportunities that exist within their respective communities. The utilization of this diagnostic procedure facilitates the implementation of well-informed decision-making and efficient allocation of resources in order to effectively handle certain difficulties. Furthermore, robust communities are frequently distinguished by clearly delineated procedures and structures. The intelligent design and constant adherence to decision-making processes, dispute resolution procedures, and communication channels are crucial. Efficient procedures play a pivotal role in fostering the seamless operation of a community. In addition, the proper administration of work leads to proficient project and resource management. Efficient management of tasks and responsibilities is crucial for the attainment of collective objectives, regardless of whether it pertains to a neighborhood organization, a volunteer group, or a sports team. Finally, a common goal is to empower individuals of the community by improving their abilities and boosting their confidence. Just as lead teachers try to enhance the potential of their colleagues, community leaders should provide training, mentorship, and chances for skill development within the community (Boyd-Dimock & McGree, 2015).

The research findings indicate that the process of integrating leadership roles for teachers into school communities necessitates a systematic implementation of intentional measures by teacher leaders. The aforementioned actions involve attributing a value of impartiality to the act of providing aid, demonstrating collegiality as a fundamental operational approach, enhancing the self-worth of educators, embracing various methods of offering support, promoting ongoing learning and support opportunities for teachers within the educational institution, and fostering the development of leadership skills among individuals to guide their colleagues.

In the essence, the application of good teacher leadership and support principles can be extended to community building, resulting in the establishment of an environment that fosters a sense of empowerment, engagement, and value among its members. Consequently, this phenomenon cultivates a feeling of inclusion and collective objectives, which are essential elements in the establishment and sustenance of robust communities.

On the other hand, many have thought that teachers are heroes; are they really heroes? The view of teachers as heroes is multi-faceted and can be grounded in their dedication, impact on students and society, adaptability, and role as champions



of education. While not all may agree with this characterization, many recognize and appreciate the heroic qualities that teachers bring to their work in the field of education.

According to La Velle (2021), heroes are typically acknowledged as those who garner admiration due to their extraordinary bravery, notable achievements, and virtuous qualities. There exists a clear and unanimous agreement that teachers consistently demonstrate these attributes in their everyday responsibilities, a reality that became widely acknowledged in light of the global implementation of mandatory 'home schooling.' Moreover, it is worth noting that the term 'hero' encompasses the fundamental elements of the psychosocial capital idea, as delineated by Luthans et al. (2006) in their scholarly work. These components consist of Hope, Efficacy, Resilience, and Optimism, sometimes abbreviated as HERO.

Figure 1 presents a visual representation of the teacher's heroic actions, illustrating their dynamic nature as they fluctuate in reaction to evolving conditions. Imagine the several concentric circles depicted in the diagram undergoing both inward and outward movements, symbolizing the dynamic character of a teacher's heroism as it adjusts to changing difficulties and prospects. The dynamism observed in teachers reflects their exceptional ability to embody the characteristics of a hero within the always evolving educational environment.

Figure 1  
Teacher as a HERO



In Figure 1, it depicts the teacher as a HERO. This conceptual illustration depicts the interconnectedness of four components: Hope, Efficacy, Resilience, and Optimism. Hope is founded on the concepts of agency and the various pathways to achieving success. Efficacy is based on the expectation of success and an individual's belief in their ability to attain it. Resilience arises from the capacity to recover and rebound after experiencing challenging or unfavorable circumstances. Lastly, Optimism emerges from a

positive and forward-thinking belief in the potential for success.

Regarding the innovativeness of educators, Fuad, Musa, and Yusof (2020) emphasized the importance of implementing a systematic, consistent, and quantifiable transformation of the education system in order to foster innovation among educators. Lecturers, educators, scholars, administrators, and policymakers all have

significant contributions to make in advancing the pedagogical philosophy, instructional methodologies, and other aspects pertaining to the domain of education. The primary objective is to guarantee that students achieve a good standard of living and are adequately equipped to meet the requirements of the labor market.

In view of the OECD (2016), innovation in education was emphasized as a crucial factor in facilitating advancements. According to the Organisation for Economic Co-operation and Development (OECD), innovation has the capacity to improve the effectiveness of a country's education system and provide superior educational achievements, with a specific emphasis on excellence and fairness. According to the OECD (2016), the predominant obstacles confronting the field of education in contemporary times pertain to matters concerning production and efficiency. The measurement of efficiency is determined by the degree to which capital expenditure results in concrete student achievement and fairness in the realm of education. According to research conducted by the Organisation for Economic Co-operation and Development (OECD), there was a notable 17 percent rise in the total expenditure per student across OECD nations from 2005 to 2013. However, the findings from the Programme for International Student Assessment (PISA) during the period of 2003-2012 did not reveal any significant advancements. The education industry exhibits notable inequalities in productivity and efficiency when juxtaposed with other industries, such as healthcare. Technological innovations have exerted a considerable influence on both the education and healthcare sectors. However, it is noteworthy that healthcare has witnessed more substantial improvements in comparison to education. The most recent PISA results in 2018 likewise indicated minimal advancements across all OECD nations, despite a financial investment that exceeded 15% growth over the preceding ten-year period.

In this way, teachers as community leaders have a unique opportunity to drive educational innovation within their communities. Their leadership in adopting innovative teaching methods, addressing educational challenges, and fostering lifelong learning can have a profound impact on the quality of education and the overall well-being of the community. By embracing innovation and sharing their expertise, teachers contribute to building stronger and more empowered communities.

A detailed still life illustration. In the center, a lit candle in a brass holder sits on a dark, reflective surface. To the right, a quill pen is placed in a glass inkwell. In the foreground, an open scroll lies flat, displaying the word "Poems" in a large, elegant cursive script. The background is dark and textured, suggesting a wooden desk or a similar surface. The overall atmosphere is warm and scholarly.

Poems



## The Ballet of Math

Roel P. Balayan, EdD

In the empire of math, where concepts intertwine,  
A dance of definitions, each term's unique design.

AXIOM, the bedrock, foundation laid,  
Immutable truth, from which proofs cascade.  
No need for proof, it stands alone,  
In the edifice of math, a cornerstone.

LAW, a principle, nature's decree,  
In mathematical physics, it finds its glee.  
Immutable truths, observed and defined,  
In the cosmic dance, where the order's aligned.

POSTULATE, a starting point, assumptions we make,  
In geometry's landscape, angles and shapes.  
Guiding the path of theorems yet unseen,  
A compass of logic, in the mathematical sheen.

CONJECTURE, a hypothesis, a daring guess,  
Awaiting confirmation, a mathematical caress.  
A challenge to prove, or perhaps disprove,  
In the realm of uncertainty, where theories move.

PROPOSITION, a claim, a statement made,  
Not as grand as the theorem's cascade.  
A puzzle piece in the mathematical game,  
In the quest for knowledge, it stakes its claim.

LEMMA, a helper, a stepping stone,  
Enabling the proof of a theorem well-known.  
A miniature theorem, in service to the grand,  
In the symphony of math, where truths expand.

THEOREM, the jewel, a statement profound,  
Derived from axioms, logic is tightly wound.  
Proven with rigor, through deductive might,  
In the proving grounds, it emerges bright.

COROLLARY, a consequence, a logical child,  
Derived from theorems, with reason compiled.  
An offspring of truths, in logical kin,  
In the mathematical narrative, it finds its spin.

In the ballet of math, each term finds its role,  
A dance of definitions, an intellectual stroll.  
From conjecture to theorem, in the mathematical scheme,  
Each term, a note, in the grand mathematical theme.

## Community Engagement of Teacher in the Community Joseph T. Moraca, EdD

In the heart of the neighborhood, a teacher takes the lead,  
A catalyst for change, planting a potent seed.  
Community engagement is their guiding star,  
A symphony of voices, harmonizing near and far.

With open arms and a welcoming smile,  
They bridge the gaps, mile by mile.  
Through workshops and forums, connections take flight,  
A teacher engaged, turning darkness to light.

In town hall meetings, where decisions are sown,  
They advocate for change, making voices known.  
Listening to concerns, like a compassionate ear,  
A teacher engaged, diminishing every fear.

Beyond the classroom, in the community's embrace,  
They foster bonds, leaving a lasting trace.  
From volunteering to projects that inspire,  
A teacher engaged, sets the community on fire.

They empower the youth to rise and aspire,  
Building futures, dreams set on fire.  
Through collaborative projects that uplift and transform,  
A teacher engaged, weathers every storm.

In service learning, the lesson extends,  
Empathy and understanding, as the heart mends.  
A teacher engaged, in the pulse of the town,  
Creates a ripple effect, never to drown.

Through partnerships forged, with organizations aligned,  
A teacher engaged, leaves no one behind.  
Uniting neighbors, building a stronger tie,  
In the tapestry of community, they amplify.

So here's to the teachers, champions in this quest,  
Community engagement, their very best.  
With passion and purpose, they stand on the stage,  
A teacher engaged, inspiring change.  
They see potential in every eager face,  
Encouraging students to find their own pace.  
With empathy and care, they uplift and mold,  
A teacher in the community, worth their weight in gold.

In the tapestry of learning, community threads,  
Woven with compassion, where knowledge spreads.  
A teacher's impact, far beyond the class,  
A beacon of hope, like stained-glass.

So, here's to the educators who stand tall,  
In the community's embrace, they enthrall.  
With hearts devoted and minds ever keen,  
A teacher in the community, a guiding, shining beam.

## ADAPTING TO CHALLENGES

Florinda D. Bautista, MPA

In the classroom's embrace, where wisdom unfolds,  
Teachers stand resilient, their tales untold.  
Adapting to challenges, a skill finely tuned,  
In the ever-changing landscape, their spirits are boon.

Economic tempests may fiercely blow,  
Technological currents may ebb and flow,  
Societal shifts like a shifting tide,  
Yet teachers persist, with courage as their guide.

Adept navigators on a sea of change,  
They craft lessons that transcend the range.  
Evolving needs met with a steadfast grace,  
In the educational journey, they find their place.

Facing economic storms, they anchor hope,  
In the vast ocean of knowledge, they elope.  
Technological waves, they skillfully ride,  
With innovation as their trusted guide.

Societal changes, a challenging maze,  
Yet educators illuminate myriad ways.  
Preparing minds to navigate with ease,  
In the dynamic world, where challenges tease.

Crucial architects in this grand design,  
Teachers sculpt futures, a task so divine.  
Nurturing individuals to contribute with might,  
In the symphony of change, their melody takes flight.

So here's to the educators, adaptable and strong,  
Guiding communities, where they belong.  
In the face of challenges, they boldly stand,  
Preparing hearts and minds for an ever-shifting land.



## CHAMPIONS OF INNOVATION

Florinda D. Bautista, MPA

In the realm of progress, where innovation takes flight,  
Teachers emerge as champions, guiding with insight.  
In this era of technology's rapid dance,  
They craft the future, offering a chance.

With cutting-edge concepts and digital grace,  
They open young minds to an endless space.  
Champions of innovation, bold and true,  
Igniting a spark in the next-gen crew.

Beyond classroom walls, their impact unfolds,  
Unsung heroes, their stories untold.  
Dedication to education, a beacon's light,  
Guiding communities through the darkest night.

Community engagement, a vital part,  
Teachers weave connections, a work of art.  
Holistic development, their noble goal,  
Nurturing hearts, minds, and spirits whole.

Indispensable contributors, they stand tall,  
As growth and resilience blossom and sprawl.  
Celebrating teachers, let the chorus rise,  
For their transformative influence, a priceless prize.

In the tapestry of progress, they weave the thread,  
Shaping vibrant communities where dreams are bred.  
So let us recognize, appreciate, and cheer,  
For teachers, the architects of a future so clear.

## EDUCATIONAL PILLARS

Florinda D. Bautista, MPA

In the classroom's embrace, where knowledge takes flight,  
Teachers stand as pillars, unwavering and bright.  
Bedrock of education, with wisdom endowed,  
Equipping minds for futures, strong and proud.

In the community's heart, they lay the foundation,  
Educational pillars, a source of inspiration.  
Building bridges to wisdom, brick by brick,  
For future generations, a resilient click.

Skills and knowledge, the tools they bestow,  
A roadmap for progress, a bright afterglow.  
Through commitment and care, their mission defined,  
Cultivating curious minds, like seeds in the mind.

In the tapestry of learning, a vibrant thread,  
Teachers inspire a love for what lies ahead.  
A ripple of passion, like a gentle stream,  
Reverberates through the community, a shared dream.

For in the hearts of learners, a fire is lit,  
A love for learning, a flame that won't quit.  
Educational pillars, steadfast and true,  
Guiding the way, for me and for you.

So here's to the teachers, the pillars so grand,  
Crafting a legacy, on knowledge they stand.  
In the echo of lessons, in the minds they inspire,  
They build the future, educational pyre.

## LIFELONG IMPACT

Florinda D. Bautista, MPA

In the halls of learning, where knowledge does unfold,  
Dedicated teachers leave a legacy untold.  
Beyond the academic years, their influence is cast,  
A lifelong impact that forever will last.

Lessons woven like threads in life's grand tapestry,  
Values instilled, shaping each destiny.  
Students carry the torch of wisdom's flame,  
Guided by teachers who played a transformative game.

The echoes of teachings, whispers in the breeze,  
Create a ripple effect, crossing time and seas.  
Empowered individuals, a radiant stream,  
Contribute to the community's vibrant dream.

The seeds of knowledge, once sown with care,  
Blossom into virtues that gracefully bear.  
In the garden of life, where aspirations sprout,  
Dedicated teachers are what dreams are about.

Their impact, a legacy, eternally spun,  
A symphony of growth beneath the sun.  
As empowered hearts weave a tapestry bold,  
The lifelong impact of teachers, a story told.



# Protecting our Biodiversity through Technology

## Benjamin G. Haboc, MAEd

In nature's symphony, a chorus diverse,  
Biodiversity, our planet's converse.  
A tapestry woven with life untold,  
In every leaf, a story unfolds.

Mountains, rivers, and oceans wide,  
Nature's palette, where wonders reside.  
But threats emerge, a looming fate,  
In the balance, we must equate.

Enter the realm where engineering meets,  
A dance with tech, a rhythmic beat.  
Guardians of Earth, with minds so keen,  
Harnessing progress to keep nature serene.

Innovation whispers through the trees,  
A promise to safeguard what the eye sees.  
Drones soaring high, like vigilant hawks,  
Monitoring forests, tracking nature's talks.

Satellites gaze from the celestial sphere,  
Mapping landscapes, making danger clear.  
With data as allies, scientists unite,  
To protect the planet, to set things right.

In the heart of progress, green solutions bloom,  
Harnessing sunlight, dispelling the gloom.  
Wind turbines dance in rhythmic delight,  
Harvesting breezes, embracing the light.

Biotechnology, a force for good,  
Restoring ecosystems as best it could.  
Remediating soil, purifying air,  
A harmonious dance, beyond compare.

Smart grids weave energy with finesse,  
Balancing power, reducing excess.  
Efficiency rises, waste declines,  
A world connected, where sustainability shines.

But let us not forget, the power we wield,  
Innovation's gift, a two-edged field.  
For progress unchecked, without restraint,  
Can disrupt the balance, invite nature's plaint.

So let's engineer with a mindful touch,  
Preserving nature, we love so much.  
Biodiversity, a delicate art,  
Protected by engineering, a shared heart.

## From Idea to Impact Technology of Business Entrepreneur Cynthia Manalad, DBA

In the crucible of thought, where ideas ignite,  
From sparks of inspiration, innovation takes flight.  
A symphony of pixels, a code of dreams,  
Technology whispers, or so it seems.

From the depths of minds, where creativity blooms,  
Entrepreneurs emerge from their unique rooms.  
Business acumen melds with a visionary gaze,  
A fusion of passion in the entrepreneurial maze.

Concepts crystallize, forming a plan,  
A blueprint for change, a digital span.  
Silicon valleys and skylines rise,  
As entrepreneurs chase the business skies.

Code becomes currency, pixels turn to gold,  
In the crucible of startups, stories unfold.  
Ventures birthed from a spark so bright,  
Navigating challenges, embracing the fight.

From servers humming to apps on the screen,  
Entrepreneurs sculpt a tech-driven scene.  
The marketplace pulses with a digital beat,  
As businesses rise with swift, agile feet.

In boardrooms where strategies intertwine,  
Entrepreneurs chart paths to success, design.  
From pitch to prototype, a journey begins,  
Navigating markets, seeking wins.

Investors gather, assessing the tale,  
As startups set sail with wind in their sail.  
From seed to series, funds align,  
Fueling the engine of the tech design.

Ideas become impact, a ripple so vast,  
Transforming industries, leaving a contrast.  
Tech-driven solutions, a global rapport,  
From idea to impact, the journey we explore.

## Teacher as an Entrepreneur Evangeline Romano

In the hallowed halls where minds take flight,  
A teacher stands, a beacon of light.  
Not just a guide in the classroom's domain,  
But an entrepreneur with a visionary gain.

With chalk in hand, and wisdom in heart,  
They embark on a journey, a daring start.  
In the marketplace of knowledge, they tread,  
A pedagogue entrepreneur, where dreams are bred.

Their lessons are more than mere impart,  
They plant seeds of knowledge, nurturing the heart.  
Each lecture, a venture, carefully designed,  
To cultivate curiosity, inquisitive minds.

They see potential in every eager gaze,  
Entrepreneurial spirit, in myriad ways.  
Not just textbooks, but ideas they sow,  
In the fertile minds that are poised to grow.

The classroom is a canvas, a startup space,  
Where innovation and inspiration embrace.  
Lessons are modules, a curriculum unfolds,  
Entrepreneurial stories in textbooks told.

They teach not just subjects, but resilience too,  
The essence of striving, of pushing through.  
Turning setbacks into lessons to learn,  
A teacher entrepreneur, forever to discern.

With passion as capital, and knowledge as stock,  
They navigate challenges, unlocking each lock.  
In the market of education, they carve a name,  
A teacher entrepreneur, playing the game.

Beyond grades and exams, they instill,  
The spirit of enterprise, a potent skill.  
For life is a venture, a journey unknown,  
A lesson they teach, in every tone.

So, here's to the teachers, the entrepreneurs bold,  
In the realm of education, their stories unfold.  
Guiding, inspiring, with a vision so grand,  
A teacher entrepreneur, shaping futures in the sand.



## **STEM ang Pag-asa ng Kabataan Ngayon Bagong Panahon** Daisy Mae R. Bongtiwon, MAT

Sa mundo ng siklab ng isipan,  
Sumibol ang STEM, wagas na hilig ng tao.  
Siencia, Teknolohiya, Inhenyerya, Matematika,  
Sa bawat hakbang, kinakalawang daan.

Sa ilalim ng malamlam na bituin,  
Bumubukas ang pinto ng kaalaman.  
Matematika, kaakibat ng pag-unlad,  
Ang pagbilang ng bituin, gabay sa landas.

Si Inhenyerya, tagapagtaguyod ng bagong gawi,  
Sa pagbuo ng kinabukasan, kanyang lihim.  
Tulay sa hinaharap, mga estruktura'y nagtataglay,  
Ang bayanihan ng kamay, diwa'y di mapapantayan.

Ang siyensya, pagsusuri ng hiwaga ng kalikasan,  
Mga tanong at sagot, kasama sa pag-usbong.  
Talino at dedikasyon, gabay sa pag-angkin,  
Ng kaalaman na hatid ng siyensya'y walang hanggan.

Teknolohiya, ang kamay na may bilang,  
Naglalaro sa lente ng kaunlaran.  
Sa kanyang pangangalaga, mundo'y napakapit,  
Ang teknolohiyang bitbit, tadhana'y napapawi.

Sa STEM, isang alon ng galing,  
Pag-asa ng bayan, sa lahat ng landasin.  
Taglay ng kabataan, pangarap ay buhayin,  
Sa ilalim ng STEM, puso ng pagbabago'y sumisiklab.

## LIFELONG IMPACT

Florinda D. Bautista, MPA

In the halls of learning, where knowledge does unfold,  
Dedicated teachers leave a legacy untold.  
Beyond the academic years, their influence is cast,  
A lifelong impact that forever will last.

Lessons woven like threads in life's grand tapestry,  
Values instilled, shaping each destiny.  
Students carry the torch of wisdom's flame,  
Guided by teachers who played a transformative game.

The echoes of teachings, whispers in the breeze,  
Create a ripple effect, crossing time and seas.  
Empowered individuals, a radiant stream,  
Contribute to the community's vibrant dream.

The seeds of knowledge, once sown with care,  
Blossom into virtues that gracefully bear.  
In the garden of life, where aspirations sprout,  
Dedicated teachers are what dreams are about.

Their impact, a legacy, eternally spun,  
A symphony of growth beneath the sun.  
As empowered hearts weave a tapestry bold,  
The lifelong impact of teachers, a story told.

## My Teacher is a Living Hero

Conrad Blando

My teacher annoys me, with his never-ending reminders,  
To pay attention to his instructions and lectures.  
My teacher called me, to test my comprehension,  
In a world of knowledge, he's my guiding lantern.

With patience that rivals the calming sea,  
He unfolds the mysteries, like a wise decree.  
In his classroom, we experience learning and laughter,  
My teacher stands tall, a wisdom thereafter

He discusses ideas, watches us grow,  
In the learning environment, his influence we know.  
Through challenges and triumphs, he leads the way,  
A living hero in the classroom every day.

The seeds of knowledge, once sown with care,  
Blossom into virtues that gracefully bear.  
In the garden of life, where aspirations sprout,  
Dedicated teachers are what dreams are about.

So though annoyance may flicker, like a passing cloud,  
In the complexity of morals, his impact is loud. My  
teacher, a hero, with lessons to share,  
Guiding us forward with unwavering care.



## **A Teacher is a Community Leader**

Conrad Blando

In every community, a leader stands,  
A teacher who guides with nurturing hands.  
Not just in the classroom, but far and wide,  
A source of wisdom, a mentor with pride.

In the house of knowledge as dreams take flight,  
He clears paths with a guiding light.  
Through challenges faced and victories won,  
A teacher leads, a job well done.

He teaches how to cultivate in fertile ground,  
Empowering minds with knowledge profound.  
In the harmony of learning, a melody played,  
A teacher as a leader, foundations laid.

A mentor, a guardian, a leader so true,  
Teacher and community entwined like dew.  
As a captain steering a ship to shore,  
In the community's journey, he explores.

So here's to a teacher, the leader we see,  
Shaping the future, setting minds free.  
In the classroom and beyond, his influence soars,  
A teacher is a community leader, who opens doors.

## Edukasyon Tungo sa Kaunlaran at Magandang Pamayanan Dennis Mangubat

Sa landasin ng edukasyon, tadhana'y binubukas,  
Landas na tunguhin: Kaunlaran, pamayanan ay sumiklab.

Sa paaralan ng ilaw, dunong at karunungan,  
Ang pag-unlad ay hamon, giliw, sagot ay aral ng kaalaman.

Gurong puno ng liwanag, ilaw ng kaisipan,  
Itinataguyod ang pangarap, pangako sa bayan.

Sa aklat ng pag-asa, nagsisimula ang kwento,  
Ng pag-usbong ng katalinuhan, sa mithiin ng ginto.

Sa bawat silid-aralan, kabihasan'y nagigising,  
Mga isipan ng kabataan, sa kamalayan ay dumarami.

Sa tinta ng kasaysayan, isinusulat ang landas,  
Ng pagbabago at pag-ahon, sa buhay ng bawat isa.

Sa kalye ng pag-aaral, layunin ay tiyakin,  
Ang mga pangarap ay mangyari, pagkat edukado'y lihim.

Bawat batang nag-aaral, sa yaman ng kaalaman,  
Sa pag-unlad ng bayan, siyang bubuo ng pundasyon.

Kaunlaran at pamayanan, sa edukasyon nakatanim,  
Sa bawat patak ng pawis, pag-asa'y dumarami.

Kahit anong yaman, sa pag-aaral ay kayamanan,  
Itong ilaw na itinuturo, lihim sa kinabukasan.

Kaya't magtutungan tayo, itaguyod ang edukasyon,  
Tungo sa kaunlaran at pamayanan ng kasaganaan.  
Sa bawat guro at mag-aaral, kasama nating abutin,  
Ang bituin ng katalinuhan, sa langit ng tagumpay.

Sa edukasyon, susi sa kaunlaran at tagumpay,  
Ang bawat iskolar ng bayan, may misyon na bitiwang.

Sa mga silid-aralan, kaisipan ay magningning,  
Ang edukasyon, daan tungo sa magandang kinabukasan.





## GUILD OF EDUCATORS IN TESOL INTERNATIONAL

### MISSION

- To provide excellent training in language education through open learning, seminars and workshops;
- To enable the educators to be expert in the teaching of English to speakers of other languages; and
- To lead educators and other professionals embrace quality research writing and high impact publication and to raise the culture of research.

### VISION

- To be a leading center of excellence in the continuing professional development for teachers locally and internationally.

Join us on a journey towards sustainable development by exploring the synergy between languages and STEM in the Philippines. This theme highlights TESOL-infused STEM initiatives fostering sustainable practices. Engage with articles showcasing bilingual scientific discoveries addressing local environmental challenges, technology-driven language acquisition enhancing STEM comprehension, engineering projects promoting diverse linguistic collaboration, and math concepts taught inclusively through multilingual approaches. Experience narratives that underscore how TESOL-integrated STEM education is pivotal in equipping Filipino learners with the tools to tackle sustainability issues and drive meaningful change for a prosperous future.