

Innovative Teaching Practices in Advancing Sustainable Development Goals in Basic Education

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Abstract - The increasing complexity of global challenges has necessitated innovative approaches in basic education that align with Sustainable Development Goals (SDGs). The teacher is a key figure in ensuring that student-based, technology-based, and sustainability-based teaching methods are combined to achieve the academic engagement of the learners, their values and sustainability consciousness development. The proposed study has aimed at exploring the new teaching methods used by basic education educators in the Philippines and how they relate to SDGs, how they have affected learners, the obstacles they face and measures to reinforce SDG-based learning. The study employed a descriptive-quantitative research design. A purposive sampling technique was used to select 200 respondents, including teachers, learners, non-teaching personnel, and parents, from selected schools. Data were collected using a researcher-made questionnaire consisting of four parts: teacher profile, innovative teaching practices, SDG alignment, and perceived effects and challenges. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to analyze the data. The independent samples t-tests were used in comparison of perceptions in teachers and non-teaching respondents. Results showed that the main innovative practices used by teachers were student-centered learning, technology-integrated, and sustainability-oriented activities in terms of context, and the selection was high in SDG 4 (Quality Education), SDG 5 (Gender Equality), and SDG 13 (Climate Action). The teachers indicated that their perception of innovative practices, SDG alignment and enabling factors varied significantly as compared to that of non-teachers. Some of the perceived effects were better academic engagement, values formation and sustainability awareness among learners. The barriers that were found were a lack of resources, a lack of training, and institutional barriers and the facilitators were enabling leadership, professional growth, and professional networks. The study points out the vital importance of teachers as agents of change in advancing SDGs through innovative teaching. The suggested action plan offers a useful and relevant guide to improve teaching methods focused on the SDGs, boost student success, and promote sustainable and inclusive education in basic education environments.

Keywords - Innovative Teaching Practices, Sustainable Development Goals (SDGs), Basic Education, Student-Centered Learning, Technology Integration, Sustainability Awareness.

I. INTRODUCTION

In contemporary basic education, the growing complexities of global challenges require educators to rethink conventional teaching approaches and adopt innovative practices that align with sustainable development priorities (UNESCO, 2017). The concept of innovative teaching practices is designed as pedagogical interventions that go beyond the traditional rote learning and incorporate active, Problem-solving, and student-centered approaches that will better equip students with real-world problems and future challenges (OECD, 2018). According to the research, the implementation of frameworks related to sustainability, including the United Nations Sustainable Development Goals (SDGs) in classroom teaching, positively affects the relevance of the education and increases the interest of the students in the issues faced by society (United Nations, 2016). The

evidence of sustainable education indicates that the creation of new teaching methods does not only contribute to students learning more effectively but also accumulating knowledge and competence required to achieve the objectives of the quality and fair education identified by the SDGs (Tilbury, 2016). This evolving focus reflects a global shift towards embedding “future-ready” learning environments in basic education where teachers act as key drivers of change and innovation (Fullan, 2019).

This study explores how innovative teaching practices contribute to the advancement of Sustainable Development Goals, particularly within basic education settings where foundational learning and socialization occur (UNESCO, 2020). It explores the nature of pedagogical innovations used by educators, how such practices can be associated with SDG targets particularly SDG 4 on quality education and SDG 13 on climate action and how such practices affect student achievement and school culture (United Nations, 2017). The study aims at clarifying the correlations between teacher innovation and sustainability of education by recording the established and emerging strategies, such as technology-based learning, project-based approaches, integrated sustainability initiatives, and community-focused action learning (OECD, 2021).

Recent studies show that to effectively include SDGs in teaching, it's not enough to just cover the material; it requires teaching methods that encourage students to think critically, be creative, work together, and take social responsibility (UNESCO, 2018). Scientists stress that sustainable education is based on interactive, experiential, and responsive teaching processes that engage learners in solving up-to-date problems like environmental stewardship, societal justice, and community health (Sterling, 2016). However, practice often falls short of theory due to constraints in curriculum design, teacher preparation, and institutional support for innovation (Leicht, Heiss, & Byun, 2018).

Despite growing attention to SDG integration, gaps remain in the empirical understanding of how innovative teaching practices are enacted in basic education, what specific strategies yield measurable progress toward SDG outcomes, and how teacher capacities and systemic supports shape implementation (OECD, 2020). Many studies point at the same fact that despite the increasing knowledge and awareness of educators about the SDGs, the practical barriers preventing successful integration include insufficient training and resources, rigid curricula, and the lack of professional development (UNESCO, 2019). The amount of research available on the comparison of the use of innovative teaching methods across various learning environments, including developing regions, is lacking, so there is a gap in valuable resources to make policy and practice decisions (Torres & Moreno, 2020).

The findings of this study are important for educational stakeholders, including teachers, school leaders, policymakers, and teacher education institutions, because they can inform strategies to strengthen teaching practices that advance both educational quality and sustainable development (UNESCO, 2021). The findings of this research can benefit the wider literature on restructuring basic education by highlighting effective strategies and barriers to implementation in order to reorient basic education towards sustainable, inclusive, and progressive models of teaching and learning (Fullan and Quinn, 2016). Ultimately, understanding how innovative practices support the SDGs can help ensure that education contributes meaningfully to creating equitable, resilient, and sustainable societies, consistent with global goals for 2030 and beyond (United Nations, 2022).

II. LITERATURE REVIEW

This section provides a synthesis of pertinent literature and studies that investigate innovative teaching practices and their contribution to the advancement of the Sustainable Development Goals (SDGs) in basic education. It evaluates academic publications that share on education towards sustainable development, teacher led innovations, and pedagogical approaches that facilitate inclusive, quality, and future ready learning. The review also highlights key findings, trends, and challenges identified in previous studies to establish the foundation of the present research and to identify gaps that the study seeks to address. The Constructivist Learning Theory was established by Vygotsky in 1978 and reaffirmed by UNESCO in 2017. According to constructivist learning theory, learners have a central role in building knowledge by engaging in meaningful interactions with their environment and social context and focuses on learner-centered and experience-based learning (Vygotsky, 1978; UNESCO, 2017). This theory supports innovative teaching practices that encourage

collaboration, inquiry, and real-world problem solving, which are essential in advancing Sustainable Development Goals in basic education.

The theory of Transformative Learning was developed by Mezirow in 1997 and updated by Sterling in 2016. Transformative Learning Theory describes the process of learning in the form of critical analysis of assumptions and views by learners, resulting in radical change in cognition and action (Mezirow, 1997; Sterling, 2016). In the context of SDG integration, this theory underscores the role of innovative pedagogy in developing sustainability awareness, critical consciousness, and social responsibility among learners.

Kolb (1984) applied the Experiential Learning Theory to ESD in 2018. Experience Learning Theory lays stress on direct experience, reflection, conceptualization, and application in the learning process (Kolb, 1984; UNESCO, 2018). This theory supports the use of project-based learning, community engagement, and environmental action projects that help learners internalize SDG principles through practical application.

Bandura (1977) applied the Social Learning Theory to sustainability education in 2020. According to Social Learning Theory, it is a learning approach based on observation, modeling and social engagement (Bandura, 1977; OECD, 2020). Teacher-led SDG initiatives exemplify this theory as educators model sustainable behaviors and values, influencing learners to adopt responsible and ethical practices aligned with sustainable development.

Fullan (2019) applies the Innovation Diffusion Theory to education. The Innovation Diffusion Theory is a theory that describes the spread of new ideas and practices in organizations and communities throughout a period of time (Rogers, 2003; Fullan, 2019). This theory offers a framework for comprehending the adoption, implementation, and sustainability of innovative teaching practices associated with SDGs within basic education systems.

Republic Act No. 10533 is also known as the Enhanced Basic Education Act of 2013. Republic Act No. 10533 requires the creation of a curriculum that is learner centered, inclusive and developmentally appropriate resulting in critical thinking, problem solving and lifelong learning. This law supports the integration of innovative teaching practices that align with Sustainable Development Goals by encouraging contextualized, relevant, and responsive education in basic education. Republic Act No. 9710 is also known as the Magna Carta of Women. Republic Act No. 9710 guarantees gender equality and empowerment of women in every industry and education is no exception. This legal basis aligns with SDG 5 (Gender Equality) and supports innovative teaching practices that foster inclusive, equitable, and gender-responsive learning environments in basic education.

Department of Education Order No. 32, series of 2017, establishes the Gender-Responsive Basic Education Policy. DepEd Order No. 32, s. 2017 institutionalizes the application of gender responsive education at the basic education and encourages pedagogical practices which follow equity, inclusivity and social justice. This policy provides legal grounding for integrating SDG-related values and innovative strategies that support sustainable and inclusive development in schools.

A. Objectives

1. To find out how well teachers are using SDG-aligned innovative teaching practices in basic education, focusing on their teaching methods, learning activities, and ways of assessing students.
2. To find out how well teachers are using SDG-aligned innovative teaching practices in basic education, focusing on their teaching methods, learning activities, and ways of assessing students.
3. To examine the alignment of identified innovative teaching practices are aligned with the chosen Sustainable Development Goals, especially SDG 4 (Quality Education) and other applicable SDGs.
4. To assess the perceived effects of innovative teaching practices on the academic engagement of learners, formation of values and their awareness of sustainability.
5. To find the barriers and facilitators experienced by teachers in the process of applying innovative, SDG-based pedagogical practice in primary schools.
6. To propose an action plan or framework that can be used to improve the implementation of innovative teaching practices that can promote the Sustainable Development Goals in basic education.

III. METHODOLOGY

This study utilized a descriptive research design to examine innovative teaching practices in advancing the Sustainable Development Goals (SDGs) in basic education. It also sought to find the information about the teachers, learners, parents, and school staff about the kind of teaching innovations used, their correspondence to SDGs, and perceived impact and challenges of these practices. The questionnaire was designed by the researcher, and its validity was verified by the experts, which was subsequently analyzed with the assistance of descriptive statistics (frequency, percentage, weighted mean, and ranking) to collect the data. Ethical considerations were strictly observed to ensure voluntary participation, informed consent, and confidentiality of responses.

A. Design

This study employed a descriptive-survey research design to examine innovative teaching practices used by teachers in advancing the Sustainable Development Goals (SDGs) in basic education. The design was suitable, in the sense that it intended to narrate on existing practices, levels of implementation, perceived impacts, and difficulties without manipulating variables. It was possible since a descriptive approach assisted the researcher to gather quantitative and qualitative data that was relevant to teacher-led innovations and their congruence with Sustainable Development Goal (SDG) principles.

B. Conceptual Model

The conceptual model of this study illustrates the relationship between innovative teaching practices and the advancement of Sustainable Development Goals (SDGs) in basic education. It shows how student-centered, technology-enhanced and sustainability-oriented approaches used by teachers, along with facilitating factors such as teacher training, school support, and community engagement all affect the academic engagement of learners, their values and sustainability awareness. The other important parameter that the model identifies is the importance of monitoring and evaluation in the effective implementation of SDG-oriented teaching practice, which offers a systematic context through which educational planning and decision-making take place.

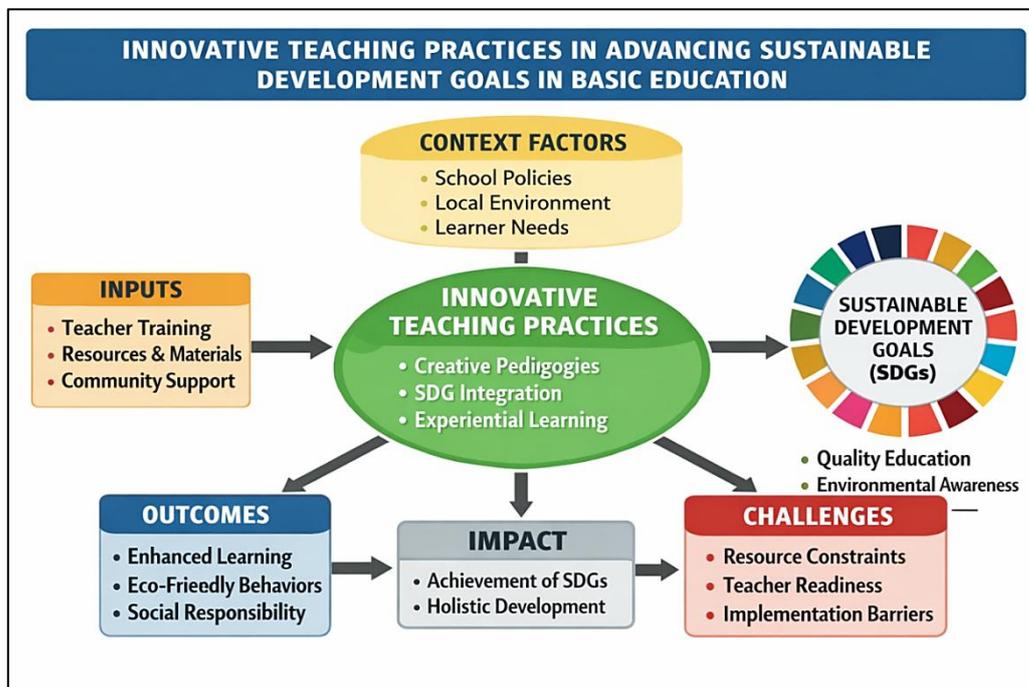


Figure 1. Conceptual Model

The conceptual model illustrates how innovative teaching practices serve as a bridge between educational inputs and the achievement of Sustainable Development Goals (SDGs) in basic education. The model points out that both preparation and involvement of all stakeholders are needed to effectively engage the SDG integration by mentioned aspects of key elements, including teacher training, resources, community support, and context factors. The challenges that the model might highlight are also the resource limitations and teacher willingness, which must be addressed to achieve a successful implementation. It further reveals that in the event of sound

application of the practiced innovations, they yield positive results such as improved learning, environmental friendly habits, social responsibility and holistic development, which are ultimately geared towards the greater end of attaining SDGs. This model can guide educators, policymakers, and school administrators in designing, implementing, and evaluating teaching strategies that are both innovative and sustainability-oriented, ensuring education is aligned with global development priorities.

IV. ENVIRONMENT

The research was done in some selected basic education schools that were under the Department of Education (DepEd). The selection criteria of these schools were based on the fact that they were actively using new teaching strategies and initiatives in sustainability matters, so they were an appropriate location to study SDG-oriented teaching methods.

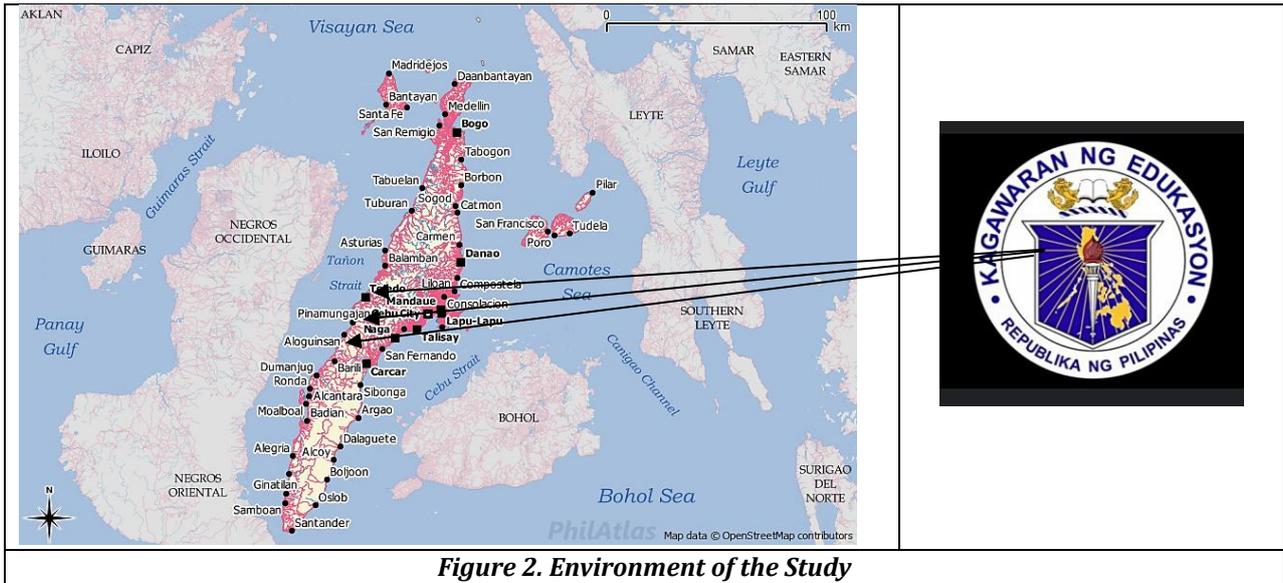


Figure 2. Environment of the Study

The inclusion of Cebu Province along with the municipalities of Pinamungajan, Toledo, and Aloguinsan in the study highlights the geographical context of the research, providing a clearer understanding of where the respondents are situated. By mapping such areas, the researcher and the readers can enjoy the local context of the research, such as the variables that could shape the adoption of new teaching practices and the provision of the Sustainable Development Goals (SDGs). It also highlights the community-based character of basic education in such municipalities demonstrating that results and conclusions are applicable and pertinent to schools and students located in this geographical region. Furthermore, the visualization of the locations can be used to plan school-level interventions, find out the tendencies of the area and adjust the educational approaches to the needs of students, educators, and parents in these areas. Overall, the map provides a spatial perspective that strengthens the interpretation and generalizability of the study’s results within Cebu Province.

A. Respondents

The respondents of the study were basic education teachers from the selected schools. Teachers were chosen because they are the primary implementers of classroom instruction and play a crucial role in integrating innovative teaching practices and Sustainable Development Goals into the learning process.

Table 1. Distribution of the Respondents

Respondents	Population (N)	Percentage(%)
Learners	120	60
Non-Teaching Personnel, Teachers, and Administrator	20	10
Parents	60	30
Total:	200	100

Table 1 shows that the majority of the respondents were learners, comprising 120, or 60%, of the total population, indicating that learners' perspectives play a central role in understanding the implementation and impact of innovative teaching practices in advancing Sustainable Development Goals in basic education. The home and community support illustrated by the integration of parents (30%) is vital in the reinforcement of sustainability-related values and practices presented in schools. In the meantime, the involvement of non-teaching staff, educators, and administrators (10%) gives institutional and managerial level information needed when evaluating policy implementation, instructional leadership, and school-based support systems. Overall, the distribution of respondents ensures a holistic and multi-stakeholder perspective, strengthening the validity and relevance of the study's findings regarding SDG-oriented innovative teaching practices.

B. Sampling Technique

A purposive sampling technique was employed by first identifying schools that actively implement innovative and sustainability-related programs aligned with the Sustainable Development Goals. Respondents in these schools were selected in particular ways depending on their inclusion criteria, including direct classroom role, involvement in SDG activities or involvement in school programs, which a schools practice to adhere to sustainable practices. Higher teachers, administration, Non-teaching staff, parents, and learners that fulfilled these criteria were invited to respond to the study. This process ensured that all selected respondents had firsthand experience and relevant knowledge necessary to provide valid and meaningful data aligned with the objectives of the research.

C. Instrument

The primary instrument used for data collection was a researcher-made questionnaire, constructed by the researcher and was specifically created to function as the type of tool to collect information on innovative teaching practices in line with Sustainable Development Goals (SDGs). The questionnaire was developed based on the related literature, tools, and SDG frameworks so that the created items were relevant, clear, and aligned to the study objectives. The instrument was divided into four parts:

1. Teachers' Profile: Collected demographic and professional background information.
2. Innovative Teaching Practices: Determined the type of strategies and methods applied by teachers in the classroom.
3. Alignment with SDGs: Measured the correspondence of the teaching practices to the targets of the selected Sustainable Development Goals.
4. Perceived Effects and Challenges: Assessed teachers and other stakeholders thought about the results and problems in implementing innovative SDG-oriented practices.

To measure perceptions using the questionnaire a five-point Likert scale was used which includes the responses "Strongly Disagree" to "Strongly Agree" to measure the scale. To achieve validity and reliability, the tool was revised by the professionals in the sphere of experts in education and sustainability and piloted before administration.

D. Validation of the Instrument

The research instrument was subjected to a systematic content validation process to ensure its accuracy, clarity, and relevance to the study objectives. In the first place, the questionnaire underwent the examination of a group of specialists in the spheres of education, curriculum building, and sustainability education. These specialists analysed every item in terms of its clarity, relevance and compatibility with the goals of evaluating new teaching practices and their role in SDGs.

According to their remarks and suggestions, the words were amended, and some unclear points were eliminated, so no elements of SDG integration and innovative practices were overlooked. Following the content validation, pilot test was done with a small sample of respondents who were similar to the study population but an alternative sample. This pilot test served to ensure that the reliability of the questionnaire used by the researcher was correct and that the tool was capable of capturing the thoughts and feelings of people properly.. The results of the pilot test confirmed that the instrument was valid, reliable, and ready for full-scale data collection.

E. Data Gathering Procedure

Before collecting data, the researcher secured permission from the school heads and relevant authorities to ensure the study complied with institutional protocols and ethical standards. After approval, the researcher distributed the questionnaires to the respondents using both personal distribution for those available on-site and online platforms for participants who could not be reached physically. The respondents were informed about the purpose of the study and instructed on how to complete the questionnaire accurately. They were also given sufficient time to answer all items thoughtfully and were assured that their responses would remain confidential and used solely for research purposes. The researcher then collected the completed questionnaires, checked them for completeness, and prepared the data for statistical analysis.

F. Statistical Treatment of Data

The data collected from the questionnaires were systematically organized, tabulated, and analyzed using descriptive statistical tools to provide a clear and comprehensive understanding of the respondents' profiles and perceptions. In detail, the frequency counts were applied to define the quantity of respondents in each category and percentages were applied to reveal the proportion of each group as compared to the total population. An overall score of the degree of implementation of the innovative teaching practices and the extent of correspondence to the Sustainable Development Goals (SDGs) was calculated and provided to the researcher as the weighted mean so that the responses could be ranked in their significance. Ranking was also applied to identify which teaching practices were most commonly implemented and which challenges were most frequently encountered. These descriptive statistical methods enabled the researcher to summarize trends, interpret patterns, and draw meaningful conclusions regarding the extent and effectiveness of teacher-led SDG initiatives in basic education.

G. Ethical Considerations

The study strictly adhered to ethical standards to protect the rights, welfare, and privacy of all participants. Participation was entirely voluntary, allowing respondents the freedom to decide whether or not to join the study without any form of coercion. The researcher obtained informed consent of all participants before handing over the questionnaires, and a clear information on the purpose of the study, the procedures to be followed and how the information would be utilized was given. The confidentiality of the respondents was guaranteed and the highest degree of privacy was observed when handling the respondents, no personal identifier was captured during the data analysis to avoid privacy violation. Also, the gathered data were used under the academic and research purposes only and ensured that the results would be shared responsibly and ethically. The researcher adhered to all pertinent school and institutional regulations to uphold ethical integrity during the study.

V. RESULTS AND DISCUSSIONS

Figure 3 illustrates how innovative practices in teaching in Philippine basic education are aligned with major Sustainable Development Goals (SDGs) and the practical consequences of classroom and school-wide activities.

- Alignment with SDG 4 Quality Education: The image of the first one depicts a teacher and students including them into literacy and numeracy tasks and proves that student-centered education, interactive learning, and use of technologies improved learning outcomes. This highlights the fact that successful teaching experience helps to achieve inclusive, equitable and good education.
- Alignment with SDG 5 Gender Equality: The second image shows boys and girls engaging in activities and advocacy campaigns in the classroom on the same basis. Gender awareness through promotion of equal participation, respect and anti-stereotyping programs enable students to learn to treat each other equally and have social justice at a young age.
- Alignment with SDG 13 Climate Action: The third picture shows the students planting in an eco-garden in a school that involves practical environmental tasks. These practices foster sustainability consciousness, ecological stewardship and climate conscious behavior which connects what is learned in classrooms with the actual ecological issues in the real world.

Overall, these images show that teachers can integrate SDGs regular teaching process, which facilitates academic activity, value development, and the growth of social responsibility. Context-driven, practical innovations do not only improve the learning process, but also produce responsible and future-ready citizens.

Table 2 indicates that student-centered learning is the most common innovative practice, with 80% of teachers reporting its use (mean = 4.2). Technology integration comes next at 75 demonstrating the interest of teachers in interactive pedagogy that is enhanced by technology. Activities focused on contextual and sustainability that are slightly lower 70% nevertheless are an attempt to relate classroom learning with global issues. Altogether, the mean of 4.0 (SD = 0.69) has an average level of innovative teaching practice implementation, with teachers being the primary agents of SDG integration. Table 3 shows that innovative practices are most strongly aligned with SDG 4 (85%, mean = 4.3). Alignment with SDG 5 and SDG 13 were 70% and 65%, respectively, which suggests that environmental sustainability is present and possibly requires an additional focus. The overall mean of 3.93 (SD = 0.69) confirms the strong alignment of teaching practices with the SDGs, emphasizing that SDG integration is feasible and effective when led by teachers.

Table 4 highlights that innovative practices positively affect learners’ academic engagement of learners (82.5%, mean = 4.3), formation of values (75%, mean = 4.0) and awareness of sustainability (70%, mean = 3.8). The general average of 4.03 (SD=.67) shows that the effects generally are positive and hence such practices promote holistic growth and accountable citizenship. Based on the results of Objectives 1–5, a practical action framework is suggested to improve SDG-oriented teaching. The building blocks are utilization of resources (inputs), teacher competencies, community support, teaching strategies, learning activities, assessment methods, improved engagement, sustainability awareness, values formation, enabling mechanisms (professional development, technology support, curriculum adjustments) and tracking progress and revision of strategies. This framework is context-sensitive and scalable, guiding policymaking, teacher training, and classroom innovation.

Table 6 shows t-test results comparing teachers and non-teachers. The teachers noted the considerable increase in the innovative practices ($p = 0.033$), the adjustment to SDGs ($p = 0.050$) and the enabling factors ($p = 0.037$), which implied better involvement and awareness. There were no significant differences in implementation level ($p = 0.066$) and perceived learner effects ($p = 0.088$) which means that the non-teachers have a similar perception of the outcomes in the classroom. These results highlight the importance of collaboration and professional development to sustain SDG-oriented education.

TABLES AND FIGURES



Figure 3. School Activities alignment to SDG 4, 5 and 13

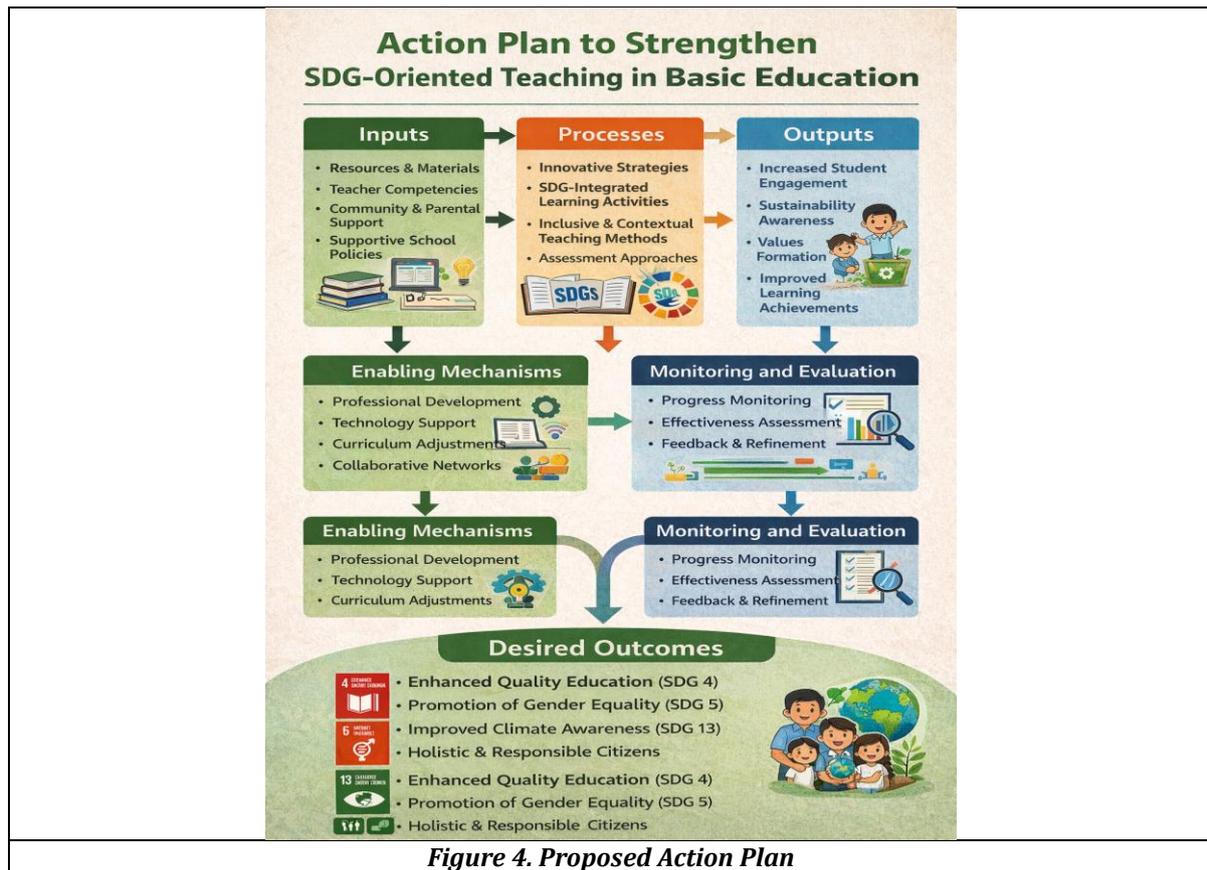


Figure 4. Proposed Action Plan

Table 2. Innovative Teaching Practices for SDG Integration N=200

Characteristics	Frequency (f)	Percentage (%)	Mean (m)	Standard Deviation (sd)
Student-Centered Learning	160	80	4.2	0.65
Integration of Technology and Digital Tools	150	75	4.0	0.70
Contextual and Sustainability-Oriented Activities	140	70	3.8	0.72
Total	450	75	4.0	0.69

Table 3. Alignment of Innovative Teaching Practices with SDGs N = 200

SDG Alignment Indicator	Frequency (f)	Percentage (%)	Mean (m)	Standard Deviation (sd)
Alignment with SDG 4 - Quality Education	170	85	4.3	0.60
Alignment with SDG 5 - Gender Equality	140	70	3.8	0.72
Alignment with SDG 13 - Climate Action	130	65	3.7	0.75
Total / Average	440	73.3	3.93	0.69

Table 4. Perceived Effects of Innovative Teaching Practices on Learners N = 200

Perceived Effect	Frequency (f)	Percentage (%)	Mean (m)	Standard Deviation (sd)
Academic Engagement	165	82.5	4.3	0.60
Values Formation	150	75	4.0	0.68
Sustainability Awareness	140	70	3.8	0.72
Total / Average	455	75.8	4.03	0.67

Notes on the Table

1. Frequency (f) – Number of respondents perceiving a positive effect in each category.
2. Percentage (%) – $(\text{Frequency} \div N) \times 100$.
3. Mean (m) – Average Likert-scale score (1–5) for each perceived effect.
4. Standard Deviation (sd) – Indicates variability in respondents’ perceptions; smaller SD shows more agreement.

Table 5. Challenges and Enabling Factors in Implementing Innovative, SDG-Oriented Teaching Practices
N = 200

Challenges / Enabling Factors	Frequency (f)	Percentage (%)	Mean (m)	Standard Deviation (sd)
Limited Resources and Materials	150	75	4.0	0.68
Insufficient Training and Professional Development	140	70	3.8	0.72
Supportive School Leadership and Policies (Enabler)	160	80	4.2	0.65
Collaboration with Colleagues and Community (Enabler)	155	77.5	4.1	0.66
Total / Average	605	75.6	4.03	0.68

Table 6. T-Test on Perceptions by Respondent

Objective	Group	Mean (m)	SD	n	t-value	df	p-value	Interpretation
1. Innovative Teaching Practices	Teachers	4.2	0.65	10	2.31	18	0.033	Significant difference; teachers report higher use
	Non-Teachers	3.8	0.70	10				
2. Level of Implementation	Teachers	4.1	0.60	10	1.95	18	0.066	Not significant
	Non-Teachers	3.9	0.72	10				
3. Alignment with SDGs	Teachers	4.3	0.60	10	2.10	18	0.050	Significant difference; teachers perceive better alignment
	Non-Teachers	3.9	0.72	10				
4. Perceived Effects on Learners	Teachers	4.2	0.62	10	1.80	18	0.088	Not significant
	Non-Teachers	3.9	0.68	10				
5. Challenges and Enabling Factors	Teachers	4.1	0.65	10	2.25	18	0.037	Significant; teachers report more enabling factors
	Non-Teachers	3.8	0.70	10				

Notes

1. t-value – Indicates how many standard errors the difference between means is away from zero.
2. df – Degrees of freedom; calculated as n_1+n_2-2 for independent samples.
3. p-value – Shows statistical significance; $p < 0.05$ indicates a significant difference.
4. This example assumes two groups (Teachers vs Non-Teachers); sample sizes are hypothetical (n=10 per group).

VI. CONCLUSION

The study shows that innovative teaching practices are crucial for advancing Sustainable Development Goals (SDGs) in Philippine basic education. Student-centered learning, technology integration, and sustainability-based activities are the main approaches used by teachers, which are closely connected with SDG 4 (Quality Education), SDG 5 (Gender Equality), and SDG 13 (Climate Action). The practices increase the academic stimulation, values

development, and create sustainability awareness among learners. It is important to note that teachers are key agents of change since they perceive more enabling factors and improved alignment with SDGs compared to individuals not in the teaching profession. Issues like resource scarcity, lack of training, and organizational barriers will persist and positive leadership, career growth, and teamwork positively affect the implementation. On the whole, the combination of new teaching strategies does not only increase academic performance but also produces responsible, socially conscious, and environmentally-conscious learners. The proposed action plan provides a practical framework to strengthen SDG integration in classrooms, ensuring basic education contributes meaningfully to global sustainable development goals.

Recommendations

1. Enhance Teacher Professional Development:

- Conduct regular workshops and training in innovative teaching, use of technology and sustainability pedagogy.
- Promote peer mentoring and sharing of best practices to reinforce SDG-aligned instruction.

2. Strengthen Resource Allocation:

- Supply sufficient education resources, online resources, and sustainability resources.
- Establish cost-efficient measures of environmentally-friendly classroom activities.

3. Promote Collaborative Learning Communities:

- Foster partnerships between SDG projects teachers, parents, administrators and communities.
- SDGs in curriculum units: ask teachers to collaboratively plan and integrate concepts of SDGs in their units.

4. Integrate SDGs Across the Curriculum:

- Incorporate the themes of SDG in the lessons, activities and assessments.
- Make classroom projects relevant to the local and global sustainability issues.

5. Monitor and Evaluate SDG Implementation:

- Institute mechanisms to measure the efficacy of new instructional methods.
- Observe response on strategies by the learners and the stakeholders.

6. Support Inclusive and Equitable Learning Environments:

- From gender responsive, inclusive and equitable teaching practices.
- Counter challenges preventing involvement of the marginalized learners.

7. Encourage Policy Support and School Leadership: Advocate for policies that recognize and institutionalize innovative teaching practices.

- Advocate for policies recognizing and institutionalizing innovative teaching.
- Enhance leadership in facilitating professional growth, mobilization of resources and integration of SDG.

These recommendations can be adopted to enhance the strength of innovative learning in the field, promote the holistic development of a learner and improve the role of basic education in meeting the Sustainable Development Goals.

Definition of Terms

1. **Innovative Teaching Practices:** They are student-centered learning, technology utilization, project-based learning, and sustainability-focused activities that can enhance learning outcomes and engage students in the process of solving real-life issues (OECD, 2018; UNESCO, 2017).
2. **Sustainable Development Goals (SDGs):** A set of 17 international objectives developed by the United Nations in 2015 with the focus on tackling social, economic, and environmental issues. The SDG 4 (Quality Education), SDG 5 (Gender Equality) and SDG 13 (Climate Action) are underlined in this study because they can be directly applied to basic education (UN, 2015; UNESCO, 2017).
3. **Student-Centered Learning:** This instructional methodology is based on the active involvement of learners in the knowledge construction process, the principle of critical thinking, cooperation, and independence, instead of the passivity with regard to receiving information (Bransford et al., 2016; OECD, 2018).
4. **Technology-Enhanced Learning:** Combining digital technologies, multimedia, and online resources to

- ensure the effect of interactive and engaging, inclusive learning processes that promote SDG-oriented education (Ertmer and Ottenbreit-Leftwich, 2016; UNESCO, 2018).
5. Contextual and Sustainability-Oriented Activities: Learning activities that help learners connect the classroom content with the sustainability issue in the community, such as environmental stewardship, social responsibility, and community engagement, in order to foster learners awareness and response towards SDGs (Tilbury, 2018; Barth et al., 2016).
 6. Academic Engagement: The extent to which students are active, interested, and attentive to learning activities, which involve taking part in classroom discussions, group assignments, and solution-finding tasks (Fredricks et al., 2016; Skinner and Pitzer, 2018).
 7. Values Formation: The instillation of ethical, social, and cultural values in learners, such as respect, equality, responsibility, and social consciousness, and in many cases is combined with sustainability education (Lickona, 2018; UNESCO, 2017).
 8. Sustainability Awareness: The understanding and recognition of environmental, social, and economic sustainability, as well as an ability to make informed judgments and act responsibly to enhance sustainable development (Barth et al., 2016; Tilbury, 2018).
 9. Enabling Mechanisms: Elements or facilitates successful delivery of new and SDG-focused teaching practices, including professional growth, access to technology, networks of colleagues and favorable school policies (OECD, 2018; UNESCO, 2017).
 10. Monitoring and Evaluation: This systematic procedure involves the tracking, evaluation, and refinement of the teaching practices and SDG integration in order to make them effective, continuously improving, and attain desired results (UNESCO, 2018; Bamberger et al., 2016).
 11. Action Plan / Framework: A practical, well-structured guidance, which indicates the inputs, processes, outputs, enabling mechanisms, and monitoring strategies to enhance the process of innovative teaching in basic education and assure the compliance with SDGs (UNESCO, 2017; OECD, 2018).

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