



INSTRUCTIONAL COMPETENCIES OF EARLY CHILDHOOD EDUCATION TEACHERS IN ESD

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Abstract

The reverberating call for the sustainability of UNESCO recognized the contribution of early childhood education (ECE) teachers since the genesis of sustainability resonates from early childhood. This study ascertained the instructional competencies of ECE teachers in Education for Sustainable Development (ESD). It determined teachers' level of awareness vis-a-vis the extent of implementation on the three key components of ESD: Visioning/reflecting, systems thinking, and critical thinking; and the highlights and lowlights of the implementation. The study employed a quantitative-qualitative method of research with 90 kindergarten teachers from both public and private schools in Cebu City who were chosen through stratified random sampling. Findings revealed that teachers have fairly satisfactory awareness of the three key components while the extent of implementation of ESD competencies on the three key components was moderately implemented. Statistics unveiled that teachers' restricted awareness did not have a direct association with the level of implementation. However, teachers took up the responsibility for promoting ESD activities since they believed that the quest for sustainability resides in education which led the learners to learn and enjoy varied educational opportunities. Home, school, and community collaboration along with administrative support needed to be strengthened to foster the implementation, monitoring, and evaluation of ESD activities. Teachers need to update and enhance their learning to carefully embed sustainable practices as they are the potent stewards of concretizing the mandates of ESD and transforming its concepts into plausible experiences at the early childhood level.

Keywords: early childhood education, Education for Sustainable Development, Instructional Competencies

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1. Introduction

Teachers are the forefront potent stewards to deliver transformative education to attain the goals of Education for Sustainable Development (ESD). ESD desired to promote the learning required to uphold and enhance our quality of life as well as the quality of future generations' lives. It capacitates everyone to grasp the knowledge, attitudes, skills, and values for sustainability. Incorporating important sustainable development concerns into teaching and learning is the core concept of ESD such as global warming, environmental conservation, biodiversity, poverty alleviation, and sustainable consumerism (United Nations Educational, Scientific and Cultural Organization, 2020). To jumpstart the visions of ESD, it necessitates teaching competence to carefully embed and implement ESD. Thereby, educators are challenged to obtain a skillset in the practices concerning sustainability.

There is no one-size-fits-all methodology for ESD, but there is a common understanding that it necessitates a move toward active, participatory, and practical training approaches that engage children and improve their understanding, reasoning, and capacity to act. There are pedagogic elements designed to accomplish this objective that this study focused on. First, visioning / reflecting means involving tools such as role-play, real-world analysis, futures visioning, problem-based learning, and allowing the opportunity for emergence. Next, systems thinking involves learning tools like scenario-based studies and significant events, task-based learning, provocative activities, and the utilization of the campus as a learning resource. The third one is critical thinking. It incorporates classic lecture formats as well as emerging alternatives including reflective accounts, learning diaries, and group discussions (United Nations Educational, Scientific and Cultural Organization, 2020). According to the report by Southeast Asian Ministers of Education Organization (2014), insufficient comprehension of sustainability issues inside the training network has been a deterring issue in implementing and advancing ESD in the ASEAN region. Since ESD concepts are continuously evolving across various disciplines, the responsibility of transforming its concepts into plausible messages relies vigorously on the conviction of teachers to do as such.

The Philippines is one with other countries in upholding ESD and it detailed its activity plan, called Philippine Agenda 21. Encompassing the social, economic, and environmental indicators with a specific outcome to guarantee the accomplishment of sustainable improvement. The Department of Education (DepEd) guarantees the interpretation of projects to schools by implementing after school-based programs and ensuring school performance and participation (Department of Education, 2011). Cebu Province has also been committed to adhering to the goals of sustainable development upon the conception of Ordinance 2013-13, Our Sustainable Cebu Program (Ouano, 2013). It is a visionary program that aims to establish a mechanism and integrate all key areas of sustainable development. However, the researcher found a deficiency in the program because it poses limitations to Local Government Units and private sectors/companies only. Collaborations with various educational agencies like the Department of Education and Commission on Higher Education are not specifically mentioned

in the implementation flow, which is deemed important if the program wants to address key sustainability concerns.

With all these programs, still, studies uncovered that sustainability programs in the country remain plagued with issues and difficulties. DepEd is confronting insufficiencies in fittingly installing ESD educational modules. There is a shortage of information on platform ESD in the early years and a lack of ESD-prepared and qualified teachers. The Philippines still needs to improve its implementation of ESD in the early childhood curriculum due to a lack of coordination and monitoring of the programs (Rosario-Braid, Tuazon, & Lopez, 2011). An amalgamation of knowledge and skills; attitude; and teaching methods are highly significant to improve performance, and these are the reasons that teachers need instructional competence. Challenges occur when variations in the teachers' awareness and execution of ESD programs happen. Sufficient preparation of the teachers is very much needed to successfully implement the mandates of ESD. With this, teachers can integrate ESD concepts into the learning experiences in unison.

This recent inquiry aimed to formulate instructional competencies of early childhood education (ECE) teachers in ESD. Early childhood education refers to the services and training provided from birth to the age of eight. This is the period when a child's brain is enormously sensitive to its surroundings. This phase of "exceptional growth" necessitates a unique educational strategy to guarantee that children grasp crucial skills and concepts that will help them succeed later in life. (American School of Paris, 2020). ECE should take advantage of children's receptivity and willingness to learn as well as their developing attitudes and values. Equipping and heightening the competence of the teachers are concomitant to making transformations in education happen. It is also deemed that teachers' instructional competence in ESD can be contributory to articulating the visionary and monumental drive for sustainability.

With the colossal drive for ESD, ECE teachers were tapped to deliver transformative education. The early years are the formative years of the child when rapid and significant development takes place was highlighted in the parlance of sustainability. The performance and effectiveness of ECE teachers could be good predictors of the success of the teaching-learning process embedding ESD. Hence, this study ascertained the instructional competencies of ECE teachers in the implementation of ESD. Specifically, it aimed to determine the level of teachers' awareness of the three key components of ESD in terms of visioning and reflecting, systems thinking, and critical thinking. It also aimed to identify the extent of implementation of ESD competencies vis-vis the three key components. The highlights and lowlights of the implementation of ESD were also sought. Out of the findings, it intended to lay down the scope of instructional competencies for ECE teachers embedding ESD.

2. Literature Review

The exclusive and significant component of the realization of the quest for developed and enhanced quality of life resides in education. It is with a relevant and quality educational response that could address the varying needs and interests of the learners in the classroom and as such upholds social equity.

To ensure the monitoring of the progress of the initiatives and directions of ESD, UNESCO was commissioned as the principal agency. Asia and the Pacific along with the First World countries in return promptly responded to the colossal drive for sustainability. In the Philippines, the creation of Republic Act 9512 upholds environmental awareness through ESD in the country. It serves as a stimulus to national development through capacity building. The projects which are considered under the law are the preparation of both formal and non-formal sectors to adapt ESD concepts and the indigenization of materials to extend instructional assistance.

The role of ECE in ESD is seldom underscored in most academic fora when the genesis of sustainability derives from early childhood. As quoted by the study of Holdgate (1987), Brundtland Convention recognizes the importance of the role of ECE teachers in the parlance of sustainability claiming that the future of sustainable development in education resides from the early childhood years. Eilks (2015) further contends the importance of early childhood and its impact on the success of sustainable development since these are the primrose years when the foundations of values and attitudes are established.

Cebrián, Junyent, and Mulà (2020) articulate that an indispensable mechanism to attain ESD is through education and generating the capability for futuristic and innovative thinking (visioning/reflecting) among learners is its vital function. By refining the type of education that the present generation receives, principally the young learners in the preparatory and formal education system, the optimism is high to successfully address sustainability issues. Teachers need to have adequate awareness of the formulation of new perspectives in teaching the content leaning on sustainable development. Thus, ESD is created to integrate sustainability challenges into the learning experiences. Its mandate is to have cooperative teaching approaches which can induce learners to upgrade their performance and take a step toward ESD. As a result, ESD upholds competencies for the learners to think critically, envision future situations, and create judgments through collaboration (Kopnina, 2020).

Teachers are likewise anticipated to have the capacity to perceive the world as a complex network where everything is associated with everything else (Palmberg, Hofman-Bergholm, Jeronen, & Yli-Panula 2017). This is what we refer to as systems thinking. The ability of the teacher to create appropriate solutions and new ideas stringing relevant issues at home, in school, or the community is necessitated in the quest for sustainability. Teachers need to understand that bonds, linkages, and associations between the elements in the environment and society comprise the whole system. With this, teachers are challenged to create opportunities for children which entails specificity of learning experiences that allow exploration and collaboration. Leaning on

this idea, learners must be trained to make them realize that their decisions and actions can affect the interrelationships of the bigger and wider society.

ECE teachers are challenged to lead the learners in formulating decisions and developing innovative ideas to contribute to a sustainable future to craft practical and viable solutions (Ardoin & Bowers, 2020). This refers to critical thinking. This is the ability of the teacher to guide or usher the learners to confront issues about ESD. This provides the reason that critical thinking needs to be embedded in education since the learners are challenged to inquire about the causes and effects of norms and values. Along with this, learners are stimulated to take part in actions for sustainability.

With this thought being elucidated, traces are visible that teachers' awareness of the key components of ESD, the attitude to embed ESD, and the pedagogy or the methods to deliberately implement ESD in the classroom are being emphasized. To shift to a sustainable future, vital components for an improvement at the level of each person comprise an improved understanding, optimistic attitudes, and behaviors parallel with the ideology of ESD. Manasia, Ianos, and Chicioreanu (2019) exposed that teachers demonstrate enthusiasm for actualizing ESD and show an uplifting state of mind towards the area. However, it was noticed that the teachers' level of awareness and learning of the different ESD ideas are somewhat low or misty. Notwithstanding, numerous teachers embed ESD values and concepts in learning experiences unknowingly. Their understanding and level of awareness of ESD are only a few of the few impediments that appeared to hinder teachers in their endeavor to integrate ESD into the curriculum to its optimum capacity.

It was manifested in the study of Cangayao (2015) that the teachers needed requisite skills in integrating the learning domains of development along with ESD into their lessons to achieve the universal aims of the teaching-learning process at the early childhood level. Since ESD concepts are continuously evolving across various disciplines, the responsibility of transforming its concepts into plausible messages relies vigorously on the conviction of teachers to do such especially at the early childhood level. Some educators don't completely absorb the encompassing ideas of the sustainable development structure and frequently concentrate just on the environmental aspect of sustainability. ECE teachers have the prime duty to enable children to create and address the knowledge and abilities expected to empower learners to comprehend complex issues on sustainability, and many other sustainable development challenges confronting society (Anyolo, Kärkkäinen, & Keinonen, 2018). Hence, this investigation would unveil teachers' level of awareness on the three key areas and the extent of executing them in a manner that is understandable for the children. Also, the challenges that the teachers encounter are illuminated as to how they adapt and embed the concepts of ESD in their daily activities.

3. Method

3.1 Research Design

This study employed both quantitative and qualitative research design. For the quantitative part of the study, a simple weighted mean was used to determine the kindergarten teachers' level of awareness and extent of implementation of the three key components of ESD – visioning/reflecting, systems thinking, and critical thinking. Pearson r Product moment correlation was used to determine the significant association between the teachers' level of awareness and the extent of implementation.

The qualitative method of research uncovered the highlights and lowlights that kindergarten teachers encountered in ESD implementation in the classroom setting. Interviews and focus group discussions were done until the saturation of data to further strengthen the study. The narratives of the respondents were transcribed and analyzed. Meaningful themes were created and illuminated meaningful ideas. Further, vignettes were included to support the claims.

3.2 Respondents

The main respondents of this study were ninety (90) kindergarten teachers from both public and private schools in Cebu City who were chosen through stratified random sampling. The years of teaching experience was considered as the stratification variable – 0 to 5 years, 6-10 years, 11-15 years, and 15 years or more – to get the representative population. Six (6) kindergarten teachers, three (3) from public schools and three (3) from private schools, were observed as to the extent of implementation of ESD competencies vis-à-vis the three key components. Bearing in mind that kindergarten teachers possess varied educational and work backgrounds, and they are teaching diverse populations, pertinent data were illuminated with regards to teachers' awareness, the extent of implementation of ESD competencies, and the highlights and lowlights of the implementation of ESD.

3.3 Instruments

The researcher-made and expert-validated questionnaires were used to gather relevant information for the study. The first instrument gathered the demographic information of the kindergarten teachers. The second instrument was the multiple-choice test which measured the level of teachers' awareness of the three key components of ESD and the third instrument was the rating scale which contained ESD competencies that the kindergarten teacher used for self-assessment on the extent of implementation of ESD in teaching. Both instruments have undergone Cronbach's Alpha reliability test having the value of 0.957 and 0.0900, respectively. It simply means that the items in the test are internally consistent and the descriptors in the rating scales are within the acceptable level.

To ensure the qualitative part of the study, the fourth instrument was the formal interview guide which contained open-ended questions that unveiled the highlights and lowlights in the implementation of ESD in the early childhood setting. Through an interview, the respondents were more encouraged to explain further and gave meaningful ideas to support the study.

4. Results

The Teachers' Level of Awareness on the Three Key Components of ESD

ECE teachers are instrumental in designing learning experiences and in magnifying the lenses of educational practice toward sustainability. These are further translated into the three key components which are visioning/reflecting, systems thinking, and critical thinking. However, as gleaned in the consequent table, these repertoires of practice which are designed to generate an extensive awareness of the drive for sustainability are ambiguous.

Table 1. *The Teacher's Level of Awareness on the Three Key Components of ESD (Education for Sustainable Development)*

ESD Components	Perfect Score	Mean Score	Equivalency	Description
Visioning/Reflecting	10	6.22	76	Fairly Satisfactory
Systems Thinking	10	6.84	80	Satisfactory
Critical Thinking	10	6.88	80	Satisfactory
Overall	30	19.94	79	Fairly Satisfactory

Legend: Using the Philippine Department of Education's Standards

Scale	Description
90-100	Outstanding
85-89	Very Satisfactory
80-84	Satisfactory
75-79	Fairly Satisfactory
Below 75	Did Not Meet Expectations

As derived from Table 1, out of the three components, it was revealed that the teachers' level of awareness on the visioning/reflecting component is fairly satisfactory, the lowest of the three. The teachers' level of awareness of the other two components - systems thinking and critical thinking- is satisfactory. Gleaned from the table, the overall teachers' level of awareness of the three key components of ESD garnered a mean score of 19.94 and has an equivalency of 79. This means fairly satisfactory awareness. Looking at the figures provides an impression that teachers' awareness of these key components which are considered the repertoires of the practice of ESD to carry out the mandates of sustainability is low or restricted.

It can be construed that the kindergarten teachers were less exposed to information regarding ESD. Minimal awareness and less access to information with regards to the key components of ESD are indicators that teachers, as the ones who fulfill the immense challenge and mandates of sustainability, must be provided with access to various types of information drive to keep their knowledge and awareness up to date.

Insufficient comprehension of sustainability issues inside the training network had been a deterring issue in implementing and advancing ESD. Though the general impression of the teachers' level of awareness is low, teachers still thrive to keep the relevance of teaching embedding ESD. It is inculcated in their outlook that the responsibility of transforming its concepts into plausible messages relies vigorously on the conviction of teachers to do as such.

To rejoin the monumental challenge for ESD necessitates instructional enhancement for teachers. This can be attained if there are committed actions that allow and give education leaders, practitioners, and various stakeholders in the learning community a chance to ponder the knowledge, aptitudes, and dispositions expected of the teachers whose main task is to guide and prepare learners to have a gratifying, productive, and sustainable life in the future.

Teachers' Extent of Implementation of ESD Competencies

Sustainability remained to be imaginary without the instrumental pillar, education. It is with a relevant and quality educational response that could address the varying needs and interests of the learners in the classroom and as such upholds social equity. To attain sustainability in the future, it is suggested that embedding ESD must commence in the early years since these are also the primrose years of their development.

Table 2. *Teacher's Extent of Implementation of ESD Competencies*

ESD Components	Mean Score	Description
Visioning and Reflecting	4.31	Extremely Implemented
Systems Thinking	4.05	Moderately Implemented
Critical Thinking	4.04	Moderately Implemented
Overall	4.13	Moderately Implemented

Scale	Description
4.21 – 5.00	<i>Extremely Implemented</i>
3.41 – 4.20	<i>Moderately Implemented</i>
2.61 – 3.40	<i>Somewhat Implemented</i>
1.81 – 2.60	<i>Slightly Implemented</i>
1.00 – 1.80	<i>Not at All Implemented</i>

The Extent of Implementation of ESD Competencies: Visioning / Reflecting Component

In the data presented in Table 2, teachers' extent of implementation of the ESD competencies of the visioning / reflecting component garnered a mean score of 4.31. It can be deemed that the competencies under this component are extremely implemented. These visioning / reflecting competencies can be gleaned in Table 3. This had been used in the study as the descriptors for the extent of implementation under this component. Kindergarten teachers embed and reinforce the intended competencies in almost all the learning experiences of the children. Teachers bring forth these visioning/reflecting competencies into the real scenario in the classroom setting. These sets of competencies are broken down into three categories – cognitive, affective, and psychomotor. Each behavioral category contains indicators following the pillars of sustainability – environment, economy, and society.

Table 3. *Competencies of the Visioning/Reflecting Component*

COGNITIVE	
Environment	Construct an understanding of the importance of the environment by taking care of the living and non-living things found within the vicinity Cite the importance of the resources such as air, land, and water
Economy	Infer the purposes behind certain rules of conduct (e.g., use of resources like water, food handling, etc.) Justify the importance of saving the resources e.g., money
Society	Create a new model of inclusivity Reconstruct outlooks of individuals within the learning environment towards harmonious and community living
AFFECTIVE	
Environment	Implement acceptable practices of showing care for the environment Values the importance of disposing and segregating the garbage properly
Economy	Encourage learners to practice certain rules of conduct in saving the resources (e.g., consuming the snacks, water consumption, etc.) Exhibit awareness of their family's economic status and examine ways of improving it
Society	Develop an empathetic attitude and display solidarity against discrimination/bullying Respect differences of people, their needs, and choices
PSYCHOMOTOR	
Environment	Take part in the conservation measures and practices within the learning vicinity Actualize their beliefs of taking care of the immediate environment by maintaining cleanliness
Economy	Envision himself/herself as being part and contributory component of the workforce Exhibit sound decisions/choices based on the situations relating to simple and relatable economic situations
Society	Extend help when learners need help/support and exhibit volunteerism Replicate collaborative attitude among individuals notwithstanding with diversity in the learning environment

Teachers extremely implement these indicators, and it can be inferred that in teaching the content in the existing curriculum, teachers seamlessly entrench the competencies of sustainability in their lessons. These competencies are anchored on the reality of human activities; thus, teachers did not find it difficult to embed and translate them into plausible educational opportunities for young learners.

To put it in context, under the cognitive domain, learners construct an understanding of the importance of the environment by taking care of the living and non-living things found within the vicinity and the taking care of the major resources that are very essential to human life – air, water, and land. Learners broaden their thinking at an early age thus leading them to justify the importance of saving resources, e.g., money. Aside from that, learners take part to have a harmonious community living within the learning environment. Making use of the regular dialogues and interactions with the youngsters amid play, teachers create a springboard to effectively engage the learners in decision making. ESD activities, particularly visioning/reflecting, can stimulate and enrich their way of thinking. In effect, learning is enriched.

Under the affective domain of visioning and reflecting, results revealed that the indicators were extremely implemented by the teachers. That means Kindergarten teachers commend acceptable practices of showing care for the environment and help the learners value the importance of disposing and segregating the garbage properly. Further, learners are trained to practice certain rules of conduct in saving resources. When dealing with the immediate people in the surrounding, teachers develop among learners an empathetic attitude and a sense of solidarity to combat discrimination/bullying. Thus, leading the children to respect the differences of people, their needs, and choices. To put it simply, UNESCO highlights the importance that learners' understanding must be put to work. Aside from gathering pieces of facts, youngsters need to figure out how to utilize learning using adaptive approaches in resolving complex issues in a wide scope of circumstances. Under the tutelage of the teachers, learners contextualize their knowledge and elucidate solutions to the real problems in society.

Under the psychomotor domain, given the condition that sustainable education should cultivate individuals' ability to assume responsibility for learners' own lives and improvement, learners ought to figure out how to do as such without harming others and their condition.

The Extent of Implementation of ESD Competencies: Systems Thinking Component

As gleaned in Table 2, Kindergarten teachers' extent of implementation on the systems thinking component constitutes a mean of 4.05. This means that the competencies were moderately implemented. These systems thinking competencies can be gleaned in Table 4. This

had been used in the study as the descriptors for the extent of implementation under this component.

Table 4. *Competencies of the Systems Thinking Component*

COGNITIVE	
Environment	Modify and correct human activities that create adverse effects on their immediate environment Employ solutions/interventions in preserving the natural environment
Economy	Reconstruct the roles/functions/processes of a system (school/home) toward sustainability Differentiate between needs and wants which reflects on his/her way of consumption
Society	Establish partnerships with the people within the learning community to generate and exchange ideas Spread awareness that the school is part of the wider society outside the home
AFFECTIVE	
Environment	Reflect on the impact of his/her actions in maintaining the welfare of the environment Acclaim his/her role in the system by being familiar with the practices, culture, norms, and routines within the learning environment
Economy	Examine responsibility of actions and choices in using their resources (school materials) Propose solutions to mitigate and uplift the family’s economic status and way of living
Society	Increase measured proficiency in completing the task while exhibiting the value of solidarity and communal living Resolve conflicts that may surface among and between individuals upon accomplishing certain tasks
PSYCHOMOTOR	
Environment	Demonstrate sustainable behaviors (conserving, recycling, and preserving) in the drive for maintaining a healthy biodiversity Respond to life-threatening situations brought by natural and/or man-made calamities
Economy	Practice responsible methods of consumption in the usage of their school materials, food, water, etc. Model a caring attitude by sharing with those who have scanty resources
Society	Respond to the problem of a certain situation from small scale to the larger context and from different perspectives Create an idea about power dynamics within the classroom setting (teacher-student relationship) and in the wider society

Conceivably, Kindergarten teachers guide and facilitate the learning process where the learners can see a more comprehensive picture of the society. From there, teachers ascertain myriad valid points from the learners’ perspectives to provide practical and viable solutions to the problems in their immediate community.

In contextualizing systems thinking competencies, under the cognitive domain, teachers indulge the learners where they can modify and correct human activities that create adverse

effects on their immediate environment. Learners are engaged in activities where they are free to solicit ideas, in effect, learners employ solutions/interventions in preserving the natural environment. Kindergarten teachers lead the young learners to reconstruct their roles/functions/processes of a system (school/home) towards sustainability. Additionally, learners, who are still developing their moral ascendancy, are also involved in learning opportunities for them to differentiate between needs and wants which reflects on their way of consumption. Further, being systems thinkers, learners learn to establish partnerships with the people within the learning community to generate and exchange ideas and spread awareness that the school is part of the wider society outside the home.

Under the affective domain of the systems thinking component, children are given opportunities to reflect on the impact of their actions in maintaining the welfare of the environment. By that, young learners are learning to acclaim their role in the system by being familiar with the practices, culture, norms, and routines within the learning environment. In manipulating the resources in the classroom centers, children learn to be responsible for their choices and actions. While being with their peers, they learn to increase measured proficiency in completing the task while exhibiting the value of solidarity and communal living. Moreover, learners resolve conflicts that surfaced among and between individuals upon accomplishing certain tasks.

The competencies in the psychomotor domain of systems thinking allow the learners to demonstrate sustainable behaviors in the drive for maintaining a healthy biodiversity. Learners are trained to respond to life-threatening situations brought by natural and/or man-made calamities that may occur unpredictably through school drills, e.g., fire and earthquake. In the usage of school materials, learners are practiced having responsible methods of consumption and replicating the value of caring and sharing with their classmates who have limited resources. When there is a certain situation that occurs in a learning environment, learners can respond to the problem from a small scale to a larger context and a different perspective. Also, at the classroom level, learners concretize the idea of power dynamics within the classroom setting (teacher-student relationship) which they can apply in the wider society.

The Extent of Implementation of ESD Competencies: Critical Thinking Component

As presented in Table 2, Kindergarten teachers' extent of implementation of the critical thinking component constitutes a mean of 4.04. This means that the competencies were moderately implemented. These critical thinking competencies can be gleaned in Table 5. This had been used in the study as the descriptors for the extent of implementation under this component.

Table 5. Competencies of the Critical Thinking Component

COGNITIVE	
Environment	Determine products and practices that actively uphold wise use of energy Analyze probable impacts of mismanagement of both renewable and non-renewable resources
Economy	Explain the cause and expected consequences of unregulated consumption Generate a new model on the needs of a family for sustained growth and well-being
Society	Cultivate healthy competition between others in the learning environment Exercise their abilities to formulate choices and decisions when in a group
AFFECTIVE	
Environment	Encourage learners to participate in environmental actions like watering the plants, segregating the garbage, and the like Accept that everyone is a significant part of the preservation of our planet
Economy	Appreciate the value of money by spending only on what is valuable and needed Display resilience despite being economically challenged
Society	Evaluate and solve any dispute to a situation happening in school Support the value of establishing a sense of community in the learning environment
PSYCHOMOTOR	
Environment	Distinguish the needs of plants and animals to survive (including people) and the environment where they live Practice the eight (8) Rs (reduce, replace, reuse, recycle, recover, refuse, reject, and rethink) habitually
Economy	Exercise business-related skills (e.g., Exhibits the value of saving, prioritizes needs over wants, consumes within financial capacity) Manifest the value of prudence in sparing or saving
Society	Treat everyone in the learning community with equal respect bearing in mind that each has unique and vital significance Modify yet understand one's standpoint towards human conditions and possibilities

Feasibly, results are leaning on the positive side since it is an inherent mission of the teacher to challenge the critical thinking faculty of the learners. This implied that learners are guided by the teacher by letting them figure out their assessments and inferences about the occurrence of issues. If children's abilities are constantly heightened on these competencies, learners would easily examine the associations between disparaging and contradicting ideas. Moreover, learners become sensitive to other peoples' ideals, sentiments, and perspectives.

To put critical thinking competencies in context, under the cognitive domain, learners are exposed to a situation where they can uphold and practice the wise use of resources in their immediate settings. Teachers implemented and streamlined the cause and consequences of unfettered consumption of the children's language. Given the economic conditions of the learners, they were able to solicit thoughts and ideologies to mitigate their conditions for sustained growth. Further, teachers exercise learners' abilities in crafting sound choices while healthy competition is ensured in the learning environment.

The competencies in the affective domain of the critical thinking component allow the learners to participate in environmental actions, e.g., watering the plants and garbage segregation, and accept that everyone is a significant part of the preservation of our planet. Further, learners were exposed to simple economic activities where they practiced appreciating the value of money by spending only on the valuable and needed. Problems in the academic community were also embedded in the learning experiences for the learners to evaluate and solve any dispute to a situation happening in school and support the value of establishing a sense of community in the learning environment.

Under the psychomotor domain of the critical thinking component, learners are provided with learning opportunities for them to distinguish the needs of plants and animals to survive (including people) and the environment where they live. To live sustainably, learners are trained with the eight (8) Rs (reduce, replace, reuse, recycle, recover, refuse, reject, and rethink) habitually. Aside from that, when the critical thinking component is discoursed, learners should also learn and exercise business-related skills (e.g., exhibits the value of saving, prioritizing needs over wants, consumes within financial capacity). If that is practiced, children will learn the value of prudence in sparing or saving. Most importantly, while accomplishing these educational experiences, learners can treat everyone in the learning community with equal respect bearing in mind that each has a unique and vital significance. When the situation arises, learners are already capable of modifying yet understand one's standpoint towards human conditions and possibilities.

From these competencies, when critical thinking is conversed, it is equally important that children are also proficient in communicating and engaging with other individuals in reckoning solutions to intricate problems.

Table 6. *The Correlation Analysis of the Teacher's Level of Awareness on the Three Key Components of ESD and the Teacher's Extent of Implementation of ESD vis-à-vis the Three Key Components*

ESD Components	Awareness Mean Score	Implementation Mean Score	Pearson r	P-Value
Visioning and Reflecting	6.22	4.31	-0.063	0.553
System Thinking	6.84	4.05	-0.069	0.515
Critical Thinking	6.88	4.04	0.062	0.561
Overall	19.94	4.13	0.034	0.752

** *significant at 0.05*

Table 6 shows the correlation between the overall teachers' level of awareness and the extent of implementation of ESD competencies. The overall awareness garnered a mean score of 19.94 (fairly satisfactory) while the implementation has a mean score of 4.13 (moderately implemented). At 0.05 significant level, statistics revealed that there was no significant association between the two variables. It unveiled that the extent of implementation of the ESD competencies on the three key components was not dependent on the teachers' level of awareness.

Results revealed that there is no significant correlation between the variables being studied. However, the three key components of ESD were integrated and embedded by the ECE teachers in their pedagogies unconsciously. It can be construed that Kindergarten teachers manifested interest in implementing ESD competencies and demonstrated an optimistic attitude in carrying out the directives of ESD on the three key components given their misty awareness.

Highlights and Lowlights of ESD Implementation

The themes below sought to abridge the feedback of the teachers regarding the implementation of the three key components of ESD. Six formulated meanings were deduced from teachers' statements which can be considered the *highlights of the implementation*.

- (1) Teachers took up the responsibility of promoting ESD activities since the quest for sustainability resided in education.
- (2) In the visioning/reflecting component, children envisioned and proposed ideas on what they wanted to achieve in the future.
- (3) In the systems thinking component, children exhibited a collaborative attitude towards communal living and demonstrated a reverence for the people and all other living/non-living things in the surroundings.
- (4) In the critical thinking component, children were able to take part in providing simple solutions to mitigate the immediate problems in the community.
- (5) Learners enjoyed the learning experiences.
- (6) Also, they can easily relate their prior experiences to the educational opportunities provided by the teacher in consonance with ESD competencies.

Conversely, five formulated meanings were derived from the teachers' statements which underscored the *lowlights of the implementation*.

- (1) Home, school, and community cooperation in the implementation of ESD activities needed to be strengthened.
- (2) Learners' readiness and family orientation were challenges for educators.
- (3) Loose administrative support, and lack of monitoring and evaluation of the ESD activities were observed by the teachers.

(4) Financial and moral support (*seminars, training, workshops, and provision of contextualized materials*) from various stakeholders were needed by the ECE teachers.

(5) Information drive must be done to keep everyone in the learning community aware.

6. Discussion

The results of the study give the idea that teachers' understanding of components (visioning/reflecting, systems thinking, and critical thinking) which are regarded as repertoires for carrying out ESD, is poor or limited. It must be noted that an indispensable mechanism to attain sustainable development as Cebrián et al. (2020) and Anyolo et al. (2018) claimed was education.

Generating the capability for futuristic and innovative thinking specifically through *visioning and reflection* among learners is its vital function. The optimism is high to successfully address sustainability issues by refining the type of education that the present generation receives, principally the young learners in the preparatory and formal education system. Teachers must acquire a sufficient understanding of the formulation of new perspectives in teaching the content leaning on sustainable development. Teachers are expected to have the capacity to perceive the world as a complex network where everything is associated with everything else (Palmberg et al, 2017). The ability of the teacher to create appropriate solutions and new ideas stringing relevant issues at home, in school, or the community is necessitated in the quest for sustainability. This is what we refer to as *systems thinking*. Also, the teacher needs to guide or usher the learners to confront issues about ESD. This refers to *critical thinking*. This provides the reason that critical thinking needs to be embedded in education since the learners were challenged to inquire about the causes and effects of norms and values.

Lahiri (2017) suggested that the way to implement successful ESD is in the hand of the classroom teachers whom they have direct contact with the learners. If teachers lack the knowledge and commitment, it is unlikely that sustainability literate learners will be produced. This means that teachers need to reshape their teaching pedagogies under the lenses of ESD to upkeep the learners with the competencies needed to respond to the challenges of ESD.

In this study, the overall extent of implementation of the competencies was moderately implemented. ECE teachers were challenged to strategize educational opportunities and pedagogic practices at the classroom level concomitant to ESD. In the *visioning/reflecting* component, kindergarten teachers who were under survey, let the learners take part in the conservation measures, and practices within the learning vicinity and actualize their beliefs of taking care of the immediate environment by maintaining cleanliness. Additionally, teachers let the learners envision themselves as being part and contributory components of the workforce. Learners are exposed to activities that would allow them to exhibit sound decisions/choices based on the situations relating to simple and relatable economic situations. Learners' spirit of volunteerism and working along with others notwithstanding the diversity are exercised in

between learning experiences. With this, Van den Branden (2015) opined that the educational opportunities for young learners should foster visioning and reflecting skills for them to explore their distinctiveness and uncover their abilities and desires. In return, teachers can formulate educational pathways tailored fit to maximize the learning and for the learners to overcome their limitations and gain confidence to accomplish the task expected of them.

In the light of the *systems thinking* component, provision of opportunities for learners to gain an in-depth understanding of another person's perspectives and development of empathetic attitude can be trained in the classroom setting. Role-plays and simulations can be used to let the children participate in taking care of their immediate environment through conservation and preservation measures. Teachers are aware that the depletion of natural resources, especially the non-renewable ones, is caused by the increasing population. Thus, there is a need to train the learners to maximize the use of the resources at present through reusing, recycling, and reducing the consumption for the future generation to enjoy the benefits of these resources at hand. One way of educating the children is to utilize learning kits and the instructional materials in the classroom corners responsibly. In terms of determining the needs and wants, teachers trained the learners which reflected the learners' way of consumption. For instance, learners are oriented to prioritize their basic needs instead of insisting on buying the things in a toy store. In the classroom setting, learners develop the attitude of sharing with their classmates having scanty resources. These practices are embedded by the teachers in their daily activities which reflected simple yet relevant economic practices among the learners. Bascopé, Perasso, and Reiss (2019) purported that a vital influence in harnessing children's abilities in ESD was the competence and teachers' awareness of ESD concepts linked to the practical experiences of the young learners. On this note, knowledge must not only be dispensed by the teachers rather they craft opportunities for the young learners and facilitate the meaning-making process.

Critical thinking means that children must be given the chance to inquire and raise vital questions and concerns regarding their life situations. Teachers are a contributory factor to help the learners evaluate their experiences and assess their conditions on their own. Van de Branden (2015) affirmed that learners' critical thinking faculty are trained to come up with innovative ideas. Instead of solving issues in an idealistic manner, learners should learn to figure out how to devise diverse measures and sufficiently apply the most proper ones to the current case at hand.

Teachers in this study allow the learners to carry out trash segregation and maintain the school garden. Wasteful and overconsumption of resources are discouraged by the teachers within the learning environment. By practicing the children to create new products out of recycled materials (bottles, papers, and the like), learners are trained to save on the costs of buying expensive materials for ornaments. In the classroom setting, instead of using rote learning, learners are exposed to real experiences that enhanced the critical thinking faculty on the wise usage of resources. Teachers grasped the idea that children can learn simple business skills even in the classroom or school setting. Children can create various products which are

within their capacity to produce such as bead bracelets, simple paintings, food preparation, and many others which can help generate income. As result, children learn the value of earning and saving money. Teachers also exhibited awareness that maintenance of school buildings and equipment can help save resources since they are in good functional condition. With that, the school community can save money instead of doing repairs from time to time. Learners listen to various community resource people since the teachers invited them into the classroom as content experts on the topic of community helpers and the like. According to the teachers who are the respondents of this study, this helped them establish a sense of communal living in the classroom.

Results revealed that there is no significant correlation between the variables being studied. However, the three key components of ESD were integrated and embedded by the ECE teachers in their pedagogies unconsciously. In a similar study, Manasia et al. (2019) implicated that despite the misty awareness displayed by the teachers, they scored genuinely well on the conduct of ESD competencies in the classroom setting.

This investigation demonstrates and implies that numerous teachers amalgamated ESD methodological aptitudes and qualities into their construction of day-by-day educational opportunities for children making ESD a way of life for the young learners. ESD is a gigantic task for educators to realize and the role of the teachers is crucial in the accomplishment of its mandates. In bringing forth ESD into reality, teachers are compelled to be cognizant and sensible in the implementation since teachers' competence will be cascaded on the way they craft learning opportunities for young learners for them to become environmental advocates, economically competent, and socio-culturally sensitive.

The analysis of the interview revealed that teachers displayed a positive attitude toward being responsible for promoting ESD activities since they believed that the quest for sustainability resides in education. Participant 3 stated that,

“It is better to start at the grassroots so when they grow up the knowledge, skills, attitudes, and values are instilled in their mind and being.”

This statement was further reinforced by participant 5 who opined that,

“Teachers are models. Early Childhood years are the most critical years in learning and development because it is the foundation or formative years of lifelong learning.”

This implied that Kindergarten teachers assumed the significant role that they possess in the pursuit of sustainability. Thereby, Kindergarten teachers were confronted to update their learning to reconstruct their perspectives in teaching and create informed educational decisions under the lenses of sustainability.

Learners who were the recipients of these refined educational practices implemented by the teachers were enjoying the learning experiences. Participant 2 stressed that,

“My learners show eagerness in learning different things each day.”

This can be construed that learning how to live sustainably does not have to be rigid and too formal for young learners. To wit, participant 5 emphasized that,

“Children were able to share and give their opinions enthusiastically. They welcomed it and involved themselves in the activities.”

With this, transforming the monumental message of sustainability was in the hand of the effective and efficient educators who were transforming the concepts into plausible messages for the learners to grasp its message comprehensively. In addition, it was revealed that learners can easily relate their prior experiences to the educational opportunities provided by the teacher. Participant 1 conveyed that,

“They [Learners] express their thoughts by showing their prior experiences at home or in their community.”

Participant 4 supplemented that,

“They [Learners] try to connect to other learners and share their stories with them. They ask questions and try to relate new knowledge with their past experiences.”

Feasibly, this implied that ESD can be relatable even for the young learners even though the concepts were broad for them to comprehend. Teachers need to master the art of communication on how to convey the message of ESD to the youngsters effectively. Therefore, it requires instructional competence in articulating the visionary and monumental drive for ESD.

On the other hand, one of the challenges that the teachers had experienced was home-school cooperation in the implementation of ESD activities needed to be strengthened. Participant 1 narrated that,

“What is taught in school is contradicting to what they [learners] learned at home.”

This was further supported by participant 5 that,

“Parent’s cooperation in ESD implementation is needed since there is an inconsistency of practice at home and in school.”

It can be deemed that there is no continuity of the practices in both environments, home, and school, where most of life’s values are learned in the parlance of sustainability. Thus, there is also a need to orient the parents to avoid dual authority on the proper practice of sustainable behaviors. Accordingly, a collaboration between the home and school must be strengthened to elevate the success of having a sustainable future.

Another challenge that had been reiterated by teachers is the financial and moral support (*seminars, training, workshops, and provision of contextualized materials*) from the administration and various stakeholders. Participant 5 attested that,

“There were priority issues on the implementation of programs per level by the school heads.”

As result, there was loose administrative support and a lack of monitoring and evaluation of the ESD activities as observed by the teachers. Participant 2 purported that,

“To come up with good and quality outcomes, information drive along with the financial and moral support from the stakeholders should come hand-in-hand.”

It can be inferred that understanding sustainability is necessary for creating effective pedagogies with the integration of ESD concepts into various learning areas. Teaching effectiveness can be strengthened by exposing teachers to myriad opportunities for them to update their learning. It necessitates teaching competence to carefully embed and implement ESD in the learning opportunities for young learners. Thus, it is in the best interest of the researcher to come up with a skillset on the practices concerning sustainability that is research and evidence based. Hence this study, Instructional Competencies of Early Childhood Teachers in ESD was created.

8. Conclusion

Teachers were unconsciously implementing ESD competencies with limited or misty awareness. Surprisingly as it may seem, the theory and the legal base were not illuminated in the results of the study. It was predominantly noticeable that teachers’ overall awareness of the three key components, visioning/reflecting, systems thinking, and critical thinking was fairly satisfactory, and the overall implementation was moderately implemented. Teachers’ restricted awareness did not have a direct association with the level of implementation since it was an acceptable level. Nevertheless, it is important to figure out that teachers also need to update their learning to carefully embed ESD practices as they are the potent stewards of concretizing the mandates of ESD and transforming its concepts into plausible experiences at the early childhood level. This provided the reason that teachers needed instructional competencies on embedding ESD in their teaching.

9. Recommendation

ECE teachers are the forefront potent stewards to deliver transformative education among early childhood learners. Even though the teachers in this study only had a misty awareness of the three key components, they were able to put some of the competencies into practice. It is recommended that the importance of educational awareness of the relationship between all three dimensions of ESD be recognized so that the ECE teachers can embed the competencies contextually. The study also recommends clear curricular advancements in the education department to set out the expectations for the teachers to accomplish. Reinforcing the inclusion of ESD in the preparation and training of pre-service teachers in the curriculum of Teacher Education Institutions can also help for a more sustainable implementation of ESD.

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