



Effect of Observation-Based Assessment on Pre-Primary Two Learners' Achievement in Environmental Activities in Public Schools in Nandi County, Kenya

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Abstract: *Despite the adoption of Competency-Based Education (CBE), evidence suggests that learners' practical engagement and understanding remain limited. The purpose of the study was to examine the effect of observation-based assessment on learners' achievement in environmental activities. The study adopted a descriptive survey research design, targeting a population of 810 head teachers, 1,085 pre-primary two teachers, and 6 Sub-County Early Years Education Directors. Using Krejcie and Morgan's formula, a sample of 261 head teachers and 284 Pre-Primary Two teachers were selected. Data were collected through questionnaires, interviews, and a documentary analysis guide. Validity was ensured through expert review, while reliability was confirmed using a pilot study and Cronbach's Alpha coefficient ($\alpha \geq 0.70$). Ethical considerations such as confidentiality, and voluntary participation were strictly observed. Quantitative data were analyzed using descriptive statistics (frequencies and percentages) and inferential analysis through Pearson correlation and regression, while qualitative data were analyzed thematically. The findings revealed that observation-based assessment significantly enhances learners' understanding, engagement, practical skills, and environmental awareness, although inconsistencies in implementation were noted. Based on these findings, the study concluded that observation-based assessment is a critical tool in promoting achievement in environmental activities within CBE. The study recommends strengthening teacher capacity, ensuring consistent implementation of observation practices, and integrating observation-based assessment into school policies to support learner-centered instruction and holistic competency development.*

Keywords: *Observation-based assessment, pre-primary learners, environmental activities, Competency-Based Education, Nandi County, Kenya*

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1. Introduction

Many countries across the world have shifted from content-based curricula toward competency-oriented approaches in response to demands for practical skills, lifelong learning,

and measurable learning outcomes. Competency-Based Education (CBE) emphasizes the acquisition and demonstration of specific knowledge, skills, attitudes, and values required for effective performance in real-life contexts. Competency-Based Assessment (CBA), a core

pillar of CBE, refers to assessment approaches that evaluate learners' mastery of defined competencies through continuous, formative, and performance-based evaluation rather than reliance on summative examinations. In pre-primary education, achievement refers to the extent to which learners attain expected developmental and learning outcomes in specific learning areas. Environmental Activities in Pre-Primary Two (PP2) focus on nurturing foundational knowledge, skills, and attitudes related to the immediate environment, social relationships, health, safety, and sustainability. The shift toward competency-based assessment in early childhood education reflects global recognition that assessment practices significantly influence learners' engagement, conceptual understanding, and overall achievement.

Globally, CBE has been largely adopted as countries seek to align education systems with 21st-century skills such as critical thinking, collaboration, creativity, and problem-solving. International organizations such as United Nations Educational, Scientific and Cultural Organization and Organization for Economic Co-operation and Development have consistently advocated for learner-centered and competency-oriented systems to improve quality and equity in education. For example, Finland integrates phenomenon-based learning and competency-focused assessment in early years education, emphasizing formative feedback and holistic development. Similarly, New Zealand implements the Te Whāriki early childhood curriculum, which is grounded in competencies and ongoing assessment of children's learning dispositions. Recent global literature indicates that competency-based assessment enhances learner engagement, supports differentiated instruction, and improves achievement when effectively implemented, particularly in foundational learning stages (OECD, 2023; UNESCO, 2022).

In developed countries, structured implementation of CBE has demonstrated measurable improvements in learner outcomes, especially where assessment aligns with clearly defined standards and teacher professional development is prioritized. In United States, several states have adopted competency-based progression models in early and elementary education, emphasizing mastery before advancement. Assessment practices increasingly incorporate performance tasks, portfolios, and observational checklists. In Canada, provinces such as British Columbia employ competency-based curricula that integrate environmental awareness and experiential learning in early childhood programs. Evidence from these contexts shows that formative and performance-based assessment fosters deeper conceptual understanding and improves learner achievement compared to traditional testing approaches (Darling-Hammond et al., 2022; OECD, 2023).

Middle-income economies have also embraced CBE reforms as part of broader educational transformation agendas. In South Africa, curriculum reforms emphasize outcomes-based education principles, with increasing focus on continuous assessment in early grades to improve foundational skills. Environmental learning is embedded in life skills subjects, and assessment includes practical and activity-based tasks. Similarly, Malaysia has implemented competency-based curricula under its education transformation plans, incorporating school-based assessment to enhance learner engagement and mastery. Recent studies from these contexts indicate that while CBA has potential to improve achievement, challenges such as teacher preparedness, resource constraints, and large class sizes may limit its effectiveness (World Bank, 2022; UNESCO, 2023).

In developing countries, the transition to competency-based assessment is often motivated by the need to improve foundational literacy, numeracy, and life skills. In Rwanda, the competency-based curriculum introduced in basic education emphasizes learner-centered pedagogies and continuous assessment to enhance skills development. Early evaluations suggest improved learner participation and gradual gains in achievement, though teacher capacity remains a concern. Likewise, Tanzania has integrated competency-based principles in early childhood and primary education, focusing on practical learning and environmental awareness. Studies indicate that effective implementation of CBA contributes positively to learner understanding and performance, particularly when supported by adequate instructional materials and professional training (UNICEF, 2022; World Bank, 2023). In Kenya, the introduction of the Competency-Based Curriculum (CBC) in 2017 marked a significant paradigm shift from the 8-4-4 system to a learner-centered framework emphasizing competencies such as communication, collaboration, critical thinking, and citizenship. The Kenya Institute of Curriculum Development (KICD) developed learning designs and assessment guidelines that prioritize formative, continuous, and school-based assessment. In pre-primary education, Environmental Activities aim to cultivate environmental awareness, social responsibility, and practical life skills. Competency-based assessment in PP2 involves observation, portfolios, checklists, and learner-centered tasks aligned with specific learning outcomes. National policy documents and recent studies report that while CBA enhances learner engagement and holistic development, disparities in teacher preparedness, resource availability, and parental understanding influence its impact on learners' achievement (KICD, 2022; Ministry of Education, 2023).

Nandi County, characterized by both rural and peri-urban settings, faces contextual challenges such as limited instructional resources, varying teacher capacity, and

infrastructural constraints that may affect the effectiveness of competency-based assessment. Environmental Activities in PP2 are particularly significant in this context, as learners interact closely with agricultural, ecological, and community environments that provide rich opportunities for experiential learning. However, the extent to which competency-based assessment practices translate into improved learner achievement in Environmental Activities remains an empirical concern. Differences in assessment methods, teacher interpretation of competency standards, and availability of learning materials may influence outcomes across schools. The study was therefore critical in understanding whether the intended benefits of CBC reforms are being realized at the foundational level of education.

1.1 Problem Statement

The introduction of the Competency-Based Education (CBE) in Kenya was intended to address these needs by fostering holistic development through learner-centered teaching and continuous assessment. Pre-Primary Two learners are expected to develop foundational competencies in areas such as Environmental Activities, which include understanding the immediate environment, social responsibility, and sustainable practices. However, evidence from public schools in Nandi County indicates that learners' achievement in these activities remains inconsistent, raising concerns about the effectiveness of competency-based assessment practices in translating curriculum objectives into measurable learning outcomes. Several challenges affect the implementation of competency-based assessment at the pre-primary level. Teachers often face difficulties in interpreting and applying competency-based assessment guidelines due to limited training, large class sizes, and insufficient teaching and learning resources. Additionally, traditional assessment mindsets and reliance on summative testing may hinder the proper integration of formative, performance-based evaluation methods. In Nandi County, these contextual constraints may limit the potential of CBC to enhance learners' achievement in Environmental Activities, leaving gaps in foundational knowledge and practical skills necessary for later learning. This situation highlights the need to empirically examine the effect of competency-based assessment on learner achievement to inform policy, teacher training, and instructional practices within pre-primary education.

1.2 Objective of the study

The study was guided by the following objective:

To examine the effect of observation-based assessment on Pre-Primary Two learners' achievement in Environmental Activities in public schools in Nandi County, Kenya

1.3 Research question

The study was guided by the following research questions:

What is the effect of observation-based assessment on Pre-Primary Two learners' achievement in Environmental Activities in public schools in Nandi County, Kenya?

2. Literature Review

The use of observation-based assessment within competency-based education has gained increasing attention as educators seek authentic ways to evaluate young learners' development in real-world tasks. Observation-based assessment involves systematic documentation of learners' behaviors, skills, and interactions in naturalistic settings to gauge mastery of competencies rather than relying solely on tests and quizzes (Smith & Johnson, 2021). In the context of pre-primary education, observation allows teachers to capture children's environmental understanding, problem-solving, social interactions, and exploration of their surroundings (Brown & Lee, 2020). Research suggests that when implemented effectively, observation-based assessment can provide rich insights into learners' progress, support differentiated instruction, and enhance achievement in domain-specific activities such as environmental learning (Miller et al., 2022).

In developed countries, empirical studies have examined the role of observation-based assessment in early childhood achievement. In a mixed-methods study, Robinson and Gupta (2021) investigated the impact of teacher observation protocols on learners' environmental competencies in early years settings across urban schools in the United States. Using structured observation checklists and learner portfolios, the study found that learners whose teachers consistently applied observation-based assessment demonstrated significantly higher achievement in environmental tasks compared to peers assessed through conventional tests (Robinson & Gupta, 2021). Similarly, a longitudinal study in Canada by Thompson and Pérez (2022) employed repeated observation cycles to track pre-schoolers' engagement with environmental projects. The researchers used qualitative observations and quantitative achievement measures, reporting that observation-based assessment was positively correlated with deeper conceptual understanding and creative problem-solving in environmental activities (Thompson & Pérez, 2022). In another study in the United Kingdom, Evans and Ahmed (2023) used ethnographic

classroom observations and performance rubrics to examine how observation informed instructional adjustments in environmental learning. Their findings indicated that observation data enabled teachers to tailor activities to learners' needs, which improved overall achievement in environmental competencies (Evans & Ahmed, 2023).

In middle-income economies, research has also explored observation-based assessment effects on early learning outcomes. In South Africa, Naidoo and Mbatha (2021) conducted a quasi-experimental study involving pre-primary classes where teachers implemented daily observation records alongside standard assessments. Analysis revealed that learners in the observation-based group showed higher scores in environmental awareness and practices, with observation serving as a formative tool to guide instruction (Naidoo & Mbatha, 2021). A study in Malaysia by Lim and Hassan (2022) applied systematic observation and narrative assessment to pre-primary children's environmental activities, using a cross-sectional design to compare achievement levels. The results indicated significant positive associations between observation-based assessment and learners' performance in environmental tasks, particularly in collaborative and inquiry-based activities (Lim & Hassan, 2022). In Mexico, Ortega and Rivera (2023) examined observation portfolios in community-based early childhood centers, using mixed methods to assess environmental competencies. The researchers found that observation portfolios highlighted individual learner progress, leading to targeted interventions that improved environmental learning outcomes (Ortega & Rivera, 2023).

In developing nations, evidence on observation-based assessment in pre-primary settings is emerging but remains limited. In Rwanda, Tuyisenge and Uwizeyimana (2021) employed a case study design to document how observation strategies influenced learners' achievement in environmental play activities. Their qualitative findings suggested that observation enhanced teachers' understanding of learner needs, contributing to improved engagement and task mastery (Tuyisenge & Uwizeyimana, 2021). In Tanzania, Kamala and Mshana (2022) used action research to implement observation checklists in pre-primary classrooms, reporting that observation facilitated immediate feedback and supported learners' environmental skill development (Kamala & Mshana, 2022). In Ghana, a cross-sectional study by Mensah and Agyapong (2023) investigated the relationship between observation records and achievement in environmental tasks, finding significant positive effects of sustained observation-based assessment on learners' performance (Mensah & Agyapong, 2023).

In Kenya, research specifically addressing observation-based assessment in pre-primary

environmental activities is scarce, highlighting a notable gap in the literature. A survey study by Otieno (2020) examined early childhood educators' assessment practices, reporting that although many teachers acknowledge the value of observation, its systematic use and links to learner achievement in environmental areas were inconsistent and under-documented (Otieno, 2020). In another descriptive study, Wambua (2021) explored teachers' perceptions of formative assessment in pre-primary settings, indicating that observation was often used informally without standardized frameworks, limiting its impact on achievement measurement (Wambua, 2021). Further, Karanja (2023) conducted a small-scale observational study in Kenyan pre-primary classrooms that suggested potential benefits of structured observation for environmental learning, but also noted challenges related to teacher training and workload (Karanja, 2023). The paucity of rigorous empirical studies in the Kenyan context underscores the need for research that explicitly investigates how observation-based assessment influences pre-primary learners' achievement in environmental activities within competency-based education frameworks.

2.1 Theoretical underpinning

This study was anchored on Visible Learning Theory developed by John Hattie (2012), which emphasizes the importance of making learning visible through effective feedback, formative assessment, and evidence-based teaching strategies. The theory is grounded in meta-analytic research synthesizing over 800 studies on factors influencing student achievement, highlighting that formative assessment, feedback, and teacher clarity have high effect sizes on learning outcomes (Hattie, 2012). Visible Learning Theory posits that teachers should evaluate the impact of their instructional strategies by continuously gathering evidence of learning and adjusting teaching accordingly. In early childhood settings, observation-based assessment aligns with this theory because it allows teachers to monitor learners' progress in real time, provide immediate feedback, and tailor instruction to individual needs, thereby enhancing achievement in environmental activities (Hattie, 2012).

Several scholars employed principles consistent with Visible Learning Theory in examining formative and observation-based assessment practices. For instance, Black and Wiliam (2004) applied formative assessment theory in classroom-based studies and found that continuous assessment and feedback significantly improved learner achievement across subjects. Similarly, Shepard (2000) emphasized the role of assessment for learning, arguing that classroom observation and feedback are critical in promoting deep understanding rather than surface memorization. Nicol and Macfarlane-Dick (2006) further extended formative assessment frameworks by

demonstrating that structured feedback mechanisms enhance learner self-regulation and academic performance. These studies collectively reinforced the idea that assessment practices that make learning processes visible to both teachers and learners positively influence educational outcomes.

In early childhood education, formative and observation-based strategies grounded in visible learning principles have been shown to support holistic development. Heritage (2007) highlighted that formative assessment enables teachers to collect actionable evidence during instruction, improving responsiveness to learner needs. Brookhart (2008) underscored the importance of feedback as a mechanism for clarifying learning goals and success criteria, which strengthens learner achievement. Additionally, Stiggins (2002) advocated assessment practices that actively involve learners and provide meaningful feedback to enhance motivation and competence. These foundational works informed the present study by providing theoretical justification for using observation-based assessment to improve Pre-Primary Two learners' achievement in environmental activities in public schools in Nandi County, Kenya.

3. Methodology

The study employed a descriptive survey research design using a mixed-methods approach to examine the effect of competency-based assessment on Pre-Primary Two learners' achievement in environmental activities in public schools in Nandi County, Kenya. The target population comprised 1,901 respondents, including 810 head teachers,

1,085 Pre-Primary Two teachers, and 6 Sub-County Early Years Education Directors, from which a sample of 261 head teachers and 284 teachers were selected using a combination of purposive, stratified, and simple random sampling techniques. Data were collected through questionnaires administered to head teachers and pre-primary two teachers, interviews with Sub-County Early Years Education Directors, and documentary analysis of assessment records, portfolios, and rubrics. Validity was ensured through expert review and pilot testing, while reliability was confirmed using Cronbach's Alpha coefficient. Quantitative data were analyzed using descriptive statistics, Pearson correlation, and regression analysis, whereas qualitative data from interviews and open-ended questionnaire items were thematically analyzed, allowing triangulation to strengthen the study's findings.

4. Results and Discussion

The purpose of this study was to examine the effect of observation-based assessment on pre-primary two learners' achievement in environmental activities in public schools in Nandi County, Kenya. Observation-based assessment is one of the key competency-based assessment methods, where teachers systematically monitor and record learners' participation, skills, and behaviors in learning experiences to inform instructional decisions. Respondents were requested to rate their perceptions regarding the use of observation-based assessment in enhancing learners' understanding and engagement in environmental activities using a five-point Likert scale ranging from Strongly Disagree to Strongly Agree. The findings were as indicated on table 1.

Table 1: Effect of Observation-Based Assessment on Achievement of Pre-Primary Two Learners' Environmental Activities

Statement	SD		D		U		A		SA	
	f	%	F	%	f	%	f	%	f	%
1. Observation-based assessments help learners better understand environmental activities.	18	3.7	32	6.5	7	1.4	224	45.4	212	43.0
2. Teachers regularly observe learners' interactions with the environment for assessment purposes.	21	4.3	196	39.8	6	1.2	229	46.5	41	8.3
3. Observation-based assessments identify individual learners' strengths and weaknesses effectively.	15	3.0	28	5.7	8	1.6	237	48.1	205	41.6
4. Observation-based assessments motivate learners to engage more with environmental activities.	19	3.9	204	41.4	5	1.0	231	46.9	34	6.9
5. Teachers provide constructive feedback based on observations of learners' environmental activities.	13	2.6	36	7.3	9	1.8	218	44.2	217	44.0
6. Observation-based assessments encourage learners to explore nature independently.	16	3.2	205	41.6	7	1.4	226	45.8	39	7.9
7. Observation-based assessments enhance learners' awareness of environmental issues.	10	2.0	30	6.1	6	1.2	233	47.3	214	43.4
8. Learners' participation in environmental activities improves when assessed through observation.	14	2.8	207	42.0	9	1.8	230	46.7	33	6.7

The findings in Table 1 showed that a majority of the respondents, 224 (45.4%), agreed that observation-based assessments help learners better understand environmental activities, while 212 (43.0%) strongly agreed with the statement, 32 (6.5%) disagreed, 18 (3.7%) strongly disagreed, and 7 (1.4%) were undecided. This implies that a substantial majority (88.4%) of teachers recognize that observation-based assessments facilitate comprehension of environmental activities, highlighting the effectiveness of real-time monitoring in promoting learning outcomes. This finding is consistent with studies by Hattie and Clarke (2020), which found that observational assessment enables teachers to provide immediate feedback and adjust teaching strategies to match learners' understanding. Additionally, McMillan and Schumacher (2021) noted that such assessments support personalized learning by identifying learners' knowledge gaps, thereby enhancing engagement and comprehension in early childhood education.

Interestingly, a majority 229 (46.5%) of respondents agreed that teachers regularly observe learners' interactions with the environment for assessment purposes, while 41 (8.3%) strongly agreed. Conversely, a significant proportion, 196 (39.8%), disagreed, 21 (4.3%) strongly disagreed, and 6 (1.2%) were undecided. This suggests that although observation is widely valued, a notable number of teachers do not consistently implement it in practice, which could limit its potential impact on learner achievement. On the other hand, similar studies by Black and Wiliam (2020) emphasize that regular observation is crucial for tracking learner progress and tailoring instruction, and inconsistencies in practice often arise due to workload pressures or insufficient training. Therefore, professional development may be necessary to ensure uniform application of observation-based assessment in pre-primary settings.

Moreover, a majority of 237 (48.1%) agreed that observation-based assessments identify individual learners' strengths and weaknesses effectively, while 205 (41.6%) strongly agreed, 28 (5.7%) disagreed, 15 (3.0%) strongly disagreed, and 8 (1.6%) were undecided. This indicates that teachers perceive observation as an effective tool for diagnosing learner capabilities, which can inform targeted interventions. Furthermore, research by Darling-Hammond et al. (2021) suggests that systematic observation provides detailed insights into learner performance, helping teachers to design instructional strategies that address specific learning needs. This supports the notion that observation-based assessment is a valuable component of competency-based education.

Additionally, a majority 231 (46.9%) of respondents agreed that observation-based assessments motivate learners to engage more with environmental activities, while 34 (6.9%) strongly agreed. A sizeable group, 204 (41.4%), disagreed, 19 (3.9%) strongly disagreed, and 5 (1.0%) were undecided. This mixed response implies that while observation can enhance motivation for some learners, others may not be equally influenced, possibly due to teaching methods or classroom dynamics. Similarly, studies by Tomlinson and Imbeau (2020) highlight that active engagement in learning is often reinforced when teachers use assessment methods that recognize individual participation, suggesting that observation can foster learner interest when implemented effectively.

The results further showed that 218 (44.2%) agreed that teachers provide constructive feedback based on observations of learners' environmental activities, with 217 (44.0%) strongly agreeing, 36 (7.3%) disagreed, 13 (2.6%) strongly disagreed, and 9 (1.8%) were undecided. This indicates that nearly 88% of respondents actively use observations to give feedback, underscoring the role of formative assessment in shaping learner performance. On the contrary, studies by Brookhart (2020) emphasize that feedback based on observation must be timely, specific, and actionable to positively influence learner achievement, otherwise its impact may be minimal. Therefore, the high agreement observed in this study highlights good practice in pre-primary classrooms in Nandi County.

Similarly, a majority 226 (45.8%) of respondents agreed that observation-based assessments encourage learners to explore nature independently, while 39 (7.9%) strongly agreed. A considerable number, 205 (41.6%), disagreed, 16 (3.2%) strongly disagreed, and 7 (1.4%) were undecided. This suggests that observation supports autonomy for many learners, but nearly half of the teachers feel it does not consistently foster independent exploration. Interestingly, findings by Shepard (2021) indicate that observation promotes self-directed learning by allowing teachers to recognize and support independent problem-solving in environmental activities. This reinforces the value of observation for cultivating curiosity and initiative among young learners.

The findings also revealed that a majority 233 (47.3%) agreed that observation-based assessments enhance learners' awareness of environmental issues, with 214 (43.4%) strongly agreeing, 30 (6.1%) disagreed, 10 (2.0%) strongly disagreed, and 6 (1.2%) were undecided. This suggests that nearly 91% of respondents believe observation enhances environmental awareness, indicating its effectiveness in promoting knowledge and responsible behaviors toward the environment. Moreover, studies by

OECD (2020) support the idea that observation-based assessment provides insights into learners' understanding of real-world concepts, thereby increasing awareness and encouraging practical application of knowledge in Early Childhood Education.

Furthermore, a majority 230 (46.7%) agreed that learners' participation in environmental activities improves when assessed through observation, while 33 (6.7%) strongly agreed. However, 207 (42.0%) disagreed, 14 (2.8%) strongly disagreed, and 9 (1.8%) were undecided. This indicates that although observation enhances participation for many learners, a substantial portion of teachers perceive it as having limited effect on engagement. Similarly, research by Black and Wiliam (2022) notes that learner participation improves most effectively when observation is coupled with immediate feedback and active learning strategies, suggesting that observation alone may not be sufficient to sustain high engagement levels.

On the other hand, a majority 239 (48.5%) of respondents agreed that observation-based assessments help teachers understand learners' practical skills in environmental activities, while 199 (40.4%) strongly agreed, 35 (7.1%) disagreed, 12 (2.4%) strongly disagreed, and 8 (1.6%) were undecided. This shows that a vast majority (88.9%) of teachers perceive observation as effective for evaluating practical skills, which is essential for competency-based education. Additionally, studies by Brookhart and Nitko (2021) indicate that practical skill assessment through observation allows teachers to capture real-time learner performance, providing critical information for instructional planning and skill development. These findings confirm the importance of observation-based assessment in assessing hands-on competencies in pre-primary classrooms.

Further, Early Years Education Directors were interviewed to supplement the quantitative findings. One of the participants D1 responded:

“Observation-based assessments greatly enhance learners’ engagement and understanding of environmental activities because they allow teachers to capture real-time interactions, curiosity, and practical application of concepts as children explore their surroundings. Through observing learners during hands-on tasks such as sorting waste, planting, or identifying environmental features, teachers gain authentic insights into their skills, attitudes, and levels of participation. However, a key challenge is that observation can be time-consuming and requires well-trained teachers who can document behaviors accurately and consistently. Despite this, the approach has significant advantages, including its ability to provide holistic, continuous feedback, support individualized

learning, and create opportunities for immediate guidance, which ultimately strengthens young learners’ environmental awareness and skill development”.

The response illustrates that observation-based assessment aligns well with the new CBE approach because it captures learning as it naturally occurs. Instead of relying on traditional tests, teachers gain insights by watching how learners interact with real environmental tasks. This allows them to understand learners' levels of curiosity, practical skills, and conceptual grasp in ways that written assessments cannot achieve. Within CBE, where demonstration of competencies is central, observation provides authentic evidence of what learners *can do* rather than what they can simply recall.

The response also suggests that observation supports learner-centered pedagogy, a core principle of the new curriculum. As teachers observe children engaging in hands-on environmental activities, they are able to provide immediate guidance and tailor support to individual needs. This promotes differentiated instruction and continuous assessment, both of which are emphasized in CBE. Through this approach, learners are constantly guided toward mastery of specific environmental competencies such as problem-solving, collaboration, and application of knowledge in real contexts.

However, the interpretation also acknowledges systemic and practical challenges within CBE implementation. Effective use of observation requires teachers to have strong assessment skills, adequate time, and manageable class sizes. Without these, consistency and accuracy may be compromised. Nonetheless, the method remains valuable because it offers a holistic view of learner progress and supports the development of essential competencies. Overall, the interpretation affirms that observation-based assessment is well suited for the new CBE reforms, provided that teachers receive adequate training and support.

According to KICD (2022), observation-based assessment is central to the New Competency-Based Education framework because it enables teachers to collect authentic evidence of learning as it happens. This approach helps educators understand how children interact with real environmental tasks, thereby revealing their emerging competencies, practical abilities, and conceptual understanding insights that would be difficult to gain through traditional testing methods. Observation therefore supports the CBE emphasis on demonstrating what learners *can do* in real-life situations.

The participant's response also aligns with the CBE principle of learner-centered pedagogy. According to MoE (2022), continuous assessment through observation allows teachers to guide learners in real time and to tailor

instruction based on individual needs. While engaging in environmental activities, learners receive timely support that strengthens skills such as collaboration, problem-solving, and application of environmental concepts. This reflects the CBE requirement for assessments that promote mastery rather than rote learning.

However, as Oduor (2022) notes, successful implementation of observation-based assessment depends on adequate teacher preparation, reasonable workloads, and smaller class sizes. The interpretation of the participant's remarks suggests similar concerns: without sufficient support, consistency and effectiveness may be compromised. Nonetheless, observation remains a valuable tool within CBE because it offers a holistic picture of learner progress and supports the development of key environmental competencies.

5. Conclusion and Recommendations

5.1 Conclusion

Based on the findings, the study concluded that observation-based assessment significantly enhances the achievement of Pre-Primary Two learners in environmental activities. A substantial majority of teachers agreed that observing learners' interactions with the environment enables better understanding, identifies individual strengths and weaknesses, and promotes the development of practical skills. Observation-based assessment was found to facilitate learner engagement, motivate participation, and increase awareness of environmental issues, thereby supporting the principles of competency-based education (CBE) which emphasize hands-on learning, continuous feedback, and mastery of skills. The study further highlighted that when teachers provide timely and constructive feedback based on their observations, learners are better able to internalize concepts and apply knowledge practically, which is critical for developing environmental competencies at the pre-primary level.

Additionally, the study concluded that the effectiveness of observation-based assessment is influenced by practical and systemic factors, such as teacher preparedness, workload, and class size. While the method provides authentic, real-time insights into learner performance and supports individualized instruction, inconsistent implementation and insufficient teacher training can limit its impact. Despite these challenges, observation remains a valuable tool for fostering learner-centered pedagogy, encouraging independent exploration, and promoting holistic development. Therefore, for maximum effectiveness, schools should invest in professional development, ensure manageable class sizes, and provide adequate support to teachers to consistently apply observation-based assessments in pre-primary classrooms.

5.2 Recommendations

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

1. The Ministry of Education and school administrators should provide regular professional development and training programs to equip pre-primary teachers with the necessary skills to effectively implement observation-based assessment. This includes guidance on documenting learner behaviours accurately, providing timely feedback, and using observations to inform instructional decisions.
2. Schools should develop structured schedules and frameworks to ensure that observation-based assessments are consistently applied across classrooms. This may involve manageable teacher-to-learner ratios, allocation of dedicated time for observations, and support mechanisms to reduce workload, ensuring that all learners benefit from continuous monitoring and individualized attention.
3. Educational authorities should formalize observation-based assessment within the pre-primary curriculum and school policies. This will emphasize its importance, provide clear guidelines for implementation, and encourage schools to adopt learner-centered practices that promote practical skills, environmental awareness, and engagement in hands-on activities.

References

- Black, P., & Wiliam, D. (2022). *Assessment and classroom learning: Revisited*. Routledge.
- Brookhart, S. M. (2020). *How to give effective feedback to your students* (3rd ed.). ASCD.
- Brookhart, S. M., & Nitko, A. J. (2021). *Assessment and grading in classrooms* (8th ed.). Pearson.
- Brown, T., & Lee, H. (2020). Observation in early childhood assessment: A practical guide. *Early Childhood Journal*, 48(3), 210–225.
- Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2021). Implications for educational practice of the science of learning and development. *Applied Developmental Science*, 25(2), 97–140.

- Evans, M., & Ahmed, S. (2023). Observation-informed instruction and early environmental learning. *Journal of Early Education, 15*(1), 33–49.
- Hattie, J. (2012). *Visible learning for teachers: Maximizing impact on learning*. Routledge.
- Hattie, J., & Clarke, S. (2020). *Visible learning: Feedback*. Routledge.
- Heritage, M. (2007). Formative assessment: What do teachers need to know and do? *Phi Delta Kappan, 89*(2), 140–145.
- Kamala, J., & Mshana, S. (2022). Implementing observation checklists in Tanzanian pre-primary classrooms: An action research study. *African Journal of Early Childhood, 8*(2), 57–72.
- Karanja, P. (2023). Structured observation in Kenyan pre-primary classrooms: Teachers' experiences and learner outcomes. *Kenya Journal of Education Research, 5*(1), 78–92.
- Kenya Institute of Curriculum Development. (2022a). *Competency-based curriculum designs for pre-primary education*. Kenya Institute of Curriculum Development.
- Kenya Institute of Curriculum Development. (2022b). *Competency-based curriculum assessment guidelines for pre-primary schools*. Kenya Institute of Curriculum Development.
- Lim, C., & Hassan, R. (2022). Observation and narrative assessment in Malaysian pre-primary environmental learning. *Asian Early Childhood Research, 9*(4), 102–118.
- McMillan, J. H., & Schumacher, S. (2021). *Research in education: Evidence-based inquiry* (8th ed.). Pearson.
- Mensah, A., & Agyapong, D. (2023). Observation records and environmental skill achievement in Ghanaian pre-primary learners. *West African Journal of Education, 12*(1), 44–60.
- Miller, P., Davis, R., & Chowdhury, S. (2022). Authentic assessment in early childhood: Observation and beyond. *Journal of Childhood Studies, 48*(5), 65–82.
- Ministry of Education. (2023). *National guidelines for implementation of competency-based curriculum in basic education*. Government Printer.
- Ministry of Education. (2022). *Early years education policy guidelines*. Ministry of Education, Kenya.
- Naidoo, S., & Mbatha, L. (2021). Observation-based assessment and environmental awareness in South African early learners. *South African Education Review, 18*(3), 19–35.
- Nicol, D. J., & Macfarlane-Dick, D. (2006). Formative assessment and self-regulated learning: A model and seven principles of good feedback practice. *Studies in Higher Education, 31*(2), 199–218.
- Oduor, J. (2022). Challenges in implementing formative-based assessments in primary schools in Busia County, Kenya. *Journal of Early Childhood Education Research, 11*(1), 45–60.
- Organisation for Economic Co-operation and Development. (2020). *Early learning and development: Assessment for learning*. OECD Publishing.
- Organisation for Economic Co-operation and Development. (2023). *Education at a glance 2023: OECD indicators*. OECD Publishing.
- Ortega, E., & Rivera, J. (2023). Observation portfolios in Mexican early childhood centers. *Journal of Childhood and Development, 11*(2), 121–138.
- Otieno, J. (2020). Assessment practices among early childhood educators in Kenya. *Kenya Educational Review, 6*(2), 89–105.
- Robinson, A., & Gupta, N. (2021). Observation protocols and environmental competencies in U.S. early years. *Early Education Studies, 29*(1), 13–28.
- Shepard, L. A. (2000). The role of assessment in a learning culture. *Educational Researcher, 29*(7), 4–14.
- Shepard, L. A. (2021). The role of classroom assessment in learning. *Educational Measurement: Issues and Practice, 40*(2), 25–34.
- Smith, D. & Johnson, L. (2021). Competency-based assessment in early childhood: Definitions and frameworks. *Education Quarterly, 44*(1), 55–70.

- Stiggins, R. J. (2002). Assessment crisis: The absence of assessment for learning. *Phi Delta Kappan*, 83(10), 758–765.
- Thompson, J., & Pérez, L. (2022). Longitudinal observation and environmental learning in early childhood. *Canadian Journal of Early Education*, 35(2), 97–115.
- Tomlinson, C. A., & Imbeau, M. B. (2020). *Leading and managing a differentiated classroom* (3rd ed.). ASCD.
- Tuyisenge, V., & Uwizeyimana, F. (2021). Observation strategies and early learning in Rwanda. *Rwandan Journal of Education*, 3(1), 38–52.
- United Nations Educational, Scientific and Cultural Organization. (2022). *Reimagining our futures together: A new social contract for education*. UNESCO Publishing.
- Wambua, S. (2021). Teachers' perceptions of formative assessment in Kenyan pre-primary schools. *Journal of Early Childhood Practice*, 7(3), 54–70.
- World Bank. (2022). *The state of global learning poverty: 2022 update*. World Bank.
- World Bank. (2023). *Improving foundational learning in Sub-Saharan Africa: Policy options and strategies*. World Bank Publications.