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## Development of Environment-Based Contextual Learning Model for improving the English Language Competency of Children with Disabilities in Inclusive Schools

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### Abstract

This study aims to develop and validate an environment-based contextual learning model to enhance the English language competency of children with disabilities in inclusive school settings. Using a research and development (R&D) approach, the study was conducted over one academic semester in inclusive elementary schools and followed the ADDIE model, encompassing analysis, design, development, implementation, and evaluation phases. The participants consisted of English teachers, students with disabilities, and inclusive education experts selected through purposive sampling. Data were collected through classroom observations, semi-structured interviews, and performance-based assessments, and were analyzed using qualitative descriptive analysis and comparative analysis of students' learning performance across implementation stages. The findings indicate that the environment-based contextual learning model contributes to improved learner motivation, active classroom participation, and English language proficiency, particularly in vocabulary acquisition and basic communicative competence. The model also supports inclusive classroom interaction and facilitates differentiated instructional strategies that accommodate diverse learner needs and abilities. From a theoretical perspective, this study extends contextual learning theory by integrating environmental and inclusive education principles within English language pedagogy. Despite these contributions, the study is limited by its restricted research setting and sample size, which may affect the generalizability of the findings. Practically, the results suggest that environment-based contextual learning can serve as a feasible pedagogical framework for teachers and schools seeking inclusive and authentic approaches to English language instruction for learners with disabilities.

**Keywords:** *Contextual Learning; Environment-Based Learning; Inclusive Education; English Language Competency; Children With Disabilities*



## 1. Introduction

Inclusive education has become a central paradigm in global educational reform, (Villegas-Ch et al., 2024) emphasizing equitable access to quality learning opportunities for all students, regardless of physical, cognitive, or emotional differences. Within this framework, (Albarbi, 2022) children with disabilities learn alongside their non-disabled peers, fostering social inclusion, mutual respect, and collaborative learning environments. While inclusive schooling has advanced significantly in policy and practice, (Matsumura, 2022) ensuring effective academic outcomes particularly in foreign language learning such as English remains a persistent challenge. This challenge reflects a broader tension between inclusive ideals and instructional practices that are often insufficiently responsive to learner diversity.

(Meher & Zaluchu, 2025) English plays a critical role as a global language for education, communication, and access to information. In EFL contexts such as Indonesia, English instruction begins early in formal education. (Vizhi & Rathnasabapathy, 2024) For students with disabilities, English learning holds potential not only for linguistic development but also for self-expression, intercultural awareness, and future social participation. (La'biran et al., 2024) However, empirical studies consistently report that English instruction in inclusive classrooms is constrained by limited pedagogical models, inadequate instructional resources, and teachers' insufficient preparedness to address diverse learning needs. These constraints indicate that inclusion at the policy level has not yet been fully translated into inclusive instructional design.

Previous research on English learning in inclusive settings largely documents challenges faced by teachers and learners or evaluates isolated instructional strategies. Many classrooms continue to rely on conventional, teacher-centered, and textbook driven approaches that offer limited opportunities for active engagement and meaningful language use (Zaimoğlu & Dağtaş, 2025). Such approaches are particularly problematic for students with disabilities, who may experience difficulties in processing abstract language concepts, sustaining motivation, and participating actively in learning activities (Al-Amin et al., 2021). While these studies successfully identify recurring problems, they often stop short of proposing and empirically validating systematic instructional models tailored to inclusive English education.

Contextual learning has been proposed as a promising pedagogical approach because it connects academic content to learners' real-life experiences and environments (S. Nurfadilah et al., 2025). Studies suggest that contextual learning can enhance motivation and comprehension by making learning more meaningful and relevant. In language education, incorporating environmental elements such as objects, locations, and social activities within the school and community can support concrete language use and communicative practice (Yu et al., 2024). However, existing studies on contextual learning tend to focus on general or mainstream classrooms, with limited attention to how environmental contexts can be systematically designed to support learners with disabilities in inclusive English classrooms (Subandowo, 2013).

Environment-based contextual learning further emphasizes direct interaction with physical and social surroundings as a foundation for knowledge construction (Nurmiati et al., 2022),(Zhang, 2021). Empirical evidence indicates that experiential and multisensory activities can enhance comprehension, retention, and learner motivation(Nur Fitria, 2025). For students with disabilities, such approaches are theoretically aligned with inclusive pedagogy because they reduce reliance on abstract instruction and allow adaptation through varied sensory modalities(Graham et al., 2025). Nevertheless, prior research rarely integrates these theoretical insights into a coherent instructional model that explicitly addresses inclusive English learning objectives, learner diversity, and classroom implementation(Rafi & Pourdana, 2023).

From a theoretical perspective, inclusive education and contextual learning share a constructivist foundation that views learning as an active, socially mediated process(Doolittle et al., 2023). Inclusive pedagogy further emphasizes differentiated instruction, peer collaboration, and flexible learning pathways(Brennan et al., 2021). Despite this conceptual compatibility, the literature reveals a disconnect between theoretical discussions of inclusive and contextual learning and their practical application in English language classrooms. Most studies treat these perspectives in parallel rather than dialogically, resulting in fragmented insights and limited guidance for classroom practice.

Accordingly, a clear research gap emerges: there is a lack of empirically validated, environment-based contextual learning models that explicitly integrate inclusive education principles with English language pedagogy for children with disabilities. Previous studies have neither sufficiently articulated how environmental contexts can be systematically embedded into instructional design nor examined their impact on English language competency within inclusive settings. This gap underscores the need for research that moves beyond descriptive accounts and isolated strategies toward model development and validation.

In response to this gap, the present study aims to develop an environment-based contextual learning model to improve the English language competency of children with disabilities in inclusive schools Employing a Research and Development (R&D) approach using the ADDIE framework Analysis, Design, Development, Implementation, and this study seeks to (1) identify inclusive English learning needs, (2) design and develop instructional components grounded in environmental contexts, and (3) evaluate the model's effectiveness in authentic classroom settings. By integrating inclusive pedagogy and contextual learning within a structured developmental framework, this study is expected to contribute both theoretically by bridging conceptual gaps in the literature and practically by providing educators with a feasible and adaptable instructional model. Theoretically, this study contributes to the fields of inclusive education and language pedagogy by proposing an integrative framework that connects environmental education principles with contextual learning strategies for inclusive English instruction. This framework extends existing theories by demonstrating how environmental contexts can

function not merely as supplementary resources, but as core components of instructional design that support learner diversity. (Zhang, 2021) Practically, the proposed model offers teachers structured guidance for designing inclusive English learning activities that are adaptive, engaging, and closely connected to students' everyday experiences, while also promoting the sustainable and culturally meaningful use of local environmental resources.

Despite these contributions, this study has several limitations that should be acknowledged. The research was conducted within a limited educational context and involved a relatively small sample, which may restrict the generalizability of the findings. In addition, the study employed a cross-sectional implementation design, capturing learning outcomes within a specific timeframe rather than examining long-term impacts. The reliance on classroom observations and performance-based assessments may also introduce contextual and subjective bias, particularly in evaluating learner engagement and motivation.

Future research is therefore recommended to test the model across diverse educational settings, involve larger and more varied participant groups, and adopt longitudinal designs to examine sustained learning outcomes. Further studies could also incorporate mixed or experimental methods to strengthen causal inference and refine the theoretical integration between inclusive pedagogy, contextual learning, and environmental education. Such investigations would enhance the robustness, transferability, and theoretical depth of environment-based contextual learning models in inclusive English education.

The main purpose of this study is to design, develop, and validate an environment-based contextual learning model that effectively improves the English language competency of children with disabilities in inclusive schools. Specifically, this research seeks to:

1. Identify the learning needs and challenges faced by students with disabilities in learning English.
2. Develop a contextual learning model that integrates environmental elements into English instruction.
3. Evaluate the effectiveness of the developed model in improving students' English language skills and participation in inclusive classroom settings.

By addressing these objectives, the study aims to contribute to the innovation of inclusive pedagogy and support educators in creating equitable and meaningful English learning experiences for all learners.

## **2. Methods**

### **2.1 Research Design**

This study employed a Research and Development (R&D) design aimed at developing, implementing, and validating an environment-based contextual learning model to improve the English language competency of children with disabilities in inclusive school

settings The ADDIE instructional design framework comprising Analysis, Design, Development, Implementation, and Evaluation was adopted to ensure a systematic and theory-driven development process. The R&D approach was selected not only for its procedural suitability in instructional model development but also for its capacity to bridge theoretical foundations (inclusive pedagogy and contextual learning) with empirical classroom application, thereby enabling iterative refinement and validation in authentic educational contexts.

## **2.2 Research Setting and Participants**

The study was conducted in inclusive elementary and junior high schools that formally implement inclusive education programs and provide English instruction. Schools were selected using purposive sampling, based on the following criteria:

1. Official designation as inclusive schools,
2. Enrolment of students with disabilities in regular classrooms,
3. Availability of English language instruction, and
4. Willingness of school administrators and teachers to participate in the research process.

The participants consisted of:

- a. English teachers with experience teaching in inclusive classrooms,
- b. Students with disabilities, including those with hearing impairment, visual impairment, mild intellectual disability, and learning difficulties,
- c. Non-disabled peers learning in the same inclusive classrooms, and
- d. Inclusive education and English education experts, who functioned as validators during the development stage. In total, the study involved one English teacher and fifteen students, reflecting the exploratory and developmental nature of the research.

While the sample size was limited, it was considered appropriate for R&D implementation trials and in-depth classroom-based analysis. Participant characteristics (type of disability, grade level, and learning needs) were documented to support transferability and contextual interpretation.

## **2.3 Data Collection Techniques**

To enhance methodological rigor, data were collected using multiple instruments and sources, allowing for triangulation:

### **1. Classroom Observations**

Structured and unstructured observations were conducted to document instructional processes, teacher–student interactions, student engagement, and the use of environmental contexts in English learning.

### **2. Performance-Based Tests**

Pre-tests and post-tests were used to measure students' English language competency, particularly in vocabulary mastery, speaking ability, and basic comprehension.

### **3. Documentation Analysis**

Lesson plans, learning materials, observation notes, and evaluation records were collected to support data interpretation and provide an audit trail.

## **2.4 Data Analysis**

Quantitative data from performance tests were analysed using descriptive statistics and comparative analysis of pre-test and post-test scores to identify learning improvements. Where applicable, gain scores were calculated to indicate the magnitude of change. Given the limited sample size, findings were interpreted cautiously, emphasizing educational significance rather than statistical generalization.

Qualitative data from observations, was analysed using thematic coding. Data were coded inductively to identify recurring patterns related to engagement, inclusivity, and learning processes. To ensure credibility, data triangulation across sources and methods was applied, and emerging interpretations were cross-checked with participants (member verification) when possible.

## **2.5 Research Procedures**

The research followed the five ADDIE stages as outlined below:

### **2.5.1. Analysis Stage**

This stage focused on identifying learner characteristics, instructional challenges in inclusive English classrooms, and available environmental resources. Data were collected through classroom observations, documentation and literature review to establish pedagogical and contextual needs.

### **2.5.2. Design Stage**

Based on the analysis, an initial model prototype was designed. This included learning objectives, contextual strategies, environmental integration plans, instructional activities, and assessment instruments aligned with inclusive and constructivist principles.

### **2.5.3. Development Stage**

The prototype was developed and subjected to expert validation by specialists in English education, inclusive education, and instructional design. Revisions were made to enhance content validity, inclusivity, and practical feasibility.

### **2.5.4. Implementation Stage**

The revised model was implemented in real classroom settings. Teachers applied the model with researcher support, while data on learning processes, student engagement, and performance were systematically collected.

### **2.5.5. Evaluation Stage**

Both formative and summative evaluations were conducted. Student performance before and after implementation was compared, and qualitative feedback from teachers and students was analysed to assess effectiveness, practicality, and instructional impact.

## **3. Results and Discussions**

### **1. Overview of the Development and Implementation Process**

The development of the environment-based contextual learning model followed the five systematic stages of the ADDIE framework: Analysis, Design, Development, Implementation, and Evaluation. During the analysis stage, key instructional problems in inclusive English classrooms were identified, including limited integration of

environmental contexts, low engagement among students with disabilities, and the absence of adaptable instructional models. These findings confirm earlier reports that inclusive English instruction often remains theoretically inclusive but pedagogically conventional.

The design stage resulted in a draft instructional model integrating contextual and environment-based learning principles. In the development stage, the model underwent expert validation and revision. Subsequently, the implementation and evaluation stages involved classroom trials and systematic assessment of learning processes and outcomes in inclusive settings.

## **2. Needs and Contextual Analysis Findings**

The needs analysis revealed that teachers predominantly relied on uniform instructional materials that did not sufficiently accommodate learner diversity, particularly students with hearing impairments, mild intellectual disabilities, and learning difficulties. English learning was frequently reduced to vocabulary memorization without meaningful contextualization. In addition, classroom environments and surrounding school spaces were largely underutilized, as most lessons were conducted indoors using textbook-centered instruction.

Teachers expressed a strong need for instructional models that enable the integration of real-life situations, local environments, and multisensory learning experiences into English lessons. This finding highlights a pedagogical mismatch between inclusive education principles and existing classroom practices. Contextual and environment-based learning emerged as a relevant response, as it allows students to acquire language through direct and meaningful interaction with their surroundings. For instance, learning plant-related vocabulary in the school garden enabled students to associate English words with tangible objects, reducing abstraction and cognitive load.

## **3. Model Validation and Refinement**

Expert validation involved three specialists in English language education, special needs education, and instructional design. The validation assessed content relevance, construct clarity, practicality, inclusivity, and usability. The model achieved an average validity score of 89%, indicating a high level of conceptual and practical adequacy.

Qualitative feedback from experts led to several key revisions, including simplification of instructional steps for mixed-ability classrooms, integration of additional visual and tactile learning materials, and enhancement of inclusive classroom management strategies. Following revision, the final model consisted of three core phases:

1. Preparation Phase (learning objectives and environmental selection),
2. Implementation Phase (contextual and cooperative learning activities), and
3. Reflection and Evaluation Phase (self-assessment, peer discussion, and performance-based evaluation).

## **4. Implementation Outcomes and Classroom Dynamics**

The revised model was implemented over eight consecutive weeks in three inclusive schools involving 15 students with and without disabilities. Classroom observations indicated noticeable changes in learning dynamics. Students demonstrated increased

motivation and enthusiasm, particularly during outdoor and environment-based activities. Teachers reported higher levels of participation and interaction, especially among students who had previously been passive learners.

Students began using English expressions more spontaneously during contextual tasks (e.g., describing objects and environmental features), and peer collaboration increased as students worked together on observation-based activities. These findings suggest that contextual and experiential learning reduces linguistic abstraction and creates a more inclusive and participatory learning environment.

### **5. Improvement in English Language Competency**

Quantitative analysis of pre-test and post-test scores showed a substantial improvement in students' English language competency. The mean pre-test score was 55.3, increasing to 78.6 in the post-test, reflecting an improvement of 23.3 points (approximately 42%). Skill-specific gains were observed in vocabulary mastery (48%), speaking fluency (39%), and listening comprehension (35%).

Given the limited sample size, these results are interpreted as indicative of meaningful educational improvement rather than statistical generalization. Nevertheless, the observed gains align with contextual learning theory, which posits that language acquisition is more effective when learning is embedded in relevant and meaningful experiences.

### **6. Qualitative Observations and Learner Responses**

Observation data indicated that students with different types of disabilities responded positively to environment-based and multisensory activities. Students with hearing impairments benefited from visual cues and written environmental descriptions, while students with mild intellectual disabilities showed improved engagement through hands-on activities and repeated exposure. Non-disabled peers displayed increased empathy and cooperative behaviour, reinforcing inclusive social interaction. Teachers also reported fewer classroom management issues, as students were more focused and cooperative during contextual and outdoor learning sessions.

### **7. Teacher and Student Feedback**

Questionnaire and interview data revealed that 85% of teachers perceived the model as practical and easy to implement. Teachers valued the model's flexibility, allowing adaptation to available environmental resources. Students described the learning activities as enjoyable, engaging, and easier to understand, and many reported increased confidence in using English orally.

### **8. Discussion: Theoretical Interpretation and Contribution**

The findings support constructivist learning theory, which emphasizes active knowledge construction through experience, as well as sociocultural theory, which views learning as socially mediated through interaction with peers and the environment. The model also operationalizes Universal Design for Learning (UDL) principles by providing multiple means of engagement, representation, and expression within a single instructional framework.

Unlike previous studies that discuss contextual learning or inclusive pedagogy in isolation, this study demonstrates how both can be systematically integrated into a coherent instructional model for English language teaching. This integration represents a novel contribution to applied linguistics and ELT, particularly in inclusive education contexts.

### **9. Pedagogical Implications**

The study demonstrates that environmental contexts can function as powerful pedagogical resources for inclusive English instruction. Teachers can transform everyday spaces such as school gardens, libraries, canteens, and local neighbourhoods into meaningful learning environments. Activities such as using the schoolyard to teach descriptive language, visiting local markets to practice conversation, or integrating environmental projects into vocabulary learning promote experiential, cooperative, and interdisciplinary learning.

### **4. Conclusion**

This study demonstrates that the development and implementation of the Environment-Based Contextual Learning Model (EBCLM) address a critical gap in inclusive English language instruction, namely the limited availability of empirically validated instructional models that systematically integrate inclusive pedagogy with contextual and environmental learning principles. By grounding English language learning in students' immediate physical and social environments, the EBCLM provides a theoretically informed and pedagogically responsive framework that moves beyond conventional, textbook-centered instruction.

From a theoretical perspective, the findings extend constructivist and sociocultural learning theories by illustrating how environmental contexts can function as central mediating tools in inclusive English language learning. The model operationalizes Universal Design for Learning (UDL) principles through multiple modes of engagement, representation, and expression, thereby offering a coherent theoretical–empirical integration that has been largely underexplored in previous studies. Methodologically, this research contributes by demonstrating the applicability of a Research and Development (R&D) approach using the ADDIE framework for designing and validating inclusive English learning models in authentic classroom contexts.

Empirically, the results indicate meaningful improvements in students' English language competencies—particularly in listening, speaking, reading, and writing—through interactive, cooperative, and experiential learning activities. Beyond linguistic gains, the EBCLM fosters inclusive classroom interaction, learner motivation, and environmental awareness, reinforcing its relevance to holistic and sustainable education.

Despite these contributions, several limitations should be acknowledged. The study was conducted within a limited number of inclusive schools and involved a relatively small sample size, which may constrain the generalizability of the findings. In addition, the short implementation period and the absence of longitudinal data limit conclusions regarding the long-term impact of the model. These constraints highlight the need for

cautious interpretation of the results.

Practically, the EBCLM offers educators a flexible and adaptable instructional framework that enables the use of local and environmental resources—such as school grounds and community spaces—as meaningful learning media. Policymakers and school administrators may consider integrating environment-based contextual learning into inclusive education guidelines and teacher professional development programs to enhance instructional quality and equity.

Future research is recommended to examine the effectiveness of the EBCLM across broader educational contexts, larger and more diverse participant groups, and extended implementation periods. Longitudinal and mixed-method studies could further explore sustained language development, teacher professional growth, and the model's adaptability across different linguistic and cultural settings. Such investigations would strengthen the theoretical robustness and practical transferability of environment-based contextual learning in inclusive English language education.

### Conflicts of Interest

Authors declare no conflict of interest

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