

A Holistic Framework for Online Education: Integrating Multiple Intelligences and Multisensory Learning in Child and Adolescent Education

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Abstract

The global expansion of online education has increased the need for pedagogical models that promote meaningful engagement and effective learning. This study examines the KIP Edu Center holistic online education framework, which integrates Howard Gardner's Multiple Intelligences theory with multisensory learning, interactive teaching materials, activity-based instruction, and integrated language skills. A controlled pretest-posttest study was conducted with 120 learners aged 7–16, including 60 learners in the intervention group and 60 in the control group. The intervention lasted eight weeks and consisted of two one-hour online sessions per week. Learning outcomes were examined across vocabulary retention, speaking fluency, problem-solving, and motivation and engagement. The intervention group demonstrated improvements from 45% to 85% in vocabulary retention, 50% to 78% in speaking fluency, 52% to 80% in problem-solving, and 60% to 92% in motivation and engagement. The control group also improved, but to a lesser extent. The findings suggest that a structured online approach combining Multiple Intelligences, multisensory learning, interactive activities, and supportive educator guidance may provide an effective model for engaging children and adolescents in online education. Further research with larger samples and longer intervention periods is recommended.

Keywords: online education, multiple intelligences, multisensory learning, holistic pedagogy, educational technology

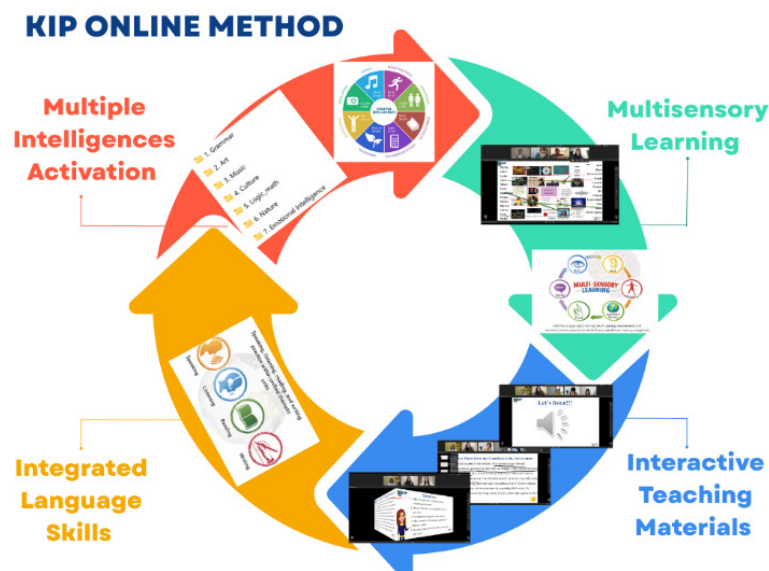
1. Introduction

The rapid expansion of online education has reshaped access to learning worldwide, offering greater flexibility and opportunities to reach learners across diverse geographical regions. Despite these advantages, online learning may face challenges in maintaining meaningful engagement, particularly among children, adolescents, and language learners. Educational research emphasizes the importance of interactive, cognitively engaging, and multisensory learning experiences (Gardner, 1983; Mayer, 2001). For younger learners in particular, passive delivery of lectures or videos may be insufficient to sustain attention, encourage active participation, and support knowledge retention.

KIP Education and Training ID Center (KIP Edu Center) addresses these challenges through a holistic online pedagogical framework that integrates Howard Gardner's Multiple Intelligences theory with multisensory and activity-based learning strategies. The framework is designed to provide learners with diverse pathways for engaging with educational content while promoting cognitive, social, emotional, and creative development.

The KIP framework incorporates four interconnected components:

1. **Multiple Intelligences Activation** – Lessons incorporate activities addressing linguistic, logical-mathematical, visual-spatial, musical, bodily-kinesthetic, interpersonal, intrapersonal, and naturalistic intelligences, providing learners with varied opportunities to engage with content.
2. **Multisensory Learning** – Activities engage visual, auditory, tactile, and kinesthetic modalities, with selected tasks incorporating real-world sensory experiences to reinforce comprehension, memory, and engagement.
3. **Interactive Teaching Materials** – Digital games, multimedia presentations, videos, visual materials, and interactive tasks are used to transform learners from passive recipients into active participants.
4. **Integrated Language Skills** – Speaking, listening, reading, and writing are systematically incorporated into thematic lessons, allowing learners to apply language skills across interconnected activities (see Graph1).



Graph 1. KIP online method

By combining these elements, the KIP framework seeks to create online learning environments that are active, interactive, and developmentally appropriate. The present study examines how these principles are implemented through lesson design, instructional materials, learner interaction, and assessment. It further evaluates the effectiveness of the framework in supporting vocabulary retention, speaking fluency, problem-solving, and learner motivation and engagement.

2. Theoretical Framework

The KIP online education framework is grounded in two complementary pedagogical perspectives: Howard Gardner's Multiple Intelligences (MI) theory and multisensory learning. Together, these perspectives provide a foundation for designing online instruction that accommodates varied learner strengths and promotes active engagement across cognitive, sensory, social, and creative domains.

2.1 Multiple Intelligences Theory

Howard Gardner (1983) proposed that intelligence is not a single, fixed ability but consists of multiple domains. These include linguistic, logical-mathematical, visual-spatial, musical, bodily-kinesthetic, interpersonal, intrapersonal, and naturalistic intelligences. The MI perspective encourages educators to provide varied opportunities for learners to engage with content and demonstrate different capabilities (Armstrong, 2009).

Within the KIP framework, MI principles are incorporated into lesson planning through varied activities and forms of participation. These may include storytelling and writing, logical classification, visual representation, music and rhythm, movement-based activities, collaborative tasks, individual reflection, and observation-based activities. This variety provides multiple pathways for learners to engage with educational content.

2.2 Multisensory Learning

Multisensory learning involves engaging more than one sensory modality during the learning process. Research suggests that combining sensory information can support attention, comprehension, and memory (Shams & Seitz, 2008).

In the KIP framework, multisensory strategies are adapted to the online environment through activities involving:

- **Visual:** videos, diagrams, illustrations, digital slides, and visual prompts;
- **Auditory:** songs, chants, storytelling, audio prompts, and sound-based activities;
- **Tactile:** printable worksheets, crafts, and home-based practical activities;
- **Kinesthetic:** movement, manipulation of learning materials, and interactive exercises;
- **Olfactory and gustatory:** selected activities involving food, scents, or textures when appropriate to the lesson.

These strategies provide varied sensory pathways for processing and reinforcing new information.

2.3 Integration of Multiple Intelligences and Multisensory Learning

The KIP framework integrates MI principles and multisensory learning within the same instructional activities rather than treating them as separate strategies. Lessons combine different cognitive and sensory pathways through structured activities that allow learners to encounter, practice, and apply new content.

This integration supports active participation, varied opportunities for comprehension and practice, cognitive, social, and creative development, and reinforcement of learning through multiple forms of representation and participation.

2.4 Interactive Teaching Materials and Language Skills

Interactive teaching materials are used to provide opportunities for active practice and application. These include digital games, multimedia presentations, visual materials, interactive quizzes, matching activities, drag-and-drop tasks, and story-based activities.

For language-learning lessons, the framework systematically integrates four core skills:

- **Speaking:** guided conversations, oral storytelling, and structured speaking activities;
- **Listening:** songs, audio prompts, videos, and listening-comprehension tasks;
- **Reading:** short texts, illustrated passages, and guided reading activities;
- **Writing:** sentence construction, vocabulary application, and short creative tasks.

The integration of these skills allows learners to encounter and practice language through interconnected activities rather than isolated skill exercises.



Figure 1. KIP Online Lesson Framework: Integration of Vocabulary, Interactive Activities, and Four Language Skills

Overall, the theoretical framework establishes the pedagogical basis for the KIP online model. Multiple Intelligences provides a framework for addressing varied learner strengths, while multisensory learning provides multiple pathways for engaging with content. Their integration, supported by interactive materials and four-skill language practice, forms the foundation for the instructional structures examined in the following sections.

3. Motivation as a Core Pillar of the Online Pedagogy Framework

3.1 Motivation in Online Language Education

Motivation plays an important role in learner engagement, persistence, and academic achievement (Deci & Ryan, 2000). In online learning environments, maintaining motivation may be challenging because of reduced physical presence, limited non-verbal communication, technological distractions, and fewer opportunities for spontaneous peer interaction.

In the KIP framework, motivation is treated as an integral component of instructional design rather than solely as a learning outcome. Lessons are designed to promote active participation, emotional engagement, learner autonomy, and sustained interest through developmentally appropriate challenges and supportive learning experiences.

3.2 Motivational Strategies

The KIP motivational approach is informed by Self-Determination Theory, particularly the importance of autonomy, competence, and relatedness in supporting sustained motivation (Ryan & Deci, 2000). Guided learning and social interaction are also consistent with the concept of the zone of proximal development (Vygotsky, 1978).

Intrinsic motivation is encouraged through:

- themes connected to learners' interests and experiences;
- meaningful, creative, and problem-based activities;
- opportunities for learner choice and autonomy;
- emphasis on progress, effort, and mastery; and
- psychologically supportive environments in which mistakes are treated as opportunities for learning.

Extrinsic motivational strategies include positive reinforcement, achievement tracking, gamified elements, immediate feedback, and recognition of effort and improvement. Together, these approaches provide external support while encouraging the development of sustained internal motivation.

3.3 The Role of the EduGuide

A distinctive element of the KIP framework is the role of the educator as an **EduGuide**. Rather than functioning solely as a transmitter of information, the EduGuide acts as a facilitator, mentor, and source of individualized learning support.

EduGuides contribute to learner motivation by:

- guiding learners through scaffolded learning experiences;
- modeling enthusiasm and intellectual curiosity;
- establishing psychological safety and trust;
- encouraging participation and open communication;
- providing individualized support based on learner strengths and needs; and
- supporting learners' academic, social, and personal development.

Through consistent relational support, EduGuides help create conditions that strengthen learners' sense of competence, belonging, and autonomy.

Motivation is therefore embedded throughout the KIP pedagogical framework. Scaffolded lesson design, interactive activities, learner choice, social interaction, feedback, and EduGuide support work together to create conditions for sustained participation and engagement.

4. Instructional Structures that Sustain Motivation

Building on the theoretical framework presented in Section 2 and the motivational principles described in Section 3, the KIP instructional model uses structured activities and supportive learning conditions to sustain learner participation and engagement.

4.1 Multiple Intelligences and Multisensory Activation

KIP lessons use Multiple Intelligences and multisensory strategies to provide learners with varied ways of accessing and practicing content. Different cognitive strengths and sensory modalities are incorporated into activities to support participation, comprehension, confidence, and sustained engagement.

4.2 Structured Social Interaction and Small-Group Learning

Learners may be organized into small groups of up to five students, depending on lesson objectives and activity type. Small-group interaction provides opportunities for peer collaboration, communication, and shared problem-solving while allowing EduGuides to provide individualized feedback.

This structure can support motivation by fostering a sense of belonging, encouraging participation, and creating a supportive environment for communication and collaboration.

4.3 Interactive Digital Platforms and Active Engagement

Interactive digital tools are used to transform learners from passive observers into active participants. Depending on the lesson, students may:

- draw, annotate, and manipulate digital materials;
- participate in interactive quizzes and games;
- complete creative and hands-on tasks; and
- receive immediate feedback.

Active participation encourages learners to interact directly with instructional content and may strengthen attention, cognitive processing, and engagement (Bonwell & Eison, 1991). Multimedia elements can further support multimodal learning and learner engagement (Moreno & Mayer, 2007).

4.4 Reducing Cognitive and Performance Pressure

Maintaining motivation also requires attention to learners' cognitive and emotional load. Excessive homework, unrealistic expectations, or persistent performance pressure may reduce engagement and increase learner fatigue.

The KIP framework addresses these challenges by emphasizing guided practice, developmentally appropriate expectations, balanced task demands, and supportive learning experiences.

4.5 Integrated Instructional Support

The instructional structures described above operate together rather than as isolated techniques. MI and multisensory activities provide varied entry points to learning, small-group interaction supports social engagement, interactive digital tools encourage active participation, and appropriate levels of challenge help maintain learner confidence.

Together with EduGuide support, these structures contribute to a structured and supportive online learning environment designed to sustain learner motivation and participation.

5. Online Lesson Design and Pedagogical Framework

KIP online lessons are structured to support learner engagement, skill development, and holistic learning through the integration of Multiple Intelligences, multisensory learning, interactive teaching materials, and structured language practice. The lesson design combines a consistent instructional sequence with flexible activities that can be adapted to learners' developmental levels and learning objectives.

5.1 Structured Lesson Flow

Lessons follow a scaffolded sequence that supports comprehension, practice, application, and reflection. The structure provides a consistent learning routine while allowing activities to vary according to the lesson content and learner needs.

The four main stages are:

1. **Warm-Up and Engagement:** Short games, music, visual prompts, or other introductory activities activate prior knowledge, stimulate curiosity, and prepare learners for the lesson.
2. **Core Instruction:** New vocabulary, concepts, language structures, or skills are introduced through interactive slides, multimedia presentations, videos, demonstrations, and other instructional materials.
3. **Practice and Application:** Learners apply new knowledge through integrated activities, including language practice, hands-on tasks, creative activities, problem-solving exercises, and, where appropriate, role-play. Activities may incorporate household or downloadable materials to connect online learning with real-world contexts.
4. **Reflection and Feedback:** Learners consolidate their understanding through reflection, discussion, guided assignments, or other review activities. EduGuides provide individualized feedback and support learners in identifying areas for further development.

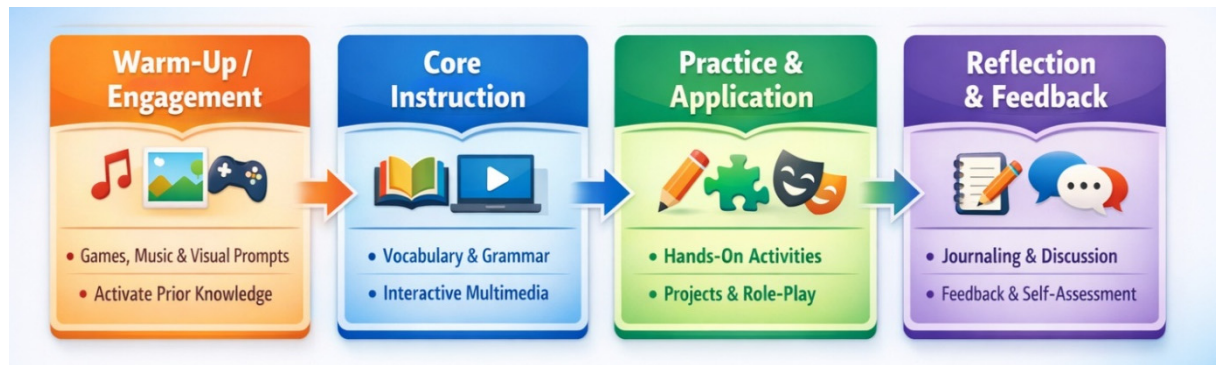


Figure 2. Four-Phase Scaffolded Online Lesson Structure

Figure 2 illustrates the four-phase structure used to organize KIP online lessons, progressing from warm-up and engagement to core instruction, practice and application, and reflection and feedback. The sequence provides a coherent instructional framework while allowing individual activities to be adapted to different learning objectives and learner characteristics.

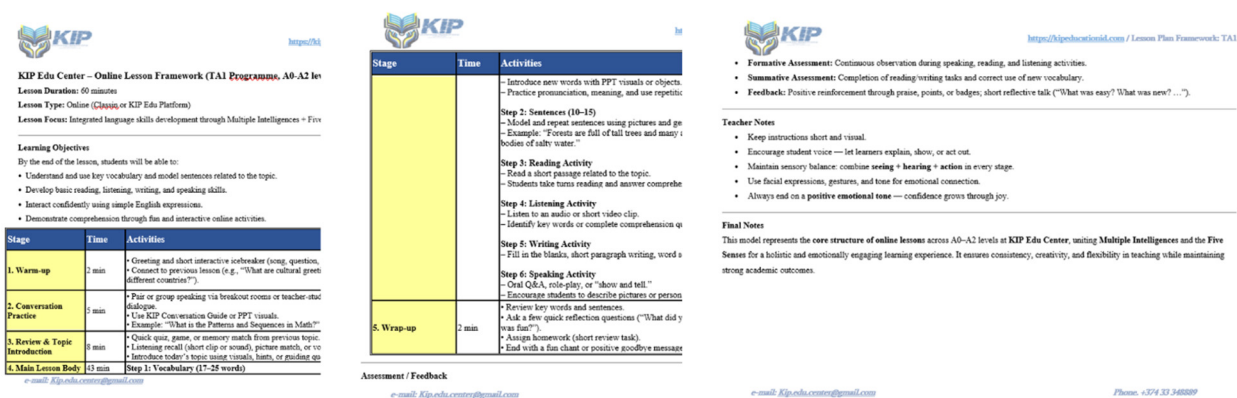


Figure 3. KIP Online Lesson Framework for A0–A2 Learners: Integration of Multiple Intelligences and Multisensory Learning

Figure 3 illustrates how Multiple Intelligences and multisensory learning are incorporated into the KIP online lesson framework for A0–A2 learners. The framework connects instructional activities with varied cognitive strengths and sensory modalities while maintaining a structured progression through the lesson.

5.2 Multiple Intelligences Activation

KIP lessons incorporate activities addressing the eight intelligences described in Gardner's framework. Examples of how these intelligences are operationalized in online instruction are presented below.

Intelligence	Example Activities	Suggested Visual Aid
Linguistic	Storytelling, speaking, and writing tasks	Student writing sample
Logical–Mathematical	Sorting, categorization, and problem-solving	Activity flowchart
Visual–Spatial	Drawing, diagrams, and visual organization	Digital slide example
Musical	Songs, rhythm, and sound-based activities	Audio or music activity
Bodily–Kinesthetic	Movement, acting, and interactive activities	Activity screenshot
Interpersonal	Group discussion, paired work, and collaboration	Group-work diagram
Intrapersonal	Journaling, reflection, and individual response	Reflection worksheet
Naturalistic	Observation and classification activities	Nature-related visual

The integration of these activities provides learners with varied opportunities to engage with educational content while supporting cognitive, social, emotional, and creative development.

6. Integration of Online Teaching Methods

The KIP online pedagogical framework integrates digital teaching methods, experiential learning strategies, and scaffolded lesson design to create an active and developmentally appropriate learning environment. These methods are implemented in combination with the Multiple Intelligences and multisensory principles described in the preceding sections.

Core Online Teaching Methods

The principal methods include:

- **Interactive Multimedia:** Videos, animations, digital slides, and interactive materials are used to present and reinforce concepts through varied modes of representation.
- **Gamification:** Educational games, achievement tracking, and other game-based elements are used to encourage participation and maintain learner interest.
- **Collaborative Learning:** Pair and group activities provide opportunities for communication, peer interaction, cooperation, and shared problem-solving.
- **Experiential Learning:** Art activities, music, practical tasks, demonstrations, and real-world applications allow learners to connect educational content with direct experience.
- **Adaptive Feedback:** EduGuides provide timely and individualized feedback based on learner performance, supporting progression and addressing areas that require additional practice.

These methods are integrated into the structured lesson sequence presented in Section 5. Rather than functioning as independent techniques, they operate together to support active participation, multisensory engagement, skill development, and learner motivation within the online environment.

7. Group Etiquette in Online Learning at KIP Edu Centre

7.1 The Importance of Etiquette in Online Classrooms

Effective online learning requires clear expectations for communication, participation, and interaction. Reduced face-to-face contact, limited non-verbal communication, and technological distractions may affect learner engagement and classroom interaction. Establishing clear behavioral expectations therefore contributes to a supportive and productive online learning environment.

At KIP Edu Center, classroom expectations are adapted according to learners' age, developmental level, instructional objectives, and learning context. The primary goals are respectful communication, meaningful participation, and effective collaboration.

7.2 Core Etiquette Principles

The KIP online classroom is guided by four core principles:

- **Mutual respect:** Students and EduGuides interact respectfully and support an inclusive learning environment.
- **Focused participation:** Learners are encouraged to remain attentive and minimize unnecessary distractions.
- **Equal participation:** Students are provided with opportunities to contribute to discussions and activities.
- **Constructive communication:** Learners are encouraged to express ideas, ask questions, and respond appropriately to others.

These principles support a psychologically safe environment in which learners can participate, communicate, and take intellectual risks without fear of negative judgment.

7.3 Role of EduGuides in Online Classroom Management

EduGuides play an active role in establishing and maintaining a supportive online classroom environment. They:

- model respectful communication and appropriate online behavior;
- clarify and reinforce classroom expectations;
- encourage positive participation;
- monitor learner interaction during activities; and
- adapt behavioral guidance according to lesson objectives and learner needs.

Through this role, EduGuides help maintain a structured, respectful, and supportive environment that facilitates active participation and collaboration.

8. Procedures and Routines in the Online Classroom

Clearly defined procedures and routines help maintain focus, continuity, and instructional coherence in online learning. Consistent routines allow learners to understand expectations, transition smoothly between activities, and participate more confidently in familiar classroom tasks.

At KIP Edu Center, routines are incorporated into lesson design and reinforced through regular instructional practice. EduGuides use concise instructions and consistent cues to support transitions, maintain lesson flow, and reduce unnecessary interruptions.

Key functions of structured routines include:

- providing clear expectations for lesson structure and learner responsibilities;
- supporting smooth transitions between activities;
- reducing uncertainty and interruptions;
- maintaining instructional continuity; and
- promoting effective use of lesson time.

EduGuides play an important role in establishing and reinforcing these routines by modeling expected behaviors, providing timely guidance, and helping learners remain focused on instructional tasks.

Overall, classroom procedures function as a supporting element of the KIP framework by creating a structured, predictable, and supportive online learning environment.

9. Holistic Integration and Case Examples

9.1 Holistic Integration

The KIP online pedagogical framework integrates interactive multimedia, gamified activities, collaborative learning, experiential tasks, adaptive feedback, Multiple Intelligences, and multisensory learning within a structured instructional model.

This integrated approach is designed to make online lessons:

- **Active:** Learners participate in activities that require interaction, creation, practice, and application rather than passive content consumption.
- **Multimodal:** Activities engage different cognitive strengths and sensory modalities through varied forms of representation and participation.
- **Developmentally Appropriate:** Lesson content, activities, and levels of support are adapted to learners' age, developmental stage, and instructional objectives.
- **Skill-Focused:** Language-learning activities integrate speaking, listening, reading, and writing within thematic and meaningful contexts.

The framework therefore positions online education as an interactive learning process in which instructional structure, learner participation, technology, and educator support operate together.

9.2 Case Example 1: K2 Music Section (Ages 7–11) — Musical Instruments

Lesson Focus

The lesson focuses on vocabulary development and functional language related to common musical instruments and their sounds. Music-based activities are used to support receptive and expressive language development.

Instructional Design

Introduction with Visual Materials:

Visual slides present musical instruments together with their names and, where appropriate, sound examples. These materials engage visual-spatial and musical forms of participation while supporting vocabulary recognition and pronunciation.

Interactive Sound and Picture Matching:

Learners match instruments with corresponding sounds or names through an interactive digital activity. The task combines auditory discrimination, visual recognition, and active interaction with the learning materials.

Four-Skill Practice

- **Speaking:** Learners name instruments and describe actions or sounds using simple sentences.
- **Listening:** Learners listen to instrument sounds and identify the corresponding instrument.
- **Reading:** Short descriptive sentences introduce instruments in context.
- **Writing:** Learners write two or three guided sentences about instruments they recognize or prefer (Picture 1).



Picture 1. Musical Instruments

9.3 Case Example 2: A1 Logic and Math Section (Ages 10–13) — Counting Money and Making Change

Lesson Focus

The lesson develops basic financial literacy and vocabulary related to money while providing opportunities to practice counting, calculating totals, and making change.

Instructional Design

Introduction with Demonstration:

The EduGuide introduces coins, bills, and money-related vocabulary using real objects, images, or short demonstrations. Learners observe practical examples of purchasing an item and receiving change.

Interactive Matching Activity:

Learners match images of coins, bills, and shopping items with corresponding vocabulary, such as *coin*, *bill*, *dollar*, *change*, *buy*, *sell*, *total*, *price*, *receipt*, and *spend*.

Hands-On Application:

Learners practice counting money and making change through classroom activities or simulated shopping situations. These activities provide opportunities for practical problem-solving and application of mathematical and language skills.

Four-Skill Practice

- **Speaking:** Learners practice shopping-related language through guided pair activities.
- **Listening:** Learners listen to short shopping situations and identify relevant information.
- **Reading:** Short texts introduce money-related vocabulary and transactions in context.
- **Writing:** Learners complete short written tasks describing a shopping situation and apply relevant vocabulary (Picture 2).



Picture 2. Interactive English Lesson: Counting Money & Making Change

The two case examples illustrate how the KIP framework is operationalized in different subject areas. The first emphasizes the integration of music, vocabulary, and language skills, while the second combines language learning with logical-mathematical reasoning and practical application. Together, they demonstrate how the framework can be adapted to different learning objectives while maintaining its core principles of active participation, multimodal engagement, and integrated skill development.

10. Study Methodology

10.1 Study Design

A controlled pretest-posttest study was conducted to evaluate the effectiveness of the KIP Edu Center holistic online pedagogical framework. The study included 120 learners divided into an intervention group and a control group. The intervention consisted of structured online lessons integrating Multiple Intelligences, multisensory activities, interactive learning materials, and four-skill language instruction.

The intervention lasted eight weeks, with two one-hour sessions per week, for a total of 16 sessions per learner.

10.2 Participants

The study included 120 learners:

- **Intervention group (n = 60):** Learners who participated in KIP Edu Center online lessons incorporating Multiple Intelligences, multisensory learning, interactive activities, and integrated language skills.
- **Control group (n = 60):** Learners who participated in standard online lessons without the structured integration of Multiple Intelligences and multisensory learning.

Participants were drawn from K2 learners aged 7–11 and TA1_A1 learners aged 12–16. The sample included learners with mixed levels of language proficiency and prior online learning experience.

Inclusion criteria included regular attendance, parental consent, and access to a stable internet connection.

Exclusion criteria included learning needs requiring specialized intervention outside the scope of the study.

10.3 Intervention

The KIP intervention incorporated the following components:

- **Multiple Intelligences Activation:** Activities addressing linguistic, logical-mathematical, visual-spatial, musical, bodily-kinesthetic, interpersonal, intrapersonal, and naturalistic intelligences.

- **Multisensory Engagement:** Visual materials such as slides and videos; auditory materials such as songs and stories; tactile activities such as worksheets and crafts; kinesthetic activities such as movement and role-play; and selected olfactory or gustatory activities where appropriate.
- **Four-Skill Language Integration:** Structured practice in speaking, listening, reading, and writing embedded within thematic lessons.
- **Interactive Learning Tools:** Digital games, matching and drag-and-drop activities, story-based tasks, quizzes, and other interactive exercises.

The control group received standard online instruction focused primarily on reading and listening comprehension, with limited use of structured interactive and multisensory activities.

10.4 Data Collection and Assessment Instruments

Pre-test and post-test assessments were used to examine changes across four primary outcome domains:

- **Cognitive Skills Test:** Assessed problem-solving, logical reasoning, and memory retention.
- **Language Skills Assessment:** Evaluated vocabulary, grammar, and four-skill language proficiency.
- **Emotional and Social Engagement Questionnaire:** Assessed motivation, participation, and collaboration.
- **Creativity Test:** Evaluated performance through art, music, and experiential tasks.

Trained observers also rated learner engagement, task completion, and collaboration using standardized rubrics.

The same assessment instruments and scoring criteria were applied at both the pre-test and post-test stages. Scores were converted into percentage scores to facilitate comparison across assessment domains.

10.5 Scoring Procedures

Assessment results were expressed as percentage scores. For each assessment, the obtained score was converted into a percentage of the maximum possible score using the following formula:

$$\text{Percentage Score} = (\text{Obtained Score} / \text{Maximum Possible Score}) \times 100$$

The same scoring procedure was applied at both the pre-test and post-test stages. The resulting percentage scores were used to compare learner performance within and between the intervention and control groups.

10.6 Statistical Analysis

Statistical analyses were conducted using **IBM SPSS Statistics 28**.

The following analyses were performed:

- **Paired-samples t-tests** were used to examine pre-test and post-test differences within groups.
- **Independent-samples t-tests** were used to examine differences between the intervention and control groups.
- **Cohen's d** was calculated to estimate effect sizes.
- The statistical significance level was set at $\alpha = 0.05$.

10.7 Ethical Considerations

The study followed basic ethical principles for research involving children and adolescents:

- parental consent and child assent were obtained;
- participant information was kept confidential and data were anonymized; and
- participants could withdraw from the study at any time without consequences.

11. Results

Table 1 presents the pre-test and post-test percentage scores for the intervention and control groups across four measured domains: vocabulary retention, speaking fluency, problem-solving, and motivation and engagement.

Table 1. Learning Outcomes Comparison Between Intervention and Control Groups

Domain	Intervention Group Pre	Intervention Group Post	Control Group Pre	Control Group Post	p-value	Effect Size (Cohen's d)
Vocabulary Retention	45%	85%	46%	62%	0.004	1.2
Speaking Fluency	50%	78%	51%	63%	0.02	0.9
Problem-Solving	52%	80%	53%	60%	0.03	0.8
Motivation & Engagement	60%	92%	59%	68%	0.001	1.4

Note: Scores represent percentage performance on the reported assessments.

The intervention group showed improvement across all four measured domains from pre-test to post-test. Vocabulary retention increased from 45% to 85%, while speaking fluency increased from 50% to 78%. Problem-solving performance increased from 52% to 80%, and motivation and engagement increased from 60% to 92%.

The control group also demonstrated improvement, although the increases were smaller. Vocabulary retention increased from 46% to 62%, speaking fluency from 51% to 63%, problem-solving from 53% to 60%, and motivation and engagement from 59% to 68%.

The reported statistical results indicate significant differences across the measured outcomes, with *p*-values ranging from 0.001 to 0.03. The reported Cohen's *d* values ranged from 0.8 to 1.4, indicating substantial effect sizes across the four domains.

The largest reported effect size was observed for motivation and engagement ($d = 1.4$), followed by vocabulary retention ($d = 1.2$), speaking fluency ($d = 0.9$), and problem-solving ($d = 0.8$).

12. Discussion

The findings indicate that the KIP Edu Center online pedagogical framework was associated with improvement across all four measured domains: vocabulary retention, speaking fluency, problem-solving, and motivation and engagement. Although the control group also improved, gains were greater in the intervention group across all outcomes.

The largest improvement was observed in motivation and engagement, which increased from 60% to 92% in the intervention group, compared with 59% to 68% in the control group. This finding may be related to the framework's emphasis on interactive activities, learner participation, multisensory engagement, small-group interaction, and supportive EduGuide facilitation.

Vocabulary retention increased from 45% to 85% in the intervention group, compared with 46% to 62% in the control group. The integration of visual and auditory materials, repetition, interactive activities, and contextualized language practice provides multiple opportunities for learners to encounter and apply new vocabulary.

Speaking fluency increased from 50% to 78% in the intervention group, compared with 51% to 63% in the control group. Similarly, problem-solving increased from 52% to 80%, compared with 53% to 60% in the control group. These improvements are consistent with the framework's integration of four-skill language practice, logical activities, problem-based tasks, and experiential learning.

Overall, the findings suggest that effective online education may benefit from combining structured pedagogy, interactive technology, multisensory learning, collaborative activities, and individualized educator support. However, the results should be interpreted cautiously given the study's sample, eight-week intervention period, and methodological limitations.

13. Limitations of the Study

Several limitations should be considered when interpreting the findings.

First, the eight-week intervention limits conclusions regarding the long-term sustainability of the observed outcomes.

Second, the sample consisted of 120 learners from two age groups and may not represent broader populations of children and adolescents learning online.

Third, differences in learners' home environments, including technology access, parental support, and potential distractions, may have influenced participation and performance.

Fourth, the study did not specifically examine learners with diverse or special educational needs, limiting conclusions regarding the applicability of the framework to these populations.

Finally, the study relied on assessment and observational measures implemented within the study context. Future

research should use larger and more diverse samples, longer intervention periods, and more rigorous experimental designs to further examine the effectiveness and generalizability of the framework.

14. Conclusion

This study examined the KIP Edu Center holistic online pedagogical framework, which integrates Multiple Intelligences-informed instruction, multisensory learning, interactive teaching materials, structured lesson design, collaborative activities, and supportive EduGuide facilitation.

The intervention group demonstrated improvements in vocabulary retention, speaking fluency, problem-solving, and motivation and engagement, with greater gains than the control group across all measured outcomes. The case examples further illustrate how the framework can be adapted to different learning objectives while maintaining its core principles of active participation, multimodal engagement, and integrated skill development.

The central contribution of the KIP framework is its integration of structured pedagogy, technology, and learner-centered interaction within the online environment. The findings suggest that such an approach may provide a promising model for engaging and developmentally appropriate online learning for children and adolescents.

Further research involving larger samples, longer intervention periods, and more rigorous experimental designs is needed to establish the effectiveness and broader applicability of the framework.

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Data sharing statement

No additional data are available.

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References

- Armstrong, T. (2009). *Multiple intelligences in the classroom* (3rd ed.). ASCD.
- Bonwell, C. C., & Eison, J. A. (1991). *Active learning: Creating excitement in the classroom*. George Washington University.
- Bransford, J. D., Brown, A. L., & Cocking, R. R. (2000). *How people learn: Brain, mind, experience, and school*. National Academies Press.

- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.
- Deci, E. L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: Human needs and the self-determination of the behavior. *Psychological Inquiry*, 11(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01
- Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. Basic Books.
- Mayer, R. E. (2001). *Multimedia learning*. Cambridge University Press. <https://doi.org/10.1017/CBO9781139164603>
- Moreno, R., & Mayer, R. E. (2007). Interactive multimodal learning environments. *Educational Psychology Review*, 19(3), 309–326. <https://doi.org/10.1007/s10648-007-9047-2>
- Nation, I. S. P., & Newton, J. (2009). *Teaching ESL/EFL listening and speaking*. Routledge. <https://doi.org/10.4324/9780203891704>
- Piaget, J. (1972). *The psychology of the child*. Basic Books.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78. <https://doi.org/10.1037/0003-066X.55.1.68>
- Shams, L., & Seitz, A. R. (2008). Benefits of multisensory learning. *Trends in Cognitive Sciences*, 12(11), 411–417. <https://doi.org/10.1016/j.tics.2008.07.006>
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.