

## Universal Design for Learning in Mongolian Visual Arts Education: Mixed-Methods Evidence from Grades 6–8

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### Abstract

*This study investigates the impact of Universal Design for Learning (UDL)–based instructional design on student engagement, multimodal representation, and creative expression in visual arts classes across Grades 6, 7, and 8 in a private Mongolian school. A total of 169 students participated in UDL-implemented lessons focusing on three culturally grounded themes: Mongolian Ornament (Grade 6), Animal Form Creation (Grade 7), and Artists of Mongolia (Grade 8). Using a mixed-methods approach, data were collected through student surveys, classroom observations, and systematic analysis of student artwork.*

*Quantitative findings indicate that UDL effectiveness increased progressively across grade levels, with the highest scores observed in Grade 8 (4.83/5), followed by Grade 7 (4.45/5) and Grade 6 (4.27/5). Qualitative results further demonstrate that the use of multiple means of representation—such as visual examples, tactile materials, and digital media—enhanced students' comprehension of artistic concepts and cultural symbolism. Similarly, providing flexible options for action and expression supported greater originality, technical experimentation, and confidence in artistic production. Increased engagement was evident through higher participation rates, greater task ownership, and stronger motivation in UDL-based lessons.*

*Overall, the study provides empirical evidence that UDL is an effective pedagogical framework for differentiated and inclusive visual arts education in Mongolia. By accommodating diverse learning preferences and supporting culturally meaningful instruction, UDL promotes deeper artistic understanding and more diverse forms of creative expression. The findings offer practical implications for instructional design, teacher professional development, and policy-level integration aimed at strengthening learner-centered and culturally responsive arts education.*

**Keywords:** Universal Design for Learning (UDL), Multimodal representation; Inclusive education; Visual arts education; Curriculum and instruction; Mongolian general education.

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## 1. Introduction

The need to design culturally meaningful, flexible, and inclusive learning environments in Mongolian visual arts education has become increasingly urgent. Although recent national reforms emphasize equitable access and learner-centered instruction, classroom practice remains largely teacher-directed, limiting opportunities for differentiated representation, engagement, and expression. To address these structural gaps, this study implements the Universal Design for Learning (UDL) framework across Grades 6, 7, and 8 and evaluates its impact on students' engagement, conceptual understanding, and creative performance. The study involved 169 students whose grade-level distribution is presented in **Appendix A**. Lesson structures aligned with UDL's three principles—multiple means of representation, action and expression, and engagement—were adapted by grade level, as detailed in **Appendix B**, while comparative effectiveness scores are reported in **Appendix C**.

UDL has become a central paradigm within inclusive education, grounded in the neuroscientific understanding that learner variability is inherent and that learning barriers arise primarily from instructional design rather than individual deficits [1]. The framework's three neural networks—recognition, strategic, and affective—correspond directly to UDL's principles, offering educators a systematic method for providing flexible, accessible, and culturally responsive learning opportunities [2]. International research shows that instruction designed through these principles enhances autonomy, creative exploration, and meaningful participation among diverse learners [3].

Visual arts education is particularly well aligned with UDL because artistic learning is inherently multimodal, sensory-rich, and expressive. Eisner (2002) notes that the arts engage perceptual, cognitive, and interpretive processes that flourish under flexible and choice-based learning conditions [4]. Empirical studies likewise demonstrate that UDL-based art instruction increases expressive diversity and strengthens collaborative creative engagement [5]. UDL has also shown promise in digital, hybrid, and STEAM contexts, reinforcing its adaptability across modalities [6,7].

Emerging Asian scholarship emphasizes cultural contextualization and teacher preparedness as essential conditions for successful UDL implementation [8-10]. In Mongolia, however, research on UDL remains limited and is concentrated mostly in special and inclusive education. Studies highlight the need for curriculum adaptation, flexible pedagogy, and professional development to support differentiated instruction [11,12]. In arts education, existing Mongolian research addresses creativity and assessment practices but does not empirically examine UDL-based instructional design within classroom implementation contexts [13].

Taken together, the literature reveals a significant gap: despite UDL's global recognition as a transformative framework for inclusive and creative pedagogy, its application within Mongolian visual arts education remains largely unexplored. Responding to this gap, the present study offers one of the first

empirical evaluations of UDL-based instruction in Mongolian general education art classrooms. By focusing on three culturally grounded themes—Mongolian ornament symbolism, animal forms, and modern Mongolian artists—the study examines how UDL influences student engagement, multimodal representation, and artistic expression across different developmental stages.

## 2. Methodology

### 2.1. Research Design

This study employed a quasi-experimental mixed-methods design to evaluate the effectiveness of Universal Design for Learning (UDL) principles in visual arts instruction across Grades 6–8 in a Mongolian general education school. Two instructional conditions were compared:

(1) an **experimental group** receiving UDL-based lessons designed with flexible learning pathways; and (2) a **control group** receiving conventional, teacher-centered instruction.

The intervention spanned **6–8 consecutive weeks**, during which UDL lessons were structured in alignment with the framework's three core principles—multiple means of representation, action and expression, and engagement [14]. Instruction incorporated multimodal inputs, including visual exemplars, tactile materials, motion-based videos, and digital media. Lesson content was grounded in culturally meaningful themes such as Mongolian ornamental symbolism, animal forms, and artists of Mongolia. Lesson design variations across grade levels are presented in **Appendix E**.

### 2.2. Participants

A total of **169 students** from Grades 6–8 participated in the overall study, with **49 students** directly involved in the UDL pilot lessons and the remainder forming the control group for comparative analysis. Participants represented diverse academic abilities, learning preferences, and motivational profiles. The distribution of students by grade level and lesson theme is summarized in **Appendix A**. This heterogeneity was essential for examining how UDL supports learner variability in artistic contexts.

### 2.3. Data Collection Methods

A multimodal data collection strategy was adopted to capture the impact of UDL on learner engagement, creative production, and conceptual understanding. Data sources included:

- **Classroom observations**, documenting instructional responsiveness, behavioral engagement, and task participation;
- **Semi-structured interviews** with teachers and selected students;
- **Artwork analysis**, assessing expressive diversity, compositional development, and cultural interpretation;
- **Formative assessment records** and learner participation logs;
- **Google Form surveys**, measuring students' interest, preferred learning modes, motivation, and perceived engagement.

Using multiple data sources enhanced methodological rigor through data triangulation. Summary themes derived from

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observational and qualitative coding are presented in **Appendix D**.

## 2.4. Data Analysis

A mixed-methods analytical approach was applied:

- **Quantitative analysis** comprised descriptive statistics (means, frequencies) and inferential testing (independent samples t-test) to evaluate differences in engagement and learning outcomes between the UDL and control groups.
- **Qualitative analysis** involved systematic coding of interview transcripts, observation notes, and artwork samples to identify recurring patterns in creative expression, behavioral engagement, and conceptual development.

The integration of both analytic strands allowed for robust interpretation of UDL's pedagogical impact.

## 2.5. Development of the UDL-Based Instructional Model

Drawing on UDL theoretical foundations and preliminary classroom insights, the study developed a localized **Integrated UDL Model for Visual Arts Education**. This model provides structured guidance for:

- flexible representation of artistic content,
- differentiated task design,
- multimodal expression options (e.g., drawing, collage, clay, digital composition),
- interest-driven student choice, and
- formative assessment aligned with UDL principles.

Survey data and student feedback informed iterative refinement of the model to ensure its suitability for broader application within Mongolian visual arts education.

## 3. Findings

The findings of this study indicate that the implementation of Universal Design for Learning (UDL) principles substantially improved students' engagement, creative expression, and conceptual understanding in visual arts classes. Results were derived from comparative analysis of the UDL-based experimental group and the traditionally instructed control group, supported by surveys, classroom observations, and artwork evaluations.

### 3.1. Increased Learner Engagement

Observation data revealed clear improvements in both behavioral and emotional engagement among students who received UDL-based instruction. Compared with the control group, these students participated more actively in discussions, used multimodal resources more frequently—including visual aids, bodily movement, and digital tools—and sustained attention for longer periods during creative tasks. Survey data corroborated these trends: most students identified **visual exemplars, hands-on activities, and choice-driven tasks** as key factors that enhanced their motivation. These patterns align with UDL's principle of **Multiple Means of Engagement**, which supports learner autonomy and interest-based participation [14].

### 3.2. Improvement in Creative Expression

Students' artworks produced under the UDL framework demonstrated greater diversity in **form, technique, symbolic interpretation, use of color and pattern, and compositional complexity**. For instance, in the lesson on *Mongolian Ornamental Patterns*, students in the UDL group offered original reinterpretations of traditional motifs and used a wider range of materials. These patterns indicate that providing multiple pathways for expression fosters creativity—a conclusion consistent with findings by Smith (2019) and Katz (2020) [5,15].

### 3.3. Enhanced Conceptual Understanding

Analysis of student reflections and interview responses showed notable improvement in students' understanding of the **symbolic meanings** of Mongolian patterns, the **interrelationships of artistic elements** such as shape, color, and rhythm, and the **cultural context** embedded in design traditions. Students reported that multimodal representations—including visual displays, videos, and tactile examples—helped them grasp abstract concepts more clearly. This observation closely aligns with UDL's principle of **Multiple Means of Representation**, which provides varied pathways to comprehension [2].

### 3.4. Effectiveness of Flexible Expression Options

Allowing students to select from multiple modes of expression—such as drawing, digital art, paper-cutting, or mixed media—led to increased assignment completion rates, reduced frustration among students who experienced difficulty with traditional drawing tasks, and enhanced confidence in presenting their work. Students in the UDL group also displayed higher levels of self-directed decision-making, choosing tools, themes, and materials based on their strengths and interests. These findings support UDL's principle of **Multiple Means of Action and Expression**, which emphasizes flexibility in how learners demonstrate understanding.

### 3.5. Student Perceptions of UDL Lessons

Survey data from 49 students in the UDL group show strong positive perceptions of the lessons:

- **78%** reported that the lessons were more interesting than traditional art classes;
- **82%** appreciated having choices in materials and task formats;
- **74%** felt more confident expressing ideas visually; and
- **69%** reported improved understanding of Mongolian cultural symbolism.

These responses demonstrate the high degree of learner receptiveness to UDL-based instruction and highlight its potential to enhance cultural understanding and creative literacy in Mongolian visual arts education.

### 3.6. Comparison with the Control Group

In contrast, the control group exhibited stable but conventional performance. Their artworks tended to be uniform in structure, less experimental in technique, and limited to the prescribed medium. Observation notes documented lower levels of verbal participation and fewer student-initiated questions in the control

group. These differences suggest that traditional instruction provides fewer opportunities for differentiation, autonomy, and creative development.

#### 4. Results

This section integrates quantitative survey scores and qualitative observations across Grades 6, 7, and 8. The analysis draws on student feedback, engagement indicators, and multimodal performance samples, with supporting data presented in **Appendices B–D**.

##### 4.1. Overall Performance Across Grade Levels

UDL effectiveness scores demonstrated a progressive increase across grade levels. Grade 6 students reported an average score of **4.27/5**, Grade 7 reported **4.45/5**, and Grade 8 reached the highest score of **4.83/5** (see **Appendix C**). These differences suggest that older students more readily internalized UDL-supported learning strategies due to stronger analytical capacity and greater autonomy.

##### 4.2. Multiple Means of Representation

Students' ability to synthesize textual, visual, auditory, and contextual information reflected clear developmental variation. Grade 8 students achieved the highest representation score (**4.8**), compared with Grades 7 (**4.2**) and 6 (**4.5**) (**Appendix C**). Lesson-specific representation strategies—detailed in **Appendix B**—show that multimodal inputs enhanced conceptual comprehension, particularly among older learners who demonstrated deeper cultural and contextual understanding.

##### 4.3. Multiple Means of Action and Expression

Student outputs revealed increasing diversity and complexity from Grades 6 to 8. Grade 7 students demonstrated strong experimentation, while Grade 8 students produced the most sophisticated multimodal work, integrating posters, essays, drawings, and digital compositions. Expression-form variety scores (**Grade 6: 4.0; Grade 7: 4.5; Grade 8: 5.0**) indicate that expanded choices improved creative expression (**Appendix C**).

##### 4.4. Multiple Means of Engagement

Engagement indicators showed that Grade 7 students displayed the highest behavioral and emotional engagement, benefiting

from the kinesthetic and sensory-rich nature of the *Animal Form Creation task*. Grade 8 exhibited strong autonomous engagement, while Grade 6 students required structured guidance to maintain focus (**Appendix D**). These patterns align with UDL's principle of providing differentiated motivational pathways.

##### 4.5. Qualitative Findings

Qualitative analysis deepened understanding of grade-level learning profiles (themes summarized in **Appendix D**):

- **Grade 6:** Strong enthusiasm for hands-on tasks yet difficulty articulating symbolic meaning, indicating a need for additional scaffolding;
- **Grade 7:** Highest spontaneous creativity, with wide variation in technique, concept, and expressive intent;
- **Grade 8:** Strongest conceptual understanding and analytical interpretation, producing balanced verbal–visual–written outputs.

These findings illustrate that UDL allowed learners at all developmental stages to interact with content through pathways aligned with their cognitive and expressive capacities.

##### 4.6. UDL Implementation Patterns

The UDL implementation matrix (**Appendix B**) shows systematic differentiation by grade level.

Hands-on ornament-based activities supported engagement in Grade 6; kinesthetic, choice-rich tasks drove high engagement in Grade 7; and autonomy-oriented research tasks yielded the strongest conceptual and creative outcomes in Grade 8. This alignment reflects the flexibility of UDL in matching instructional design to learner characteristics.

Below is a professional, publication-ready English translation of your entire Results section. I preserved academic clarity, structure, and terminology suitable for journals such as *Luwai* and other education/arts research outlets.

## Results

### 1. Participant Profile

Grade	Class Group	Number of Participants	Lesson Theme
Grade 8	A, B	69 students	Representatives of Mongolian Visual Art
Grade 6	A, B	49 students	Symbolism of Mongolian Ornaments
Grade 7	A, B	51 students	Creating Animal Forms
<b>Total Participants:</b>		<b>169 students</b>	

## 2. Findings from UDL-Based Lesson Implementation

Grade 8 — *Representatives of Visual Art*

### UDL Opportunities:

- **Multiple means of representation:** images, videos, short

texts, teacher explanations, oral introductions

- **Engagement:** short independent research on a chosen artist, analytical tasks
- **Multiple means of expression:** presentations, posters, essays, oral explanations

### Qualitative Outcomes:

- Stronger conceptual understanding (supported by age-appropriate cognitive maturity)
- High level of independent inquiry
- Consistently strong class engagement

Grade 6 — *Symbolism of Mongolian Ornaments*

### UDL Opportunities:

- **Representation:** real ornament samples, images, videos, visual demonstrations
- **Engagement:** cutting, drawing, color selection
- **Expression:** small creative works, explanation of symbolic meaning

### Qualitative Outcomes:

- Strong sensory engagement; lessons captured students' attention well

- High participation due to hands-on activities
- Some students experienced difficulty interpreting symbolic meaning

Grade 7 — *Creating Animal Forms*

### UDL Opportunities:

- **Representation:** animal movement, form, natural environment
- **Engagement:** drawing, clay modelling, digital art, collage
- **Expression:** original artwork based on a chosen animal

### Qualitative Outcomes:

- High creative participation
- Strong motivation due to flexible choice
- Variation in artwork quality across students

## 3. Comparative Analysis of UDL Principal Implementation

Category	Grade 6 – Ornamental Symbolism	Grade 7 – Animal Forms	Grade 8 – Art Representatives
<b>Participants</b>	49	51	69
<b>Representation</b>	Real ornaments, images, videos — <i>excellent</i>	Animal form/movement — <i>good</i>	Images, videos, texts — <i>excellent</i>
<b>Engagement</b>	Strong due to hands-on tasks	High due to wide choice	Strong cognitive/analytical engagement
<b>Expression</b>	Small crafts, symbolic explanation	Drawing, clay, digital, collage	Presentation, poster, essay, oral report
<b>Lesson Difficulty Level</b>	Transitional stage → good understanding, but difficulty with symbolism	Highest creativity observed	Deep understanding, strong autonomy
<b>Student Engagement</b>	High	High	Moderate–high (more research-focused)
<b>Overall Qualitative Rating</b>	★★★★☆	★★★★☆	★★★★★

## 4. Which Grade Demonstrated the Highest UDL Effectiveness? — Analytical Summary

### Conclusion

Grade 8 demonstrated the highest overall effectiveness in

implementing UDL principles.

Comparative Rating of UDL Outcomes

Indicators	Grade 6	Grade 7	Grade 8
<b>Multiple Means of Representation</b>	4.5 / 5	4.2 / 5	<b>4.8 / 5</b>
<b>Engagement &amp; Participation</b>	4.7 / 5	<b>4.8 / 5</b>	4.6 / 5
<b>Multiple Means of Expression</b>	4.0 / 5	4.5 / 5	<b>5.0 / 5</b>
<b>Depth of Learning (Cognitive understanding &amp; mastery)</b>	3.9 / 5	4.3 / 5	<b>4.9 / 5</b>
<b>Average Score</b>	4.27 / 5	4.45 / 5	<b>4.83 / 5</b>

## 6. Interpretation

Grade 8 students benefited most from multimodal representation and higher-order analytical tasks due to their cognitive maturity. Their ability to conduct independent research and articulate interpretations resulted in the highest overall UDL effectiveness.

## 7. Discussion

The findings of this study demonstrate that the Universal Design for Learning (UDL) framework substantially enhances conceptual clarity, creative freedom, and learner motivation in Mongolian visual arts education. Comparative analysis across grade levels

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shows that students benefited from UDL in developmentally distinct ways, a pattern clearly reflected in the thematic insights presented in **Appendix D**. The progression in effectiveness scores across Grades 6, 7, and 8 (see **Appendix C**) further illustrates how multimodal representation and flexible expression options support increasing autonomy as learners mature.

These results strongly align with international UDL scholarship, which identifies learner engagement, creative diversity, and conceptual depth as key outcomes of flexible and multimodal instruction [2,4,14]. The particularly strong performance of Grade 8 students suggests that older learners possess greater multimodal integration skills, enabling them to synthesize visual, textual, and cultural information more effectively. Meanwhile, the exceptionally high engagement observed in Grade 7 supports UDL's emphasis on affective networks, demonstrating that sensory-rich, movement-based, and choice-driven tasks significantly enhance student motivation. Grade 6 students' challenges in articulating symbolic meaning highlight the importance of age-appropriate scaffolding when introducing culturally embedded visual concepts.

Taken together, the results indicate that UDL enhances visual arts learning through four interconnected mechanisms:

1. **Expanding creative expression** through open-ended, flexible, and multimodal pathways;
2. **Strengthening cultural literacy** via varied representational formats and culturally grounded content;
3. **Promoting learner autonomy** through choice-based and differentiated task structures;
4. **Supporting multisensory engagement** aligned with diverse learning preferences.

These mechanisms are highly relevant within Mongolia's diverse educational landscape, where learner variability is prominent and inclusive, equitable learning opportunities remain a national priority. The differentiated instructional patterns observed in **Appendix B** further confirm that UDL offers a responsive structure capable of adapting to distinct developmental needs and artistic competencies.

The study also presents important pedagogical implications. Effective implementation of UDL requires deliberate planning time for differentiated task design, access to multimodal artistic resources, and assessment approaches that recognize individual learning pathways rather than privileging uniform outputs. These considerations echo existing Mongolian research identifying gaps in teacher preparedness and resource availability for inclusive and flexible instruction [11,12].

Finally, the findings contribute timely evidence to ongoing policy discussions on inclusive and learner-centered education in Mongolia. Given the strong alignment between UDL principles and national reform priorities for equity, creativity, and flexible pedagogy, this study offers practical guidance for integrating UDL-based instructional design into curriculum renewal and

teacher professional development initiatives. By demonstrating its positive impact across grade levels, the research affirms UDL's potential as a transformative framework for advancing culturally meaningful, developmentally responsive, and inclusive visual arts education in Mongolia.

## 8. Implications for Practice

### 1. Curriculum and Lesson Design

UDL-based visual arts instruction should follow a **developmentally sequenced, culturally grounded progression** across Grades 6–8:

- **Grade 6 (Mongolian Ornaments):** Prioritize sensory-rich, hands-on exploration of cultural symbols to build foundational understanding.
- **Grade 7 (Animal Forms):** Emphasize observation, movement, and imagination through high-choice, open-ended creative tasks.
- **Grade 8 (Mongolian Artists):** Deepen learning through research, analysis, and interpretive tasks encouraging personal artistic perspective.

This progression establishes a coherent pathway from **cultural heritage** → **natural observation** → **artistic interpretation**.

UDL's three core principles should be integrated systematically:

- **Representation:** Use real cultural objects (Grade 6), motion-based examples (Grade 7), and artist/contextual analysis (Grade 8).
- **Action & Expression:** Provide consistent choice among drawing, collage, digital art, and oral/written formats.
- **Engagement:** Apply structured discussions, inquiry prompts, and self-assessment routines to sustain motivation.

### 2. Pedagogy and Classroom Practice

Instruction should align with age-appropriate cognitive readiness:

- **Grade 6:** Avoid abstract symbolism; use simple analogies and scaffolded explanation tools (image–word cards).
- **Grade 7:** Expand divergent thinking opportunities through imaginative, open-ended tasks.
- **Grade 8:** Use scaffolded research supports (analysis tables, rubrics) to strengthen conceptual depth.

To ensure equitable participation:

- Provide differentiation through flexible support (extended time, scaffolded vocabulary).
- Maintain flexible output choices so students can engage through their strengths.
- Embed collaborative learning routines (group selection tasks, short peer-feedback cycles) to cultivate constructive critique.

### 3. Assessment and Use of Findings

A **unified UDL-based assessment rubric** across Grades 6–8 should include:

1. Creative originality
2. Coherence of color, form, symbolism (or movement/interpretation)
3. Technical accuracy and composition

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#### 4. Engagement and motivation (including self-assessment)

Regular formative, summative, and self-assessment helps evaluate not only final artwork but also the **quality of reasoning, cultural understanding, and decision-making**.

#### 4. Policy and Learning Environment

Schools should establish a **UDL-based lesson resource bank**, including model lessons, worksheets, rubrics, and differentiated homework options. This resource can support teacher professional development and promote system-wide adoption.

The Grade 6–8 UDL model provides a practical framework for implementing **differentiated, inclusive, and culturally sustaining education**, aligning strongly with Mongolia’s national reform priorities. The grade-level trends (sensory engagement in Grade 6, peak creativity in Grade 7, and conceptual depth in Grade 8) highlight the need for a **developmentally responsive UDL model** in visual arts.

### 9. Conclusion

This study provides one of the first empirical evaluations of Universal Design for Learning (UDL) within Mongolian general education visual arts classrooms and demonstrates that UDL-based instructional design can substantially enhance educational outcomes across Grades 6–8. Analysis of survey data, classroom observations, and student artwork—supported by the structural documentation presented in **Appendices A–E**—shows that UDL improved learner engagement, broadened opportunities for creative expression, deepened cultural understanding, and fostered greater autonomy. Among the grade levels, Grade 8 students achieved the strongest outcomes, reflecting their advanced capacity to integrate multimodal representations and higher-order analytical tasks.

The findings confirm that UDL’s three core principles—multiple means of representation, action and expression, and engagement—effectively respond to variations in learners’ cognitive styles, motivational profiles, and artistic abilities. Students in the experimental group not only demonstrated higher levels of participation but also produced more diverse, original, and interpretively rich artworks. Their strengthened understanding of Mongolian cultural motifs highlights the role of flexible, multimodal pedagogy in cultivating cultural literacy and meaningful artistic interpretation.

Beyond classroom-level outcomes, the study underscores UDL’s relevance to Mongolia’s national priorities for educational reform, particularly in advancing equity, inclusion, and learner-centered instruction. UDL offers a theoretically grounded and practically adaptable framework capable of enhancing the quality and accessibility of arts education at the system level. Achieving broader implementation, however, requires sustained support for teacher professional development, improved access to multimodal learning resources, and deeper integration of flexible instructional design within curriculum policy.

Future research should examine the long-term impact of UDL-based instruction, explore scalability across rural and urban school contexts, and investigate the potential of digital UDL tools to further enrich visual arts learning. Overall, the present study expands scholarly and practical understanding of UDL in the Mongolian context and demonstrates its promise for transforming visual arts education into a more inclusive, engaging, and culturally meaningful learning experience for all students.

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## APPENDIX A.

### Survey Participants

Grade Level	Number of Students	Lesson Theme
Grade 6	49	Mongolian Ornament
Grade 7	51	Animal Form Creation
Grade 8	69	Artists of Mongolia
<b>Total</b>	<b>169</b>	—

**Note.** This table summarizes the distribution of student participants involved in the UDL-based instructional intervention

**Table A1 : Participant Distribution by Grade Level and Lesson Theme**

## APPENDIX B.

### UDL Implementation Table

UDL Principle	Grade 6 – <i>Mongolian Ornament</i>	Grade 7 – <i>Animal Form Creation</i>	Grade 8 – <i>Artists of Mongolia</i>
Multiple Means of Representation	Real ornaments, visuals, videos	Animal form, motion, visuals	Images, videos, texts, artist analysis
Multiple Means of Engagement	High (hands-on)	Very high (choice-rich tasks)	Strong (autonomous exploration)
Multiple Means of Expression	Small artwork + explanation	Drawing, clay, collage, digital	Poster, essay, oral report, digital design
Learning Depth	Moderate	High	Very high
Overall Quality	★★★★☆	★★★★☆	★★★★★

**Note.** Indicators reflect observed instructional processes and student performance across grades.

**Table B1: Implementation of UDL Principles Across Grade Levels**

## APPENDIX C.

### Effectiveness Ratings

Indicator	Grade 6	Grade 7	Grade 8
Representation	4.5	4.2	4.8
Expression	4.0	4.5	5.0
Engagement	4.7	4.8	4.6
Depth of Understanding	3.9	4.3	4.9
<b>Overall Score</b>	<b>4.27</b>	<b>4.45</b>	<b>4.83</b>

**Note.** Scores reflect survey responses and performance assessment across 169 students.

**Table C1: UDL Effectiveness Scores by Grade (5-point scale)**

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**APPENDIX D.**

## Qualitative Themes

Grade Level	Key Observations	Evidence of Learning
Grade 6	Strong engagement; difficulty with symbolism	Effective multisensory participation; emerging cultural understanding
Grade 7	Highest creativity; wide technique variation	Strong experimentation; confident material use
Grade 8	Deep conceptual analysis; multimodal expression	Balanced verbal–visual–written outputs; advanced interpretation
<b>Note.</b> Themes were derived from classroom observation notes and analysis of student artworks		

**Table D1: Themes from Observation and Student Work Analysis****APPENDIX E.**

## Lesson Design Summary

Grade	Representation Strategies	Engagement Strategies	Expression Strategies
6	Ornament visuals, videos, real examples	Hands-on tasks, color selection	Small artwork + symbolic explanation
7	Animal movement videos, shape analysis	Material choice, collaborative tasks	Drawing, clay, collage, digital forms
8	Artist biographies, artwork analysis	Discussion, independent research	Poster, essay, presentation, digital composition
<b>Note.</b> Lesson designs follow the three core UDL principles and were adapted to developmental needs at each grade level.			

**Table E1: UDL-Based Lesson Design Across Grades**

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