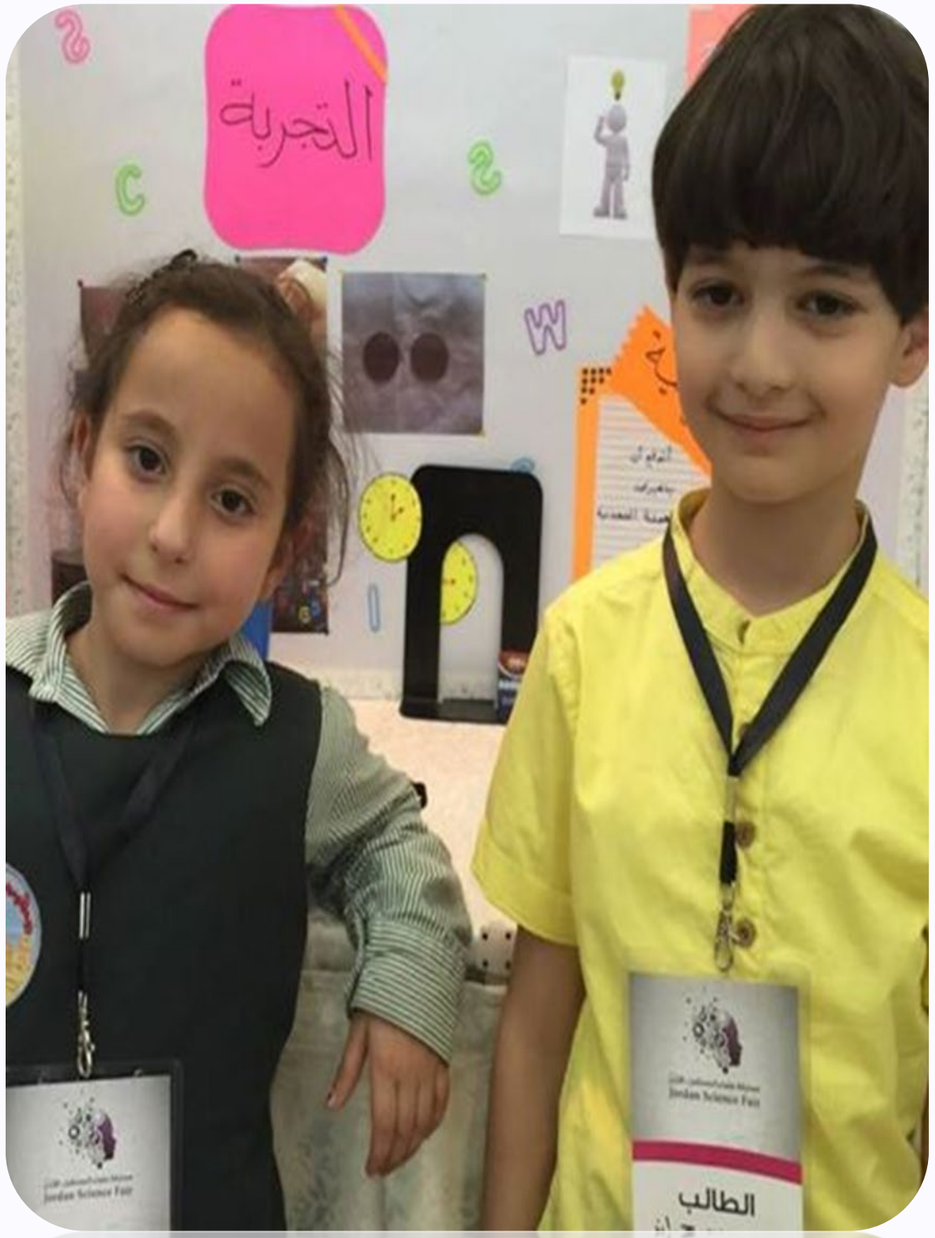

Integrative Educational Projects and Teachers' Educational Practice

An evaluation of best practices in STEAM project-based learning in Jordan's educational context.

By *Innovation for Creativity Development Association (ICDA), Jordan*

Eman Zaitoun, Samar Nazzal, Asma Zaitoun, and Suraya Ayyad

Innovation for Creativity Development Association (ICDA)

ABOUT

A Jordanian nonprofit association established in 2013 and registered with the Ministry of Culture.
It is concerned with the development of the capacities of children and youth through the provision of various academic, technical, social, and educational services, especially in the areas of talent, creativity, and innovation.

Understanding the Study

Research Focus

Investigating STEAM project-based learning influence on teachers' educational practices.

Diverse Sectors

Included finalists from public, private, and UNRWA educational sectors.

Competition Analysis

The **Best Educational Practices Competition** started 2019 and it is held annually since. The 2025 version is the 7th. The ICDA conducts a thorough training for all the participants to develop their knowledge and skills regarding PBL, STEAM education, and teaching by theme.

The projects examined in this research are from the 2023 & 2024 versions.


LUMA StarT Education Best Practices Award ٢٠٢٤
مسابقة الممارسات التعليمية الفضلى – الأردن ٢٠٢٤
مدرسة خولة بنت الأزور الأساسية
لأنه لا يوجد كوكب بديل
فريق المشروع
أهمية المشروع
فكرة المشروع
مراحل المشروع
Certificate
StarT
انذكار
2024
معرض مسابقة علماء المستقبل ولوما ستارت
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Theoretical Framework

Integrative Educational Projects

Bridge disciplinary boundaries and connect to real-world contexts.

STEAM Project-Based Learning

Integrates Science, Technology, Engineering, Arts, and Mathematics.

Teachers' Educational Practices

Teachers serve as pivotal facilitators in student-centered environments.

Professional Development

Critical for equipping educators with necessary skills and knowledge.


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2024
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Research Design Overview

Descriptive-Analytical

Our study used this approach to investigate innovative teaching practices.

Focus

We examined educational projects from teachers across Jordan.

Purpose

To identify exemplary practices in integrative approaches and STEAM Project-Based Learning.


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Methodology

Descriptive-Analytical Approach

Used systematic evaluation to analyze educational projects.

Project Evaluation Tool

Assessed 28 attributes across four key domains using a five-point Likert scale.

Multiple Evaluators

Four evaluators reviewed each project to ensure assessment reliability.


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Evaluation Domains

Project Design & Planning

Assessed structure, objectives, and innovation.

Learning Content & Context

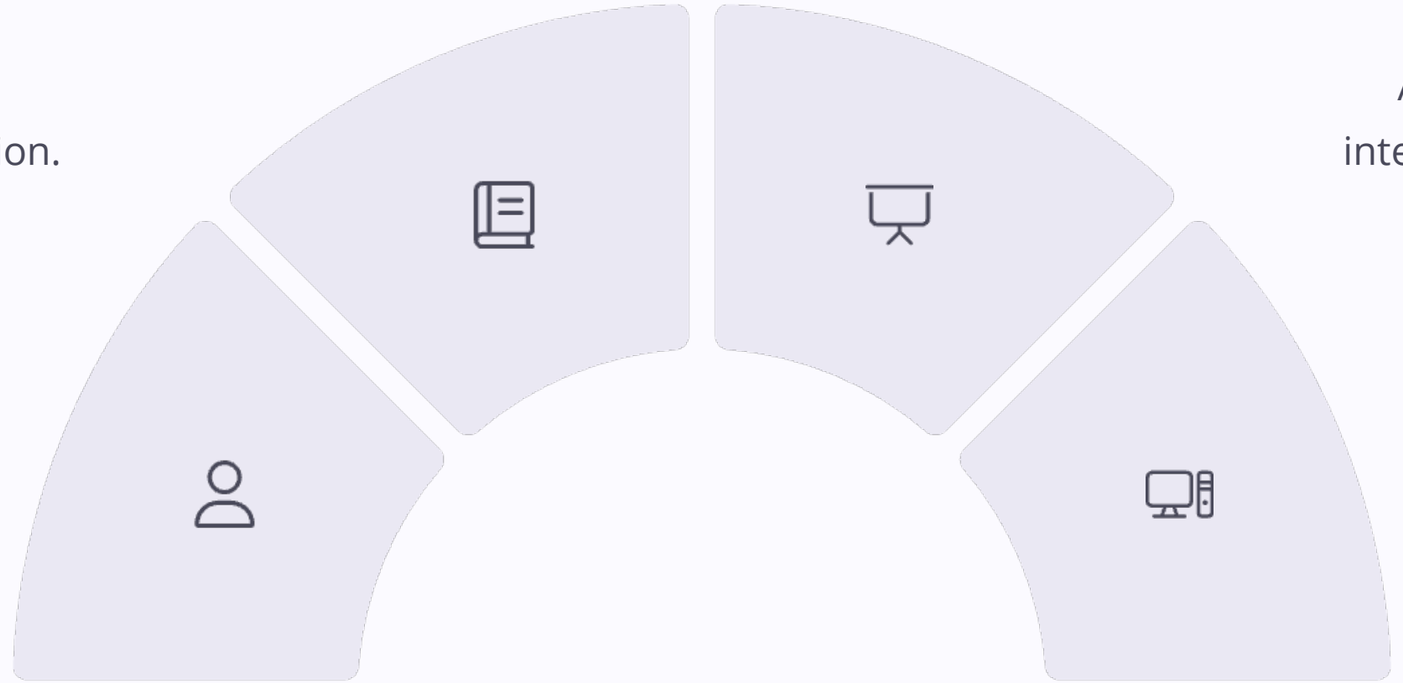
Evaluated relevance, depth, and real-world connections.

Learning Processes & Presentation

Examined teaching methods and student engagement.

Assessment, ICT & Collaboration

Analyzed technology integration and teamwork.



Community and Sample

Target Community

All teachers across public, private, and UNRWA schools in Jordan.

Sample Selection

28 educational projects from the Best Educational Practices Competition of the years 2023 & 2024.

Sampling Method

Purposive sampling focused on exemplary practices.

Quality Assurance

Projects represented pre-screened, high-quality examples.

Data Collection Tool

Project Evaluation Tool

Primary tool designed to assess educational projects systematically.

Administered by four independent evaluators.

Structure

Assessed 28 distinct attributes across 20 items.

Used five-point Likert scale for quantitative assessment.

Validity

Established through expert review during development.

Inter-rater reliability data not available for this evaluation.

Rating Scale

Exceptional Achievement

4.21 – 5.00

Commendable Achievement

3.41 – 4.20

Satisfactory Achievement

2.61 – 3.40

Limited Achievement

1.81 – 2.60

Minimal Achievement

1.00 – 1.80

Analysis Approach

Calculate Central Tendencies

Determined mean scores for items and domains.

Measure Dispersion

Calculated standard deviation to assess variability.

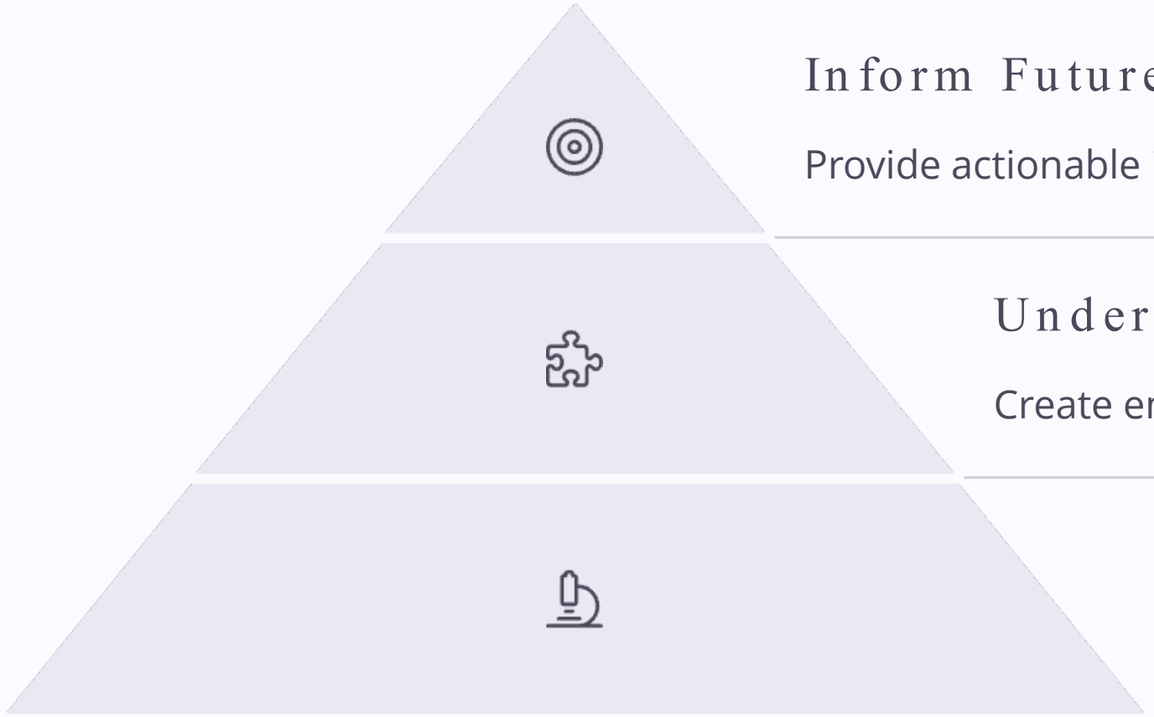
Identify Patterns

Located strengths and weaknesses within projects.

Interpret Findings

Applied predefined criteria to understand results.

Analytical Goals



Inform Future Interventions

Provide actionable insights for educational improvement.

Understand Current Practices

Create empirical basis for educational assessment.

Identify Strengths & Weaknesses

Pinpoint specific areas of success and improvement.

Methodological Strengths

Quality Focus

Examined pre-screened exemplary projects ensuring high-quality data.

Comprehensive Framework

Evaluated 28 attributes across four key educational domains.

Multiple Evaluators

Four independent raters reduced individual assessment bias.

Nuanced Assessment

Five-point scale allowed for detailed performance differentiation.

Methodological Limitations

Sample Size Constraints

Limited to 28 projects, potentially affecting generalizability.

Inter-rater Reliability

Data unavailable for this specific evaluation instance.

Competition Context

Projects submitted for competition may not represent typical practices.

Key Findings

70 .75

Average Score

Projects achieved good overall quality out of 100 possible points.

28

Attributes

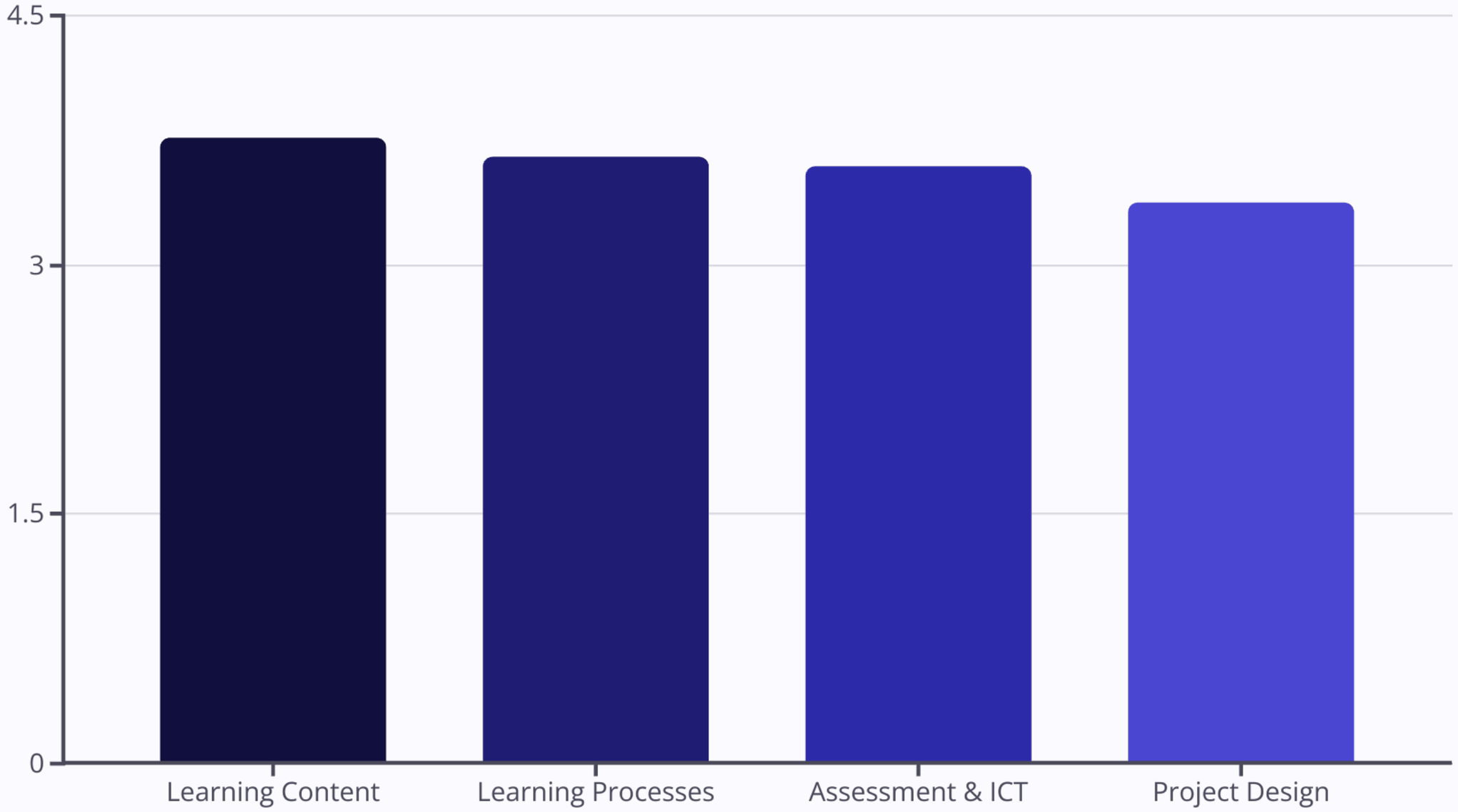
Comprehensive evaluation across multiple educational dimensions.

4

Domains

Key areas assessed in the evaluation framework.

Overall Evaluation Results



Project Design & Planning Analysis

Clear Objectives

Projects demonstrated commendable achievement in establishing clear objectives (3.61).

Well-Planned Activities

Resource planning and activities showed strong performance (3.75).

Innovation Areas

Projects need improvement in STEAM foundations (3.25), real-life relevance (3.11), and originality (3.18).

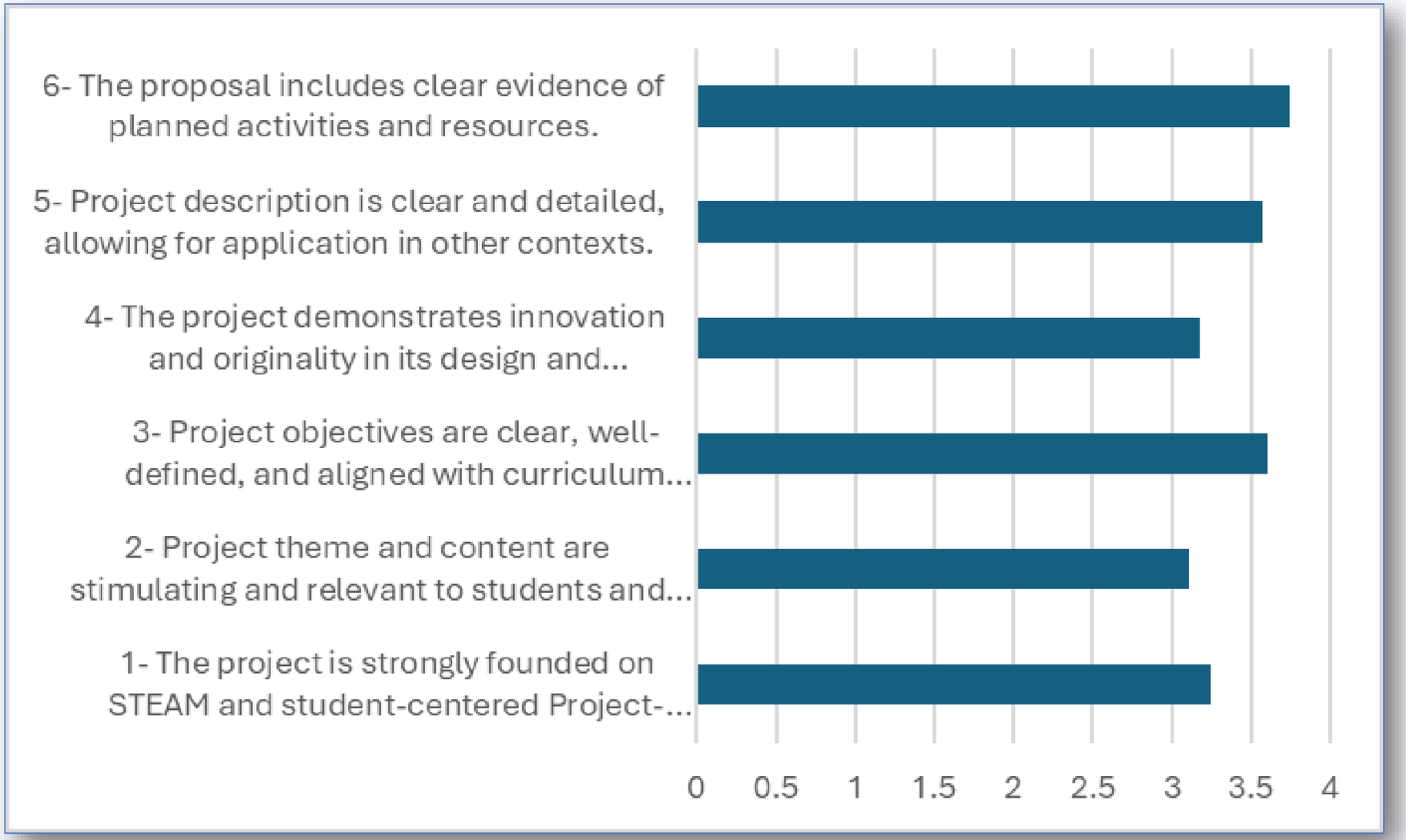


Figure 2. Individual Attributes Within the "Project Design and Planning" Domain

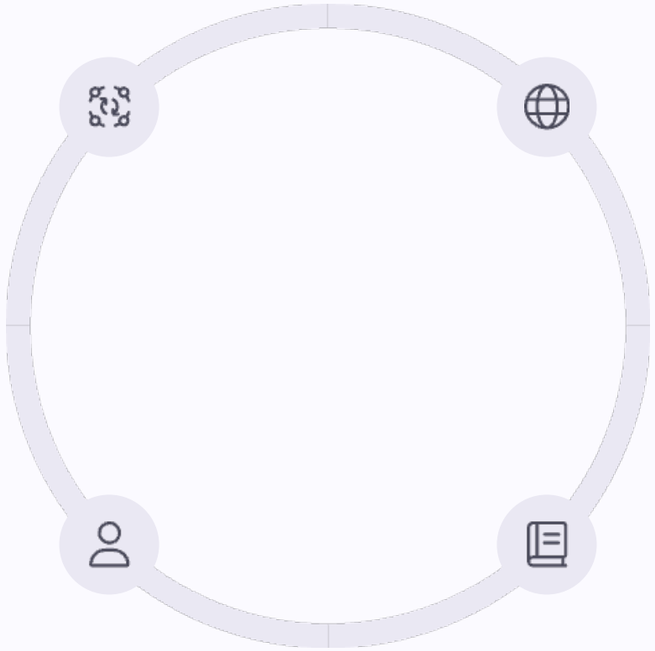
Learning Content & Context Strengths

Community Impact

Projects excelled at positively impacting communities outside classrooms (4.07).

Engagement

High levels of student engagement with meaningful content.



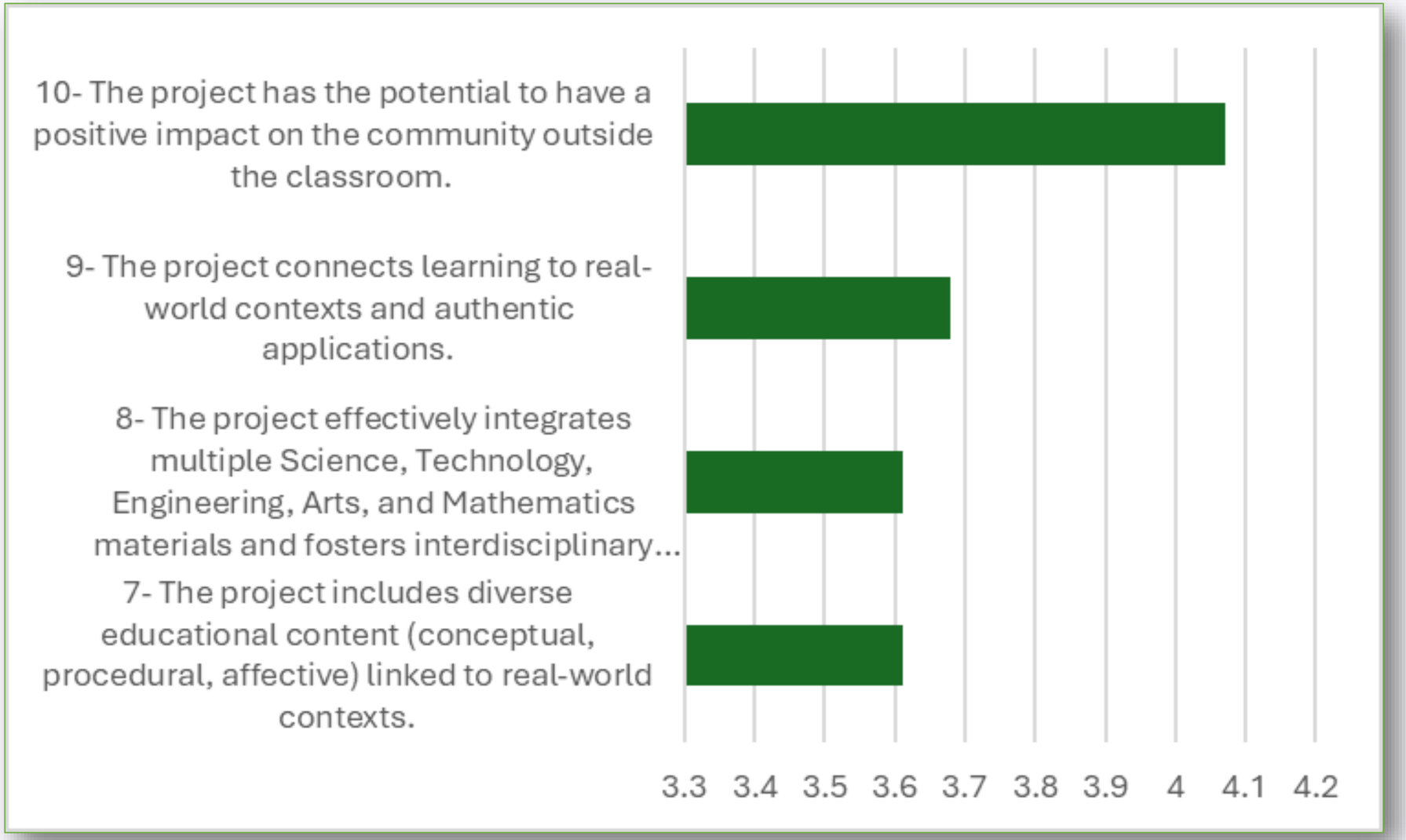
Real-World Connections

Strong links to authentic applications and real-world contexts (3.68).

Content Integration

Effective integration of subject matter across disciplines.

Figure 3. Individual Attributes Within the "Learning Content and Context" Domain



Learning Processes & Presentation

Active Inquiry

Strong student participation in inquiry and problem-solving (3.68).

Solution Design

Students effectively designed, implemented, and evaluated solutions (3.61).

Presentation Quality

Project presentations showed only satisfactory organization and attractiveness (3.29).

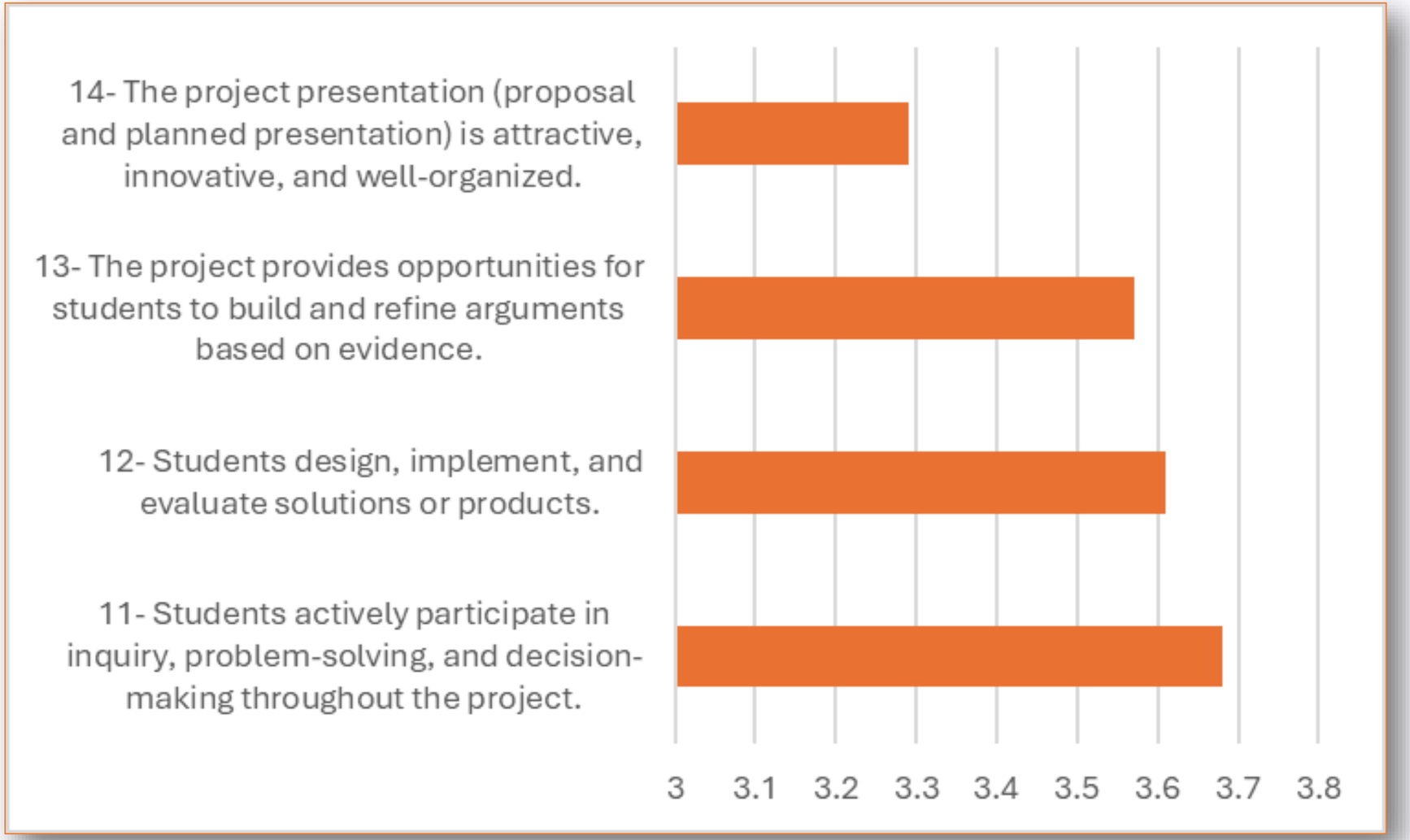


Figure 4. Individual Attributes Within the "Learning Processes and Presentation" Domain

Assessment, ICT & Collaboration

Participation

Active student and teacher participation rated highly (3.89).

Collaboration

Effective teamwork and collaborative approaches (3.61).

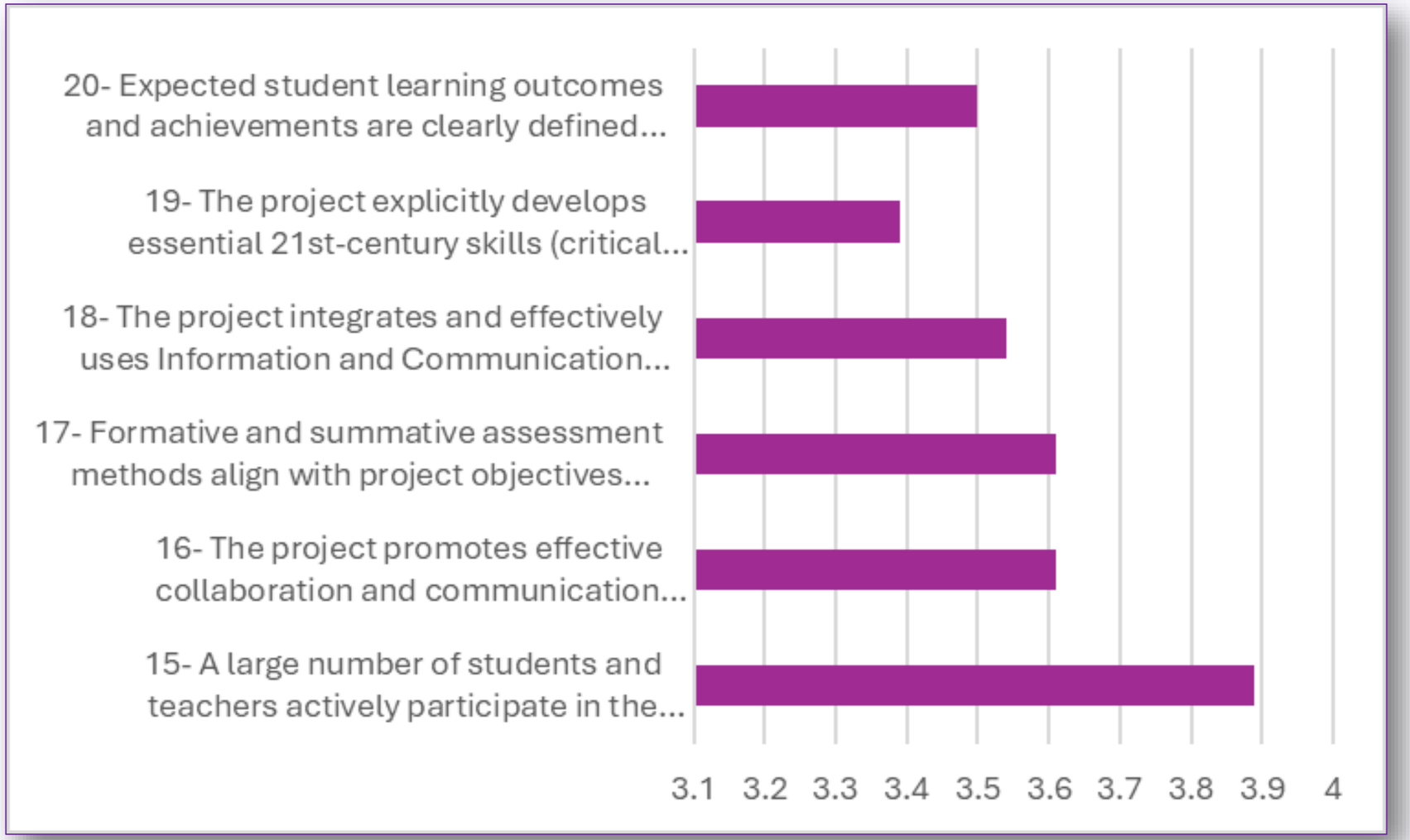
ICT Integration

Commendable but highly variable implementation (3.54, σ=1.10).

21st Century Skills

Only satisfactory development of critical future skills (3.39).

Figure 5. Individual Attributes Within the "Assessment, ICT, and Collaboration" Domain



Project Strengths

Community Impact

Projects demonstrated strong potential for positive influence on local communities.

Student Engagement

Many projects successfully fostered active student participation and interest.

Cross-Disciplinary Approach

Projects showed promising integration across multiple subject areas.

Areas Needing Improvement

STEAM Integration

Strengthen foundational STEAM PBL approaches

Innovation

Enhance originality in project design

ICT Consistency

Standardize technology integration

21st Century Skills

Explicitly develop and measure future-ready abilities

Recommendations

Professional Development

Prioritize in-depth training on STEAM PBL methodologies and innovative design.

Incentivize Innovation

Refine competition guidelines to reward originality and 21st-century skills.

ICT Guidelines

Establish comprehensive standards for effective technology integration.

- Enhance pedagogical design through targeted professional development.
- Standardize ICT applications across educational sectors.
- Foster innovation in project themes and approaches.
- Strengthen connections between classroom projects and community needs.

Future Research Directions

ICT Variability Factors

Explore reasons behind inconsistent technology integration across projects.

Longitudinal Impact

Assess long-term effects on student outcomes and teacher practices.

Implementation Optimization

Identify best practices for maximizing effectiveness of integrative approaches.

SCAN ME

Thank you for listening!

Innovation for Creativity Development Association (ICDA), Jordan