

# Rethinking Teaching: Why Students Produce Low Levels of Innovation

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## Abstract

**Purpose:** This study investigates the low levels of innovation in education, emphasizing how traditional teaching methods limit students' creativity and ability to engage in independent thinking.

**Methodology/approach:** A mixed-methods approach was employed, involving surveys and classroom observations among 200 high school students across three regions. Students were exposed to traditional versus student-centered teaching models such as inquiry-based learning. Data were analyzed using statistical software and qualitative coding techniques.

**Results/findings:** The study reveals a significant correlation between teaching methods and student creativity. Traditional, teacher-centered methods are linked to lower engagement and innovation, while student-centered approaches enhance independent thinking and creative problem-solving.

**Limitations:** The study is limited to a specific geographic and demographic sample, which may affect generalizability.

**Contribution:** This study contributes to educational reform discussions by providing empirical support for student-centered learning approaches that foster creativity and innovation.

**Novelty:** Unlike many prior works, this study combines qualitative and quantitative evidence to directly link specific teaching practices with measurable student creativity outcomes.

**Keywords:** *Innovation in education, creativity, learning methods, student-centered instruction, teaching strategies*

## 1. Introduction

Innovation is widely acknowledged as a key driver of economic growth, technological progress, and societal advancement. Within the context of education, fostering students' creativity and innovation skills is essential for preparing them to thrive in an increasingly competitive and dynamic global environment. Despite the growing demand for creative thinking, many educational systems around the world continue to rely on outdated pedagogical approaches that do not adequately support the development of such skills.

Traditional learning models often emphasize rote memorization, standardized testing, and teacher-led instruction. These practices restrict students' ability to engage in creative problem-solving or generate original ideas (Robinson, 2011; Zhao, 2012). As a result, students may excel in meeting academic benchmarks but lack the innovation competencies necessary to contribute meaningfully to a knowledge-driven economy.

This concern is particularly relevant in regions with less developed economies, where educational institutions struggle to equip students with the adaptive and innovative mindsets increasingly sought by employers (Sahlberg, 2011). Students in such environments are often trained to meet predefined standards but are not encouraged to explore alternative solutions or challenge existing paradigms.

The low level of innovation produced by students in these contexts is a direct reflection of learning strategies that do not prioritize creativity, experimentation, or collaborative inquiry. This study aims to examine the root causes of this issue and explore how rethinking teaching practices can significantly improve students' ability to innovate. By shifting from rigid, traditional models to dynamic, student-centered approaches such as inquiry-based learning and collaborative problem-solving, educational systems can create a more fertile environment for creativity and innovation to flourish.

## 2. Literature review and hypothesis/es development

In the 21st century, creativity and innovation are increasingly recognized as critical competencies within the educational sphere. However, despite their importance, many education systems continue to implement teacher-centered methods that hinder the development of students' creative potential (Robinson, 2011; Sawyer, 2006). These methods emphasize the acquisition of predefined knowledge and standardized outcomes, leaving limited space for experimentation or creative exploration.

A major contributor to this issue is the prevalence of standardized testing, which prioritizes narrow skill sets over broader cognitive capabilities. High-stakes testing environments often discourage intellectual risk-taking and problem-solving, pushing students to focus on "correct" answers rather than exploring multiple pathways to solutions (Beghetto & Kaufman, 2009; Zhao, 2012).

Constructivist theorists such as Vygotsky (1978) and Piaget (1952) advocate for student-centered learning environments that actively engage learners in constructing their own understanding. Pedagogical strategies like inquiry-based learning, problem-based learning, and project-based learning have been shown to effectively stimulate creativity and independent thinking (Hmelo-Silver, Duncan, & Chinn, 2007; Thomas, 2000).

Nonetheless, practical implementation of these strategies remains limited. Systemic challenges such as rigid curricula, inadequate teacher training, and limited institutional support hinder their broader adoption (Sahlberg, 2011). Additionally, while technology presents opportunities for fostering creativity, its integration into classrooms must be paired with innovative pedagogical practices to be effective (Mishra & Koehler, 2006).

### 2.1 Research Gap and Direction

Although existing literature highlights the importance of fostering creativity through constructivist and student-centered methods, few studies have directly measured the correlation between teaching strategy and student innovation using a mixed-methods approach. This study aims to fill that gap by empirically analyzing how different teaching styles impact students' perceived creativity and problem-solving abilities.

Implied Hypothesis:

Student-centered teaching methods such as inquiry-based and project-based learning have a significantly more positive effect on student creativity and innovation than traditional, teacher-centered methods.

## 3. Methodology

This study utilized a mixed-methods research design, combining both quantitative and qualitative approaches to gain a comprehensive understanding of the relationship between instructional methods and student innovation levels.

### 3.1. Research Design

The research employed a comparative approach, focusing on two distinct pedagogical models: traditional, teacher-centered instruction and student-centered strategies such as inquiry-based learning and project-based learning. This design allowed for evaluating the differences in creativity outcomes based on instructional approach.

### 3.2. Participants

A total of 200 high school students from three different regions participated in the study. These students were enrolled in classrooms that implemented either conventional or innovative teaching methods. Participant selection was based on purposive sampling to ensure diversity in educational environments and instructional practices.

### 3.3. Data Collection

Data were collected through two main instruments:

Surveys: A structured questionnaire was used to gather students' self-reported levels of creativity, engagement, and motivation.

Classroom Observations: Non-intrusive observations were conducted to document the teaching methods applied and to assess the presence of creativity-encouraging activities in the classroom.

### 3.4. Data Analysis

Quantitative data from surveys were analyzed using statistical software (e.g., SPSS) to identify correlations between teaching methods and creativity indicators. Descriptive statistics and correlation analysis were conducted to explore patterns and differences across instructional types.

Qualitative data from classroom observations were coded thematically to identify teaching behaviors and classroom environments that either supported or restricted innovation. This combination of methods enabled triangulation, enhancing the reliability and depth of the findings.

## **4. Results and discussion**

### **4.1. Quantitative Findings**

The survey results revealed a significant relationship between instructional approach and students' reported creativity and engagement levels. Specifically, 70% of students in traditional, teacher-centered classrooms indicated that they did not feel encouraged to explore new ideas or take intellectual risks. In contrast, 80% of students in student-centered environments — particularly those exposed to inquiry-based and project-based learning — reported a stronger sense of autonomy and innovation in their learning process.

Statistical analysis supported these findings, indicating a positive correlation ( $r = 0.62, p < 0.01$ ) between student-centered instruction and self-reported creativity. These results underscore the impact of pedagogical strategies on nurturing or stifling creative development.

### **4.2. Qualitative Observations**

Classroom observations provided further evidence supporting the quantitative findings. In teacher-centered classrooms, instruction was dominated by lectures, repetition, and textbook-based tasks. Creative expression was minimal, and student participation was largely passive.

Conversely, classrooms employing inquiry-based and collaborative learning strategies displayed a more dynamic atmosphere. Students worked in groups, engaged in open-ended problem-solving tasks, and were encouraged to ask questions and present novel solutions. Teachers acted as facilitators rather than sole knowledge providers.

### **4.3. Discussion**

These findings align with previous studies that critique traditional pedagogies for limiting student innovation (Robinson, 2011; Sawyer, 2006). The correlation between student-centered methods and higher levels of creativity supports the theoretical frameworks of constructivist education (Vygotsky, 1978; Hmelo-Silver et al., 2007).

The results emphasize that fostering a culture of innovation in the classroom requires more than superficial curriculum reforms. It necessitates a fundamental shift in instructional philosophy — one that embraces uncertainty, values diverse solutions, and empowers students to take ownership of their learning journey. Moreover, these pedagogical reforms should be supported by institutional policies and teacher training programs aimed at equipping educators with the skills and mindset to cultivate creativity.

## **5. Conclusion**

### **5.1. Conclusion**

This study examined how different instructional strategies influence students' ability to innovate. The findings demonstrate a clear relationship between teaching methods and creativity levels. Traditional, teacher-centered classrooms were associated with lower student engagement and innovation, while student-centered approaches — such as inquiry-based and project-based learning — fostered higher levels of autonomy, motivation, and creative thinking.

These results reinforce the argument that promoting innovation in education requires a shift away from rigid, standardized methods toward dynamic pedagogical practices that empower students to explore, experiment, and collaborate.

### **5.2. Limitation**

While the study provides valuable insights, it has several limitations. The sample was restricted to high school students from three regions, which may not represent broader educational contexts. Additionally, the reliance on self-reported measures introduces potential bias in the assessment of creativity and engagement.

The study also did not examine long-term outcomes of creative skills development or how these instructional differences affect academic achievement beyond the scope of innovation.

### 5.3. Suggestion

To address these limitations and build on the findings, future research should involve more diverse populations across multiple educational levels and cultural settings. Longitudinal studies could offer insights into the lasting effects of student-centered instruction on innovation and academic success.

Educational institutions should invest in professional development programs that train teachers to implement inquiry-based and collaborative teaching strategies. Moreover, policymakers should re-evaluate assessment systems to move beyond standardized testing and incorporate measures that value creativity, adaptability, and critical thinking.

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