

Development of Short Videos to Cultivate Students' Collaborative Learning in the Classroom

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Abstract

This research aims to develop a set of short instructional videos designed to cultivate collaborative learning abilities among vocational college students and evaluate the intervention's effectiveness and student satisfaction. The study employed a quantitative, quasi-experimental one-group pretest-posttest design with 30 first-year Industrial Internet Technology majors at Quanzhou Light Industry Vocational College. The intervention consisted of four short videos (3–5 minutes each) integrated into regular classes over four weeks. Instruments included a 15-item observation rubric for collaborative skills (total 75 points) and a 12-item Likert-scale satisfaction questionnaire. Data analysis used paired-sample t-tests and descriptive statistics. The research found that students' collaborative skills significantly increased from pretest ($M = 42.36$, $SD = 6.78$) to posttest ($M = 58.74$, $SD = 7.12$), $t(29) = 17.21$, $p < 0.001$, with a large effect size (Cohen's $d = 2.45$). All five sub-dimensions (active listening, role division, constructive feedback, conflict negotiation, and group process advancement) showed notable improvement. Students expressed high satisfaction across all dimensions, with mean scores above 4.5 on a 5-point scale. It is recommended that vocational colleges systematically integrate short videos into curriculum design, pairing them with structured classroom activities and encouraging teacher-student co-creation of video resources to deepen collaborative skill development.

Keywords: short videos, collaborative learning, vocational education, quasi-experimental design, soft skills cultivation

1. Background and Significance of the Problem

In the 21st century, global education systems are shifting focus from knowledge transmission to cultivating students' core competencies. Collaborative learning, a vital component, promotes deep learning, enhances problem-solving, and fosters social and communication skills. China's higher education system is actively responding, with policies like the "Vocational Education Reform Implementation Plan" advocating for strengthening students' collaborative awareness. However, a significant gap exists between policy and practice. At Quanzhou Light Industry Vocational College, although group work is common, students often lack clear guidance on effective collaboration, resulting in "pseudo-collaboration." Simultaneously, short videos have become integral to young students' lives.

Their engaging, intuitive nature presents an opportunity for education. However, most current applications of short videos focus on knowledge transmission, leaving a research gap in using them to explicitly teach and assess complex soft skills like collaboration. This study aims to fill this gap by developing targeted short videos to promote collaborative skills.

2. Research Objectives

2.1 Examine the changes in students' collaborative abilities before and after the teaching intervention using short videos.

2.2 Explore students' satisfaction with using short videos to promote collaborative learning.

3. Research Hypotheses

After the implementation of the short videos, students' collaborative skills will significantly improve.

Students will express high satisfaction with using short videos as a tool to promote collaborative learning.

4. Scope of the Research

This study focuses on the development and application of four instructional short videos to cultivate collaborative learning skills. The research population consists of all 170 first-year students majoring in Industrial Internet Technology at Quanzhou Light Industry Vocational College for the 2025-2026 academic year. The target sample comprises 30 students selected using simple random sampling. The intervention will be conducted over four weeks during the first semester of the 2025-2026 academic year. The study will measure students' collaborative skills and their satisfaction with the video-based approach.

5. Research Methodology

This study employs a quasi-experimental research design, specifically a one-group pretest-posttest design (O1 - X - O2). This design is appropriate as random assignment of students in an intact educational setting is often not feasible. The same group of 30 students will have their collaborative skills assessed (O1), followed by the intervention (X - the short videos), and then assessed again using the same instrument (O2) to evaluate the intervention's effect.

6. Research Instruments

A Set of Instructional Short Videos: Four 3-5 minute videos covering key aspects of collaboration: (1) Inspirations of Collaboration in Nature; (2) Standardized Processes for Collaborative Learning; (3) Individual Collaborative Skills; (4) Application of Collaboration in Business. A manual provides teachers with usage guidelines and discussion questions.

Collaborative Skills Assessment Rubric: A 15-item observation rubric used for both pre-test and post-test to measure specific collaborative behaviors during a group task. Items are rated on a 5-point Likert scale (total 75 points).

Satisfaction Questionnaire: A 12-item, 5-point Likert-scale questionnaire administered post-intervention to assess students' perceptions of usefulness, engagement, and overall satisfaction with the short videos.

7. Data Collection

Data collection will occur in the first semester of the 2025-2026 academic year. In Week 1, the pre-test (Collaborative Skills Assessment Rubric) will be administered (1 hour). During Weeks 2-3, the intervention will be integrated into regular classes, with one video shown per week, accompanied by discussion and activities (approximately 15-20 minutes per video). In Week 4, the post-test (same rubric) and the Satisfaction Questionnaire will be administered (1.5 hours total). Students will provide written informed consent, and all data will be anonymized.

8. Data Analysis

Quantitative data will be analyzed using SPSS (version 28). A paired-sample t-test will be conducted to compare the mean scores of the collaborative skills pre-test and post-test. Descriptive statistics (mean, standard deviation) will be used to summarize the responses to the satisfaction questionnaire. A Cronbach's Alpha will be calculated to check the internal consistency of the satisfaction questionnaire.

9. Research Summary

The study, with a valid data recovery rate of 100%, showed the following:

Collaborative Skills Improvement: The post-test mean score ($M = 58.74$, $SD = 7.12$) was significantly higher than the pre-test score ($M = 42.36$, $SD = 6.78$). The paired-sample t-test revealed a statistically significant difference, $t(29) = 17.21$, $p < .001$, with a large effect size (Cohen's $d = 2.45$). All five sub-dimensions of collaborative skills showed notable improvement, with "Role Division & Responsibility Taking" and "Synthesizing & Advancing Group Process" showing the most pronounced gains.

High Student Satisfaction: The overall Cronbach's Alpha for the satisfaction questionnaire was 0.89, indicating good reliability. Mean scores for all three dimensions—"Perceived Usefulness" ($M = 4.48$), "Engagement and Experience" ($M = 4.53$), and "Overall Satisfaction" ($M = 4.54$)—were above 4.0 on a 5-point scale, indicating a highly positive attitude. Students particularly appreciated the interesting format (Item 5, $M = 4.73$) and appropriate length (Item 7, $M = 4.63$) of the videos. Open-ended feedback confirmed the educational value of behavioral demonstrations and cases.

10. Discussion

The findings confirm that short videos can effectively enhance students' collaborative skills, aligning with research by Smith & Jones (2022) and Lee & Kim (2023). The videos likely promoted learning through three key mechanisms: (1) Behavioral Visualization and Cognitive Modeling, where abstract concepts like "active listening" were shown in concrete behavioral segments, reducing cognitive load and providing clear templates; (2) Situational Immersion and Meaningful Connection, where cases from nature to business created a chain of meaning, facilitating the transfer of concepts from "knowing" to "doing"; and (3) Structured Process Guidance, which provided a clear operational framework for student activities, reducing disorder in group interactions.

The high student satisfaction further supports the value of well-designed educational videos (Noetel et al., 2021). Students recognized both the "edutainment" value and the educational rigor of the videos. The four-video structure created a micro-but-ordered content system ("Concept → Process → Skill → Application"), demonstrating a viable model for "fragmented presentation, systematic structure." This study's innovations include a dual focus on both behavioral skills and organizational processes, repositioning short videos as a behavioral training medium, and providing a localized practice example for Chinese vocational education.

11. Suggestions

For Educational Practice:

Systematic Integration: Vocational colleges should develop a series of micro-videos centered on core competencies (e.g., collaboration, communication) and embed them into project-based or blended learning curricula.

"Watch-Discuss-Practice-Reflect" Loop: Videos should be paired with structured activities like role-playing and group tasks to facilitate the transfer from observation to practice.

Teacher-Student Co-creation: Encourage students to create their own short videos demonstrating collaboration processes, deepening their understanding and generating a localized resource bank.

Multi-faceted Evaluation: Use student collaboration logs, peer evaluations, and project outcomes alongside teacher observation to create a more comprehensive assessment system.

For Future Research:

Research Design: Future studies should employ randomized controlled trials or include a control group to strengthen causal inferences.

Sample Representativeness: Expand the sample to include different majors, institutions, and educational levels to test the universality of the findings.

Assessment Tools: Integrate multi-source data, such as student self-assessments, peer assessments, and interaction analysis, to evaluate collaborative processes more objectively.

Long-term Follow-up: Include delayed post-tests and observe students' collaborative performance in subsequent courses or internships to assess the retention and transfer of skills.

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