

A Study on the Learning Motivation and Learning Outcomes of Short-Form Videos Into the Design Cluster of Vocational High School

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Abstract

The purpose of this study was to investigate the integration of short-form videos into practice-oriented courses in the design cluster of a vocational high school and to analyze their relationship with students' learning motivation and learning outcomes. This study adopted an experimental research design, and the participants were 41 students from the design cluster of a vocational high school in Taiwan. The study produced short-form instructional videos for the professional subject Principles of Form, with the thematic unit of Art and Craft Movement, which included three components: "historical background," "design concepts," and "representative figures." The videos were integrated into classroom instruction and implemented prior to the evaluation of learning outcomes, with a questionnaire based on the ARCS motivation model administered to measure students' learning motivation. Data were analyzed using descriptive statistics, paired-sample t-tests, one-way ANOVA, and Pearson correlation analysis. The results indicated that students demonstrated a certain level of learning motivation toward the integration of short-form videos into the course, and their learning outcomes also showed improvement; however, no significant correlation was found between learning motivation and learning outcomes.

Keywords: short-form videos, design cluster of vocational high school, learning motivation, learning outcomes

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Introduction

Background

With the rise of social media, the modes of information dissemination have shifted toward immediacy, visualization, and high-level condensation. Short-form videos, characterized by their brevity, high appeal, and fragmented content, have gradually become one of the primary channels through which the younger generation accesses digital content. The multisensory stimulation and instant feedback offered by such media align with people's preferences for information consumption. Compared with traditional sources such as print materials, textbooks, and online courses, individuals now tend to rely more on short-form videos as a means of information seeking. This tendency is attributed to the intuitive, sequential, and replayable features of short-form videos, which cater to the growing dependence on real-time learning resources (Garcia et al., 2022).

In the design cluster of Taiwan's vocational high schools, most professional courses still rely on traditional face-to-face instruction, chalkboard teaching, and static visual-textual materials. These approaches typically emphasize theoretical exposition and aesthetic analysis, which can easily lead to student fatigue and frustration. Among the core subjects of the design cluster, the Principles of Form course covers knowledge areas such as the history of form, stylistic evolution, and design vocabulary. In particular, the unit on Form and Culture requires students to comprehend the developmental trajectory of form from the Arts and Crafts Movement to Postmodernism. This unit serves as a crucial foundation for cultivating artistic perception and design literacy. However, due to its extensive content and memory demands, it is often difficult to stimulate student motivation. If short-form videos are integrated as supplementary teaching materials, the use of dynamic imagery and narrative styles may reinforce the delivery of key course concepts, thereby enhancing students' learning motivation and learning outcomes for this unit.

Purposes

Based on the aforementioned background and motivation, the specific purposes of this study are as follows:

1. To explore the impact of short-form videos on the learning motivation of students in the design cluster of vocational high schools in Taiwan.
2. To explore the impact of short-form videos on the learning outcomes of students in the design cluster of vocational high schools in Taiwan.
3. To explore the relationship between learning motivation and learning outcomes in the context of short-form video integration for students in the design cluster of vocational high schools in Taiwan.

Literature Review

Current Development of Short-Form Videos

Short-form video, as an emerging form of social media expression, differs from traditional long-form videos in that its duration generally ranges from 5 seconds to 5 minutes. It is characterized by simplified production processes, low production costs, and content that is often refined and diverse, making it well-suited to the fast-paced lifestyles of contemporary users (Yani et al., 2019). These videos are ideal for viewing during fragmented periods such as

commuting or short breaks and have been extensively developed on major digital video platforms. Short-form videos have not only transformed users' media consumption habits but have also driven platforms to develop algorithm-driven personalized recommendation systems aimed at increasing user engagement and interaction. In recent years, with the diversification of platform content and the transformation of user habits, short-form videos, which were originally dominated by entertainment purposes, have gradually been applied in the field of education. Characterized by brevity, compact narratives, and strong visual stimulation, short-form videos help enhance students' attention and content retention, thereby becoming an emerging tool for digital instruction.

The ARCS Motivation Model

Digital learning and self-directed learning have increasingly become prevalent trends in contemporary educational contexts. Within multimedia-rich and fragmented information environments, how to effectively stimulate and sustain learners' motivation has become a critical issue for educators. In 1984, Keller proposed the ARCS Motivation Model, which consists of four key components: Attention, which aims to capture learners' focus and stimulate their interest and curiosity in the content; Relevance, which aligns the learning material with learners' needs and goals, fostering positive learning attitudes; Confidence, which helps learners believe in their ability to accomplish tasks and master the keys to success; and Satisfaction, which enhances learners' sense of achievement through positive feedback and rewards (Keller, 1987). Short-form video instruction, with its concise content, fast-paced rhythm, and strong visual appeal, aligns well with the digital habits of today's learners. When combined with the multifaceted ARCS motivation model, it can more effectively capture learners' interest, increase engagement, and enhance learning involvement. By applying this model, educators can observe changes in learners' motivation and learning responses during the short-form video experience, thereby adjusting instructional content and pacing to improve teaching quality and learning outcomes.

Learning Outcomes

Learning outcomes refer to the growth and changes exhibited by learners in terms of knowledge, skills, and attitudes after completing a full learning process. Learning outcomes not only represent learners' performance during the learning process but also encompass their ability to effectively apply acquired knowledge, solve problems, and achieve overall learning satisfaction. According to Wang (2010), learning outcomes are a multi-level, multi-dimensional, and temporal concept. Therefore, assessments of learning outcomes should incorporate cognitive, skill-based, and affective dimensions simultaneously in order to comprehensively and accurately reflect the actual impact of educational interventions, as well as to provide an essential basis for continuous improvement in educational institutions. Caspersen et al. (2017) indicated that the assessment of learning outcomes can serve purposes such as competency validation, learning process tracking, or educational quality evaluation. The selection of appropriate assessment methods—such as grades, self-assessments, or standardized tests—should depend on the specific instructional context. Only through diversified and contextualized assessment mechanisms can educators fully understand students' learning processes and the true effectiveness of educational interventions.

Jeminiwa et al. (2025) found that integrating short-form videos into classroom instruction enhanced learners' learning confidence, knowledge mastery, and understanding of course content. Learners also reported receiving positive feedback and expressed a high willingness

to recommend such instructional approaches, indicating that short-form videos hold significant potential and practical value as a higher education teaching strategy. Similarly, Aslan and Sirojitdinovna (2025) indicated that most learners perceived short-form videos as providing rapid knowledge input, convenient mechanisms for repeated viewing, and an appropriate amount of information, which facilitated memory retention and learning transfer. In addition, the use of real-life contexts and visual aids in short-form videos further supports comprehension and application, outperforming traditional lecture-based instruction in terms of learner engagement and learning outcomes. As an emerging instructional medium, the impact of short-form videos on learning outcomes has increasingly become a focal point of educational research.

In summary, learning outcomes serve as a core indicator for assessing the impact of instruction and the quality of learning. A valid assessment of learning outcomes should encompass cognitive, skill-based, and attitudinal dimensions in order to fully capture the overall learning achievements resulting from educational interventions.

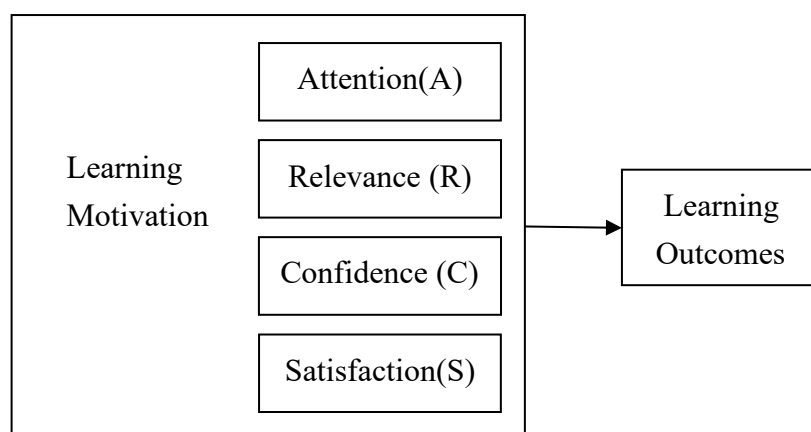
Research Method

The purpose of this study was to investigate the relationship between learning motivation and learning outcomes of students in the design cluster of vocational high schools when short-form videos were integrated into the curriculum. A questionnaire survey was employed to collect data from students at a vocational high school in Taiwan regarding their learning motivation and learning outcomes in design courses incorporating short-form videos, with the aim of examining the correlation between students' learning motivation and learning outcomes following the integration of short-form videos. The specific details regarding the research framework, participants, research instruments, implementation procedures, and data processing and analysis are presented below.

Research Framework

Based on the purpose of this study, the ARCS motivation model was adopted to explore the relationship between learning motivation and learning outcomes in the integration of short-form videos into a professional design course at a vocational high school. The research framework is illustrated in Figure 1.

Figure 1
Research Framework



Research Participants

A vocational high school was selected as the research site for this study. Through convenience sampling, one class from the design cluster was chosen as the research sample, consisting of 41 students. After excluding six students who did not fully participate in the course, the final sample comprised 35 students.

Research Instruments

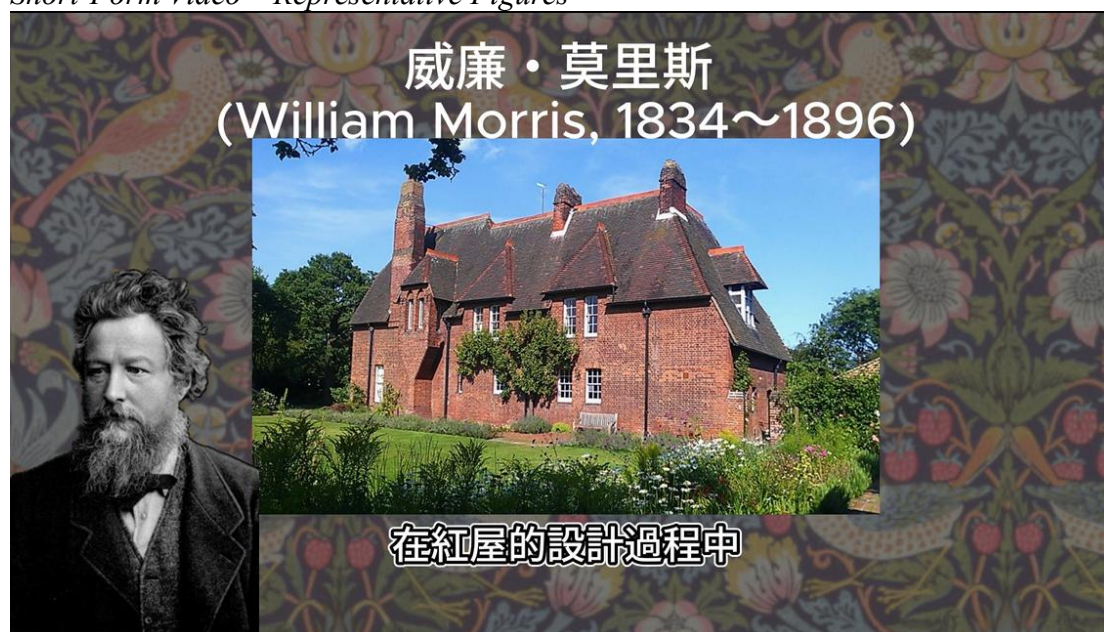
Short-Form Videos for Principles of Form

The instructional short-form videos used in this study were developed based on the “Arts and Crafts Movement” unit of the Principles of Form course in the design cluster of vocational high schools. The development also referred to the content of the asynchronous online learning materials titled Principles of Form – Evolution of Modern Form Culture (Ke, 2020). The unit topics cover the “Historical Background” (Figure 2), “Design Concepts” (Figure 3), and “Representative Figures” (Figure 4). A total of three instructional short-form videos were produced, with content organized using a thematic narrative design that integrates images, text, and voice guidance to enhance students’ learning focus and content comprehension.

Figure 2

Short-Form Video – Historical Background



Figure 3*Short-Form Video – Design Concepts***Figure 4***Short-Form Video – Representative Figures*

Questionnaire on Learning Motivation for Short-Form Video Integration in the Course

This study employed a questionnaire survey method. Based on a review of the literature, the questionnaire was initially developed with reference to Pintrich's (1991) Motivated Strategies for Learning Questionnaire (MSLQ) and Keller's (1987) Instructional Materials Motivation Survey (IMMS). Subsequently, considering factors related to the integration of short-form videos into courses and learning motivation identified in the literature, a preliminary version of the questionnaire on learning motivation for courses incorporating short-form videos was drafted. Expert feedback was then collected to refine and simplify the questionnaire constructs, which led to the development of the finalized questionnaire on learning motivation.

The online learning motivation questionnaire consisted of 20 items, covering four dimensions: gaining attention, relevance, building confidence, and satisfaction. Each dimension contained five items. A five-point Likert scale was adopted, with 1 representing “strongly disagree” and 5 representing “strongly agree.” Higher scores indicated a more positive level of students’ learning motivation.

Research Implementation

The study was conducted within the design cluster curriculum of a vocational high school during the final review period prior to the end-of-semester examinations. The instructional content focused on the Art and Craft Movement unit of the course Principles of Form. To support students in reviewing key concepts, the researcher produced three thematic short-form instructional videos, each covering one of the following topics: “historical background,” “design concepts,” and “representative figures.” During classroom implementation, the videos were played, followed by teacher-led explanations and worksheet-based learning activities designed to guide students in summarizing and understanding the main ideas. Upon completion of the video-based instruction, a learning motivation questionnaire based on the ARCS motivation model was administered, and statistical analysis was conducted.

Data Analysis

The questionnaire responses were first compiled and processed using Microsoft Excel. The data were then subjected to statistical analysis using JASP (version 0.19.3.0). Cronbach’s α coefficient was calculated to assess the internal consistency and reliability of the questionnaire. Descriptive statistics were used to present the overall means and standard deviations of the questionnaire items, along with a general summary of the participants’ demographic profiles. Subsequently, students’ average learning motivation scores were ranked from highest to lowest. Based on the interquartile range (IQR), the students were categorized into three groups: high, medium, and low levels of learning motivation. The corresponding learning outcome scores were then matched to each student. Paired-sample t-test, Pearson correlation analysis and one-way ANOVA, were conducted to examine differences among the three groups and to explore the relationship between students’ learning motivation and learning outcomes in the context of short-form video–integrated instruction within the vocational high school design cluster.

After the questionnaires were collected, a reliability analysis was conducted. As shown in Table 1, the quantitative results indicated a Cronbach’s α of .929, exceeding the threshold of 0.7, thereby demonstrating that the questionnaire possessed an acceptable level of reliability. Furthermore, to confirm the necessity of each item, the Cronbach’s α values after item deletion ranged from .921 to .931, none of which were significantly higher than the overall reliability coefficient (.929). This result suggests that all items were well integrated with the overall scale. Finally, the questionnaire was also reviewed by academic experts to ensure its validity.

Table 1

Results of the Unidimensional Reliability Analysis of the Learning Motivation Questionnaire

Cronbach	estimate	Std.Error	95% confidence interval	
			Lower	Upper
Cronbach's α	0.929	0.012	0.934	0.979

Results and Discussion

This study aimed to examine the relationship between learning motivation and learning outcomes in short-form video–integrated courses within vocational high school design programs. A questionnaire survey method was adopted to collect data from students in a vocational high school regarding their learning motivation and outcomes in such courses. A total of 41 questionnaires were returned. After excluding six students who did not fully participate in the course, 35 valid responses remained. After confirming the reliability and validity of the instrument through reliability analysis, both descriptive and inferential statistical analyses were conducted. As shown in Table 2, the results showed that the overall mean score of learning motivation across the 35 valid questionnaires was 3.689, which fell within the upper-mid range, indicating that students demonstrated a certain level of learning motivation toward short-form video–integrated courses.

Table 2

Descriptive Statistical Analysis of Overall Student Learning Motivation

Group	N	Mean	SD
All Students	35	3.689	0.422

The paired-sample t-test was conducted to examine whether there were significant differences in learning outcomes before and after integrating short-form videos into the course instruction. The mean score of learning outcomes before the integration was 72.086 (SD = 11.296), and after the integration, the mean score increased to 75.971 (SD = 14.486). The results of the paired-sample t-test revealed no statistically significant difference, $t = -1.542$, $p = .132 > .05$. As shown in Table 3, although the statistical result was not significant, the mean score indicates an improvement in learning outcomes.

Table 3

Paired Samples t-Test Analysis of Learning Outcomes Before and After Integration of Short-Form Videos Into the Curriculum

Group	N	Learning Outcomes Mean	SD	df	T-value	P-value
Before integration of short-form videos	35	72.086	11.296	34	-1.542	0.132
After integration of short-form videos	35	75.971	14.486			

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

The Pearson correlation analysis between students' learning motivation and learning outcomes reveals the correlation coefficient between the two variables. As shown in Table 4, there is no significant correlation between students' learning motivation and their learning outcomes.

Table 4
Pearson Correlation Analysis Results Between Learning Motivation and Learning Outcomes

		Learning Motivation	Learning Outcomes	Mean	SD
Learning Motivation	Pearsons'r	-	-0.045	3.689	0.442
	p-value	-	0.799		
Learning Outcomes	Pearsons'r	-0.045	-	75.356	14.488
	p-value	0.799	-		

Note. *p < .05, **p < .01, ***p < .001

Using a one-way analysis of variance (ANOVA), the statistical results shown in Table 5 indicate that the average learning outcome score for the low-motivation group was 75.778 (SD = 10.929), for the medium-motivation group was 78.069 (SD = 13.548), and for the high-motivation group was 72.222 (SD = 19.505). Overall, the average learning outcome score for all students was 75.071 (SD = 14.488). The results of the one-way ANOVA revealed no significant differences in learning outcomes among students with different levels of learning motivation after short-form videos integration ($F = 0.463$, $p = .633 > .05$). This indicates that, in this study, different levels of learning motivation among students in the vocational high school design cluster did not affect their learning outcomes.

Table 5
One-Way ANOVA Analysis of Learning Outcomes Based on Different Levels of Learning Motivation

Group	N	Learning Outcomes Mean	SD	df	F	P
Low learning motivation	9	75.778	10.929	32	0.463	0.633
Intermediate learning motivation	17	78.069	13.548			
Upper-intermediate learning motivation	9	72.222	19.505			

Note. *p < .05, **p < .01, ***p < .001

Further analysis of learning outcomes among students with different levels of learning motivation revealed that students in the high-motivation group demonstrated lower learning outcomes compared with those in the medium- and low-motivation groups. This finding does not align with the commonly held view in prior research that “higher learning motivation or acceptance typically leads to better learning outcomes” (Zhang et al., 2024). This result may reflect certain limitations in the application of digital instructional materials. Students with high learning motivation may tend to engage in active exploration and deep learning, and the concise, compressed nature of short-form video content may not satisfy their need for comprehensive and in-depth knowledge, potentially affecting their learning performance. In contrast, students with moderate levels of learning motivation may benefit more from the key information and visual stimulation provided by short-form videos, thus improving their learning outcomes.

These findings also suggest that the relationship between learning motivation and learning outcomes is not strictly linear, but is influenced by the interplay of instructional media, course design, and individual learner differences. While short-form videos have the potential to capture attention and stimulate learning interest, their use should be carefully adapted based on course objectives, learner characteristics, and disciplinary requirements to maximize effectiveness. Future research may further investigate the effects of short-form videos on learners' short-term memory and long-term learning outcomes, and explore their potential when integrated with blended instructional designs and other teaching strategies.

Conclusion

This study aimed to investigate the effects of integrating short-form videos into vocational high school design courses on students' learning motivation and learning outcomes, and further examine the relationship between the two. The results are presented as follows:

1. Students generally held a positive attitude toward the integration of short-form videos into the course. The overall level of learning motivation was in the upper-mid range, indicating that short-form videos have the potential to enhance learning interest and promote classroom engagement.
2. Students showed a tendency toward higher overall learning scores after the integration of short-form videos into the course, suggesting that while there was some improvement, it was not sufficient to reach a statistically significant effect.
3. In this study, no significant relationship was found between learning motivation and learning outcomes among students in the Design Cluster of Vocational High School following the integration of short-form videos into the course.

Overall, this study offers preliminary validation for the use of short-form videos in teaching within the Design Cluster of Vocational High Schools. Short-form videos appear to be both feasible and potentially effective in enhancing students' learning motivation. However, achieving substantial improvements in learning outcomes will require further refinement of instructional strategies and media application to ensure meaningful enhancement of student s' outcomes.

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