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RESEARCH ARTICLE

The Impact of Viewing Quality Tiktok Educational Videos Towards the Actual Safety Wiring Techniques

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Abstract

This study examines how quality TikTok educational videos affect the safety wiring performance of third-year Aircraft Maintenance Technology students at Indiana Aerospace University during AY 2024–2025. As short-form videos grow in technical education, the research explores their impact on knowledge retention, learning effectiveness, and hands-on skills. Guided by the Technology-Enhanced Learning (TEL) framework, Mayer's Cognitive Theory of Multimedia Learning, Dual Coding Theory, Media Richness and Engagement Theory, and Microlearning Effectiveness Theory, the study highlights how visual-verbal content and brief, focused instruction aid learning. Using a quantitative approach with surveys and pre- and post-assessments involving 100 students, the results show that well-made TikTok videos improve memory and accuracy in safety wiring. However, issues such as poor video quality, unclear steps, and limited practical readiness persist. The study recommends integrating curated TikTok content with traditional methods to enhance technical training.

Keywords: *educational videos, knowledge retention, learning effectiveness*

Introduction

TikTok has evolved into a valuable educational tool, particularly for demonstrating technical procedures such as safety wiring. Its short, engaging, and replayable format supports microlearning, helping students visualize complex steps more easily. In the United States, where aviation training is highly regulated, platforms like TikTok are utilized to enhance student engagement and improve knowledge retention. In parts of Asia, particularly in developing regions, students increasingly rely on social media to supplement limited access to hands-on training tools, thereby enhancing their technical skills through digital means.

This study is grounded in several educational theories that explain how digital media affects learning. The Technology-Enhanced Learning (TEL) framework supports the use of digital tools for personalized and interactive instruction, although students may struggle to choose or utilize these tools effectively without guidance. Mayer's Cognitive Theory of Multimedia Learning and Dual Coding Theory emphasize the importance of combining visuals and narration to improve understanding, yet overly fast or unclear videos can hinder comprehension. The Media Richness and Engagement Theory highlights that low-quality visuals and audio reduce clarity and attention. The Cognitive-Affective Theory of Learning with Media 2.0 suggests that videos lacking emotional or cognitive engagement may lower student motivation and retention. The Microlearning Effectiveness Theory favors short, focused learning content, but overly simplified TikTok videos may omit crucial details. The Social Media Learning Ecologies Framework promotes peer interaction and community-based learning; however, TikTok's limited feedback and discussion features can leave students feeling confused or unsupported.

Despite TikTok's widespread use in education, there is limited research verifying its effectiveness in teaching hands-on technical skills, such as safety wiring. Many TikTok videos are not designed for formal instruction and often lack the structure, accuracy, or alignment with aviation standards needed for proper skill development, raising concerns about students learning incorrect or unsafe procedures.

As students increasingly turn to social media as a learning resource, it becomes essential to understand how these platforms affect aviation training outcomes. This research aims to provide insights that can help educators refine their teaching methods, integrate digital tools more effectively, and ensure that students are prepared to meet both academic and industry standards.

The primary goal of this study is to evaluate the impact of high-quality TikTok educational videos on student performance in safety

wiring, with a focus on knowledge retention, learning effectiveness, and alignment with aviation maintenance standards.

Additionally, the study will analyze the instructional clarity of TikTok content, its influence on memory and real-world application, and the challenges students face in using the platform. Based on these findings, the study will provide recommendations for integrating digital media into aviation education to enhance support for technical skill development.

Research Question/ Objectives

This study aimed to assess the impact of viewing quality TikTok educational videos towards the actual safety wiring techniques of 3rd-year Aircraft Maintenance Technology students for the A.Y. 2024–2025. Specifically, this study will sought to answer the following sub-problems:

1. Evaluate the quality and relevance of TikTok educational videos viewed by 3rd-year Aircraft Maintenance Technology students in relation to safety wiring techniques.
2. Assess the level of knowledge retention among students after viewing TikTok educational videos on safety wiring.
3. Determine the effectiveness of TikTok educational videos in improving students' actual performance and learning outcomes in safety wiring.
4. Rank the problems encountered by the third-year Aircraft Maintenance Technology students for the Academic Year 2024–2025.

Methodology

Research Design

The quantitative research method will be employed to assess the impact of viewing high-quality TikTok educational videos on the practical skills of basic safety wiring. Quantitative research is a systematic approach that focuses on collecting and analyzing numerical data to objectively measure variables and assess the relationships between them. This study will involve 100 third-year Aircraft Maintenance Technology students from Indiana Aerospace University, who have a basic theoretical understanding but minimal hands-on experience. Participants will be recruited from the third-year student population.

Participants/Respondents

This study involves 100 third-year students selected from the 136 students enrolled in the Aircraft Maintenance Technology (AMT) program during the 2024–2025 academic year. As these students are currently engaged in advanced training, including safety wiring techniques, they are considered well-suited to assess the impact of educational TikTok videos on enhancing practical skills in aircraft maintenance. The respondents will be selected through random sampling to ensure that each student in the population has an equal chance of being chosen, thereby promoting fairness and reducing selection bias in the study.

Instrument

To gather relevant data, the researchers used a self-made survey questionnaire consisting of three parts. The first part assesses the perceived effectiveness of high-quality TikTok educational videos as supplementary learning tools. The second part focuses on the learners' self-assessed ability to apply safety wiring techniques, as well as the clarity and visual quality of TikTok content in demonstrating these procedures. The third part evaluates the learners' retention of safety wiring steps and procedures after engaging with the video content. It was rated using a scale where 5 is 'Strongly Agree', 4 is 'Agree', 3 is 'Neutral', 2 is 'Disagree', and 1 is 'Strongly Disagree'.

Procedure

Data will be collected by assessing their performance on a standardized practical wiring task before and after viewing the TikTok videos, measuring accuracy, safety compliance, and completion time. The data will then be analyzed to determine if there is a meaningful improvement in skills following the intervention by comparing participants' performance before and after watching the videos using appropriate statistical methods. Summary statistics such as averages and variations will also be provided to summarize the findings.

Data Analysis

The statistical treatment of data utilizes a five-point scale with a numerical range, descriptive equivalent, and interpretation in Assessing the Impact of viewing quality TikTok educational videos on the Actual Basis (Safety) Wiring Techniques at Indiana Aerospace University.

Ethical Considerations

The study followed ethical guidelines to ensure participant safety and privacy. Participation was voluntary, with the right to withdraw at any time. Data was anonymized, securely stored, and accessible only to the research team. No personal information was disclosed, and all activities posed minimal risk within the university's training environment. The study was approved by Indiana Aerospace University, with conflicts of interest disclosed and efforts made to reduce stress. Participants could review their data, and findings were reported accurately with transparency about limitations and biases.

Results and Discussion

Educational Videos

Educational videos are visual tools designed to teach specific skills or knowledge. When well-made, they improve understanding and memory retention. In teaching safety wiring techniques, platforms like TikTok are effective for showing proper procedures and reinforcing skills. Theories like Mayer's Cognitive Theory of Multimedia Learning, Dual Coding Theory, Media Richness Theory, and Engagement Theory all support the use of video for clearer instruction and deeper learning.

Table 1 presents the impact of viewing quality TikTok educational videos on actual safety wiring techniques in terms of educational value.

Table 1. *Educational Videos*

Indicators	*Weighted Mean*	*Description*
The safety wiring videos I watched in TikTok provided clear and understandable instructions.	4.06	Agree
The safety wiring in TikTok videos captured my attention and kept me engaged throughout the demonstration.	4.06	Agree
I find short and structured instructional TikTok videos helpful when learning technical tasks like safety wiring techniques.	4.05	Agree
The overall quality of safety wiring techniques found in TikTok videos (audio, visuals, and editing) made it easier to follow the lesson.	4.01	Agree
The presenters or instructors in TikTok videos demonstrated a strong understanding of safety wiring techniques.	3.99	Agree
Average Mean	4.034	Agree

Legend: 4.21-5.00 = Strongly Agree 3.41-4.20 = Agree 2.61.3.40 = Neutral 1.81-2.60 = Disagree 1.00-1.80 = Strongly Disagree

Knowledge Retention

Knowledge retention is the ability to remember and apply learned information over time, which is essential for performing safety wiring techniques accurately. Visually rich, short-form videos—such as those on TikTok—aid memory recall, supported by Microlearning Effectiveness Theory and Dual Coding Theory. The Social Media Learning Ecologies Framework also demonstrates that platforms like TikTok foster learner-centered environments that encourage ongoing, informal learning. Together, these approaches make social media an effective tool for reinforcing technical skills and improving long-term retention.

Table 2 the impact of viewing quality tiktok educational videos towards the actual safety wiring techniques in terms of knowledge retention.

Table 2. *Knowledge Retention*

Indicators	*Weighted Mean*	*Description*
Rewatching safety wiring technique TikTok videos strengthened my memory of the procedures.	4.12	Agree
I can still recall safety wiring methods when applying them in real tasks, even days after watching the TikTok videos.	4.07	Agree
I can clearly remember the step-by-step safety wiring procedures after watching safety wiring technique videos in TikTok.	3.99	Agree
The short and focused format of TikTok videos made it easier for me to recall specific safety wiring steps.	3.97	Agree
The visual demonstrations in the safety wiring techniques TikTok videos helped me retain the correct techniques.	3.92	Agree
Average Mean	4.014	Agree

Legend: 4.21-5.00 = Strongly Agree 3.41-4.20 = Agree 2.61.3.40 = Neutral 1.81-2.60 = Disagree 1.00-1.80 = Strongly Disagree

Learning Effectiveness

Learning effectiveness measures how well learners acquire and apply skills after instruction. In safety wiring, it reflects the ability to perform tasks accurately and confidently. Engaging, high-quality TikTok videos improve both understanding and execution, as supported by Media Richness Theory and the Cognitive-Affective Theory of Learning with Media. These theories highlight how rich, focused media boost attention and practical performance.

Table 3 the impact of viewing quality TikTok educational videos on the actual safety wiring techniques in terms of learning effectiveness.

Table 3. *Learning Effectiveness*

Indicators	*Weighted Mean*	*Description*
The visual demonstrations, such as showing how to twist the wire and secure it properly, in the quality TikTok educational videos on safety wiring techniques made the procedure easier to understand.	4.12	Agree
The instructors in the quality TikTok educational videos on safety wiring techniques explained each step clearly and demonstrated the technique with confidence.	4.12	Agree

Watching TikTok educational videos on safety wiring techniques improved my ability to apply the concepts in real- world situations.	4.05	Agree
The fast-paced and visually engaging style of the quality TikTok educational videos on safety wiring techniques kept me focused and interested in learning.	4.04	Agree
After watching the quality TikTok educational videos on safety wiring techniques, I was confident and able to accurately perform all the necessary safety wiring steps during hands-on practice.	4.00	Agree
Average Mean	4.066	Agree

Legend: 4.21-5.00 = Strongly Agree 3.41-4.20 = Agree 2.61.3.40 = Neutral 1.81-2.60 = Disagree 1.00-1.80 = Strongly Disagree

Problems Encountered

The problems encountered on watching quality TikTok educational safety wiring videos includes, unclear explanations from instructors, lack of proper demonstrations of the techniques, poor video quality (such as weak audio, visuals, and editing), unclear visual demonstrations (such as twisting and securing the wire), difficulty in understanding the correct steps, lack of confidence during hands-on practice, and trouble remembering the procedures due to the way the videos were presented.

Table 4 presents the problems encountered in the Impact of Watching Quality Educational TikTok Videos on Actual Safety Wiring Techniques.

Table 4. *Problems Encountered*

Indicators	*Frequency*	*Rank*
The visual demonstrations in safety wiring techniques on TikTok videos (e.g., twisting and securing the wire) did not make the procedure easier to understand.	22	1
The safety wiring techniques TikTok video quality (audio, visuals, and editing) made it difficult to follow the lesson.	17	2
After watching the safety wiring techniques TikTok videos, I was not confident or able to accurately perform the safety wiring steps during hands-on practice.	16	3
The visual demonstrations in safety wiring techniques on TikTok videos (e.g., twisting and securing the wire) did not make the procedure easier to understand.	14	5
The visual demonstrations in the safety wiring TikTok videos did not help me retain the correct techniques.	14	5
The short and focused format of the TikTok videos did not make it easier to recall safety wiring steps.	14	5
The step-by-step format and short duration of the safety wiring techniques in TikTok videos did not help me focus or retain the process.	13	7
I am unable to recall safety wiring methods when applying them in real tasks after watching the TikTok videos.	11	8
I do not remember the step-by-step safety wiring procedures after watching the TikTok videos.	10	9.5
Short and structured instructional TikTok videos are not helpful for learning technical tasks like safety wiring.	10	9.5

The top 5 problems encountered are as follows: The visual demonstrations in safety wiring techniques on TikTok videos did not make the procedure easier to understand, with a frequency of twenty-two.

The second-highest problem is the safety wiring techniques. TikTok video quality made it difficult to follow the lesson, with a frequency of seventeen.

The third most frequently reported problem, with a frequency of sixteen, is that TikTok videos on safety wiring techniques did not effectively prepare students to accurately perform the steps during hands-on practice.

The fourth problem encountered is that the visual demonstrations in safety wiring techniques on TikTok videos did not make the procedure easier to understand, with a frequency of fourteen.

The fifth most ranked problem is that the visual demonstrations in the safety wiring TikTok videos did not help me retain the correct techniques, with a frequency of fourteen.

Conclusion

The findings of this study reveal that 3rd-year Aircraft Maintenance Technology students for the A.Y. 2024–2025 academic year recognized the positive impact of quality TikTok educational videos on their learning of safety wiring techniques. These videos were found to enhance knowledge retention, improve understanding, and support the effective application of technical skills. This highlights the potential of short-form educational content as a valuable supplementary tool in technical training programs, enabling students to grasp complex safety practices in a more engaging and accessible manner.

To maximize the benefits of using TikTok as a learning aid, the study recommends that instructors carefully curate and integrate high-quality, visually clear educational videos into their lessons. Compiling accessible video lists, encouraging students to log and reflect on confusing parts, and conducting follow-up group activities can help bridge gaps between theory and practice. Reinforcement strategies, such as peer explanations, quick recaps, or drawing out procedural steps, are also encouraged to solidify retention and ensure the correct

application of safety wiring techniques. With these measures, TikTok can be effectively harnessed to complement traditional methods and strengthen hands-on learning in aviation training.

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