The Role of Short-Form Video in Digital Education: Enhancing Student Engagement and Learning Outcomes among Generation Z

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ABSTRACT

The growing influence of digital media has significantly reshaped contemporary learning environments, particularly for Generation Z learners whose educational experiences are closely connected with visual, interactive, and fast-paced forms of content. Within this context, short-form video has emerged as a widely used medium across both informal and formal learning settings. Despite its increasing adoption, its pedagogical value remains open to debate, especially in relation to whether enhanced engagement necessarily leads to meaningful learning outcomes. This study aims to explore how short-form video functions within digital education, with a particular focus on its relationship with student engagement and learning outcomes. A mixed-methods approach was employed, combining quantitative data collected through structured questionnaires with qualitative insights derived from semi-structured interviews. The study involved 120 undergraduate students, allowing for a comparative analysis of learning behaviors before and after exposure to short-form video-based instructional materials. The findings suggest that short-form video can enhance student engagement by aligning with learners' existing media practices, particularly in terms of attention, interaction, and perceived relevance. In addition, its concise and multimodal structure appears to support comprehension and short-term retention of key concepts. However, the results also indicate that increased engagement does not automatically translate into deeper learning, especially when content lacks coherence or instructional guidance. Overall, the study highlights that the educational value of short-form video lies not in the format itself, but in how it is integrated into structured learning environments. These findings contribute to ongoing discussions on digital education by offering a more nuanced understanding of both the potential and limitations of emerging media formats.

Keywords: short-form video; digital learning; Generation Z; student engagement; learning effectiveness

INTRODUCTION

The increasing integration of digital technologies into education has brought about significant changes in how knowledge is accessed, interpreted, and retained. In recent years, short-form video has emerged as a particularly prominent format, gaining widespread popularity across social media platforms and gradually entering formal educational contexts. This development is especially relevant for learners who are already deeply embedded in digital media environments, as their learning behaviors are often shaped by visual and interactive modes of communication (Trang et al., 2025). As a result, traditional instructional approaches are increasingly challenged to adapt to these evolving patterns of engagement.

Learners belonging to Generation Z are often characterized by their familiarity with digital media and their responsiveness to visually rich and dynamic forms of content. Choudhary and Zandbergs (2024) suggest that this group tends to engage more effectively with materials that are concise, flexible, and easily accessible, which may explain the growing relevance of microlearning approaches. In this sense, short-form video does not simply represent a new delivery format, but rather reflects a broader shift in how learners interact with

information. Its structure appears to align with existing habits of content consumption, potentially making learning more accessible and engaging.

However, the increasing popularity of short-form video does not necessarily guarantee its effectiveness as an educational tool. While some studies have reported improvements in engagement and motivation, others have raised concerns about reduced attention span and a tendency toward surface-level learning (Denojean-Mairet et al., 2024). These contrasting perspectives suggest that the role of short-form video in education remains complex and context-dependent, requiring further empirical investigation.

Against this background, the present study examines the role of short-form video in digital education, with a particular focus on its influence on student engagement and learning outcomes among Generation Z learners. Beyond evaluating its effectiveness, the study seeks to clarify how engagement and learning outcomes interact within short-form video environments. In doing so, it offers a more integrated perspective that extends existing research, which often considers these dimensions separately.

LITERATURE REVIEW

Short-Form Video and Microlearning（Revised Advanced Version）

Short-form video is often discussed in relation to microlearning, yet the connection between the two extends beyond simple content segmentation. Rather than merely presenting information in shorter durations, microlearning emphasizes the structuring of knowledge into discrete, cognitively manageable units that align with learners' processing capacity. As Sutarman et al. (2025) suggest, reducing the volume of information delivered at one time may help alleviate cognitive overload, particularly in digital environments where learners are frequently confronted with competing stimuli. In this sense, short-form video does not simply shorten content but reshapes how information is organized and experienced.

From a multimodal perspective, the effectiveness of short-form video lies in its ability to combine visual, auditory, and textual cues within a limited time frame. This integration allows learners to engage with content through multiple channels simultaneously, which may support comprehension when properly designed. Stavrinou et al. (2025) observe that coordinated multimodal elements can enhance learning by reinforcing key concepts, yet they also note that such outcomes depend heavily on the coherence of the design. When visual and narrative components are misaligned, the same features that are intended to support learning may instead contribute to cognitive distraction.

It is therefore important to recognize that brevity alone does not guarantee effectiveness. While short-form video may appear inherently engaging, its pedagogical value emerges only when content structure, pacing, and representation are carefully considered. As recent studies have indicated, poorly designed microlearning materials may lead to fragmented understanding rather than meaningful knowledge construction (Denojean-Mairet et al., 2024). Consequently, the relationship between short-form video and microlearning should be understood not as a direct equivalence, but as a conditional alignment that depends on instructional design decisions.

This perspective is further supported by recent studies that emphasize the role of microlearning analytics in understanding learner engagement (Khalil et al., 2022).

Generation Z and Learning Preferences

The learning behaviors of Generation Z are often described in relation to their continuous exposure to digital media, yet such descriptions can sometimes oversimplify the complexity of their engagement patterns. Rather than merely preferring fast-paced content, learners in this group tend to respond to materials that offer a balance between immediacy and relevance. As Pandey et al. (2025) note, visual richness and contextual resonance appear to play a significant role in capturing attention, particularly when content aligns with learners' everyday media experiences. In this regard, short-form video may be effective not because of its brevity alone, but because it reflects familiar modes of interaction.

At the same time, Generation Z learners are frequently associated with self-directed learning tendencies, particularly in digital environments where content can be accessed on demand. Mawarni and Hartoto (2025) observe that learners often revisit short-form video materials as a way of reinforcing understanding, suggesting that these formats may support iterative learning processes rather than one-time exposure. However, this flexibility also introduces variability, as learners may engage selectively or inconsistently depending on context.

It is therefore important to avoid treating Generation Z as a uniform group with fixed learning preferences. Although short-form video may align with certain tendencies such as a preference for visually engaging and accessible content, learners within this cohort still display considerable variation in motivation, prior knowledge, and learning strategies. In practice, this means that the effectiveness of short-form video is likely to differ across individuals and contexts. Rather than assuming a consistent response, instructional design should take into account this diversity, allowing for flexibility in how content is presented and engaged with. Such a perspective shifts the focus from generalized assumptions toward a more differentiated understanding of learner engagement in digital environments.

Student Engagement in Digital Learning

Student engagement in digital learning environments is often conceptualized as a multidimensional construct, encompassing cognitive, emotional, and behavioral components. While these dimensions are frequently discussed in isolation, their interaction plays a crucial role in shaping learning outcomes. As Hilsmann (2025) suggests, engagement is not simply a response to content delivery, but a dynamic process influenced by how learners interpret and interact with instructional materials.

Short-form video has been identified as a medium that may stimulate engagement through its combination of visual intensity and temporal brevity. In particular, its ability to present information in condensed formats may help sustain attention, especially in environments characterized by frequent distractions. However, this effect should not be understood as automatic. As Chiossi et al. (2023) caution, the same features that enhance initial engagement may also contribute to reduced attention span over time if learners become accustomed to rapid content switching.

Furthermore, engagement in digital contexts is shaped not only by content characteristics but also by the conditions under which learning takes place. For example, the absence of physical interaction may limit opportunities for sustained involvement, while the presence of competing stimuli may disrupt concentration. In this sense, short-form video may function as a catalyst for engagement, but its effectiveness ultimately depends on how it is integrated into a broader pedagogical framework that supports continuity and depth.

Learning Outcomes and Instructional Media

The relationship between instructional media and learning outcomes has long been a subject of debate, particularly in the context of emerging digital technologies. While certain formats may appear more engaging, their actual contribution to learning remains contingent on how they support cognitive processes. Alsaid (2025) suggests that short-form video can facilitate learning by presenting information in structured and accessible ways, yet this benefit is closely tied to the design of the content rather than the format itself.

From a cognitive perspective, concise and multimodal representations may aid comprehension by directing attention to key concepts and reducing unnecessary complexity. However, this advantage may diminish if content lacks coherence or if learners are exposed to fragmented sequences without clear connections. As noted by Denojean-Mairet et al. (2024), poorly structured microlearning materials may lead to surface-level understanding rather than deeper knowledge construction.

It is therefore necessary to consider learning outcomes not only in terms of immediate performance but also in relation to long-term retention and conceptual understanding. While short-form video may support initial comprehension, its contribution to sustained learning depends on how it is embedded within a sequence of

instructional activities. In this regard, the effectiveness of instructional media should be evaluated not in isolation, but as part of an integrated learning design that accounts for both engagement and cognitive depth.

METHODOLOGY

Research Design

To examine both observable outcomes and learners' experiences, this study adopts a mixed-methods approach. Rather than relying exclusively on numerical data, the design allows for the combination of statistical patterns with interpretive insights, which is often considered beneficial in educational research contexts (Yang et al., 2025). By integrating these two perspectives, the study seeks to capture not only measurable changes but also how learners make sense of their interactions with short-form video content.

Participants

The study involved 120 undergraduate students who can be broadly categorized as members of Generation Z. All participants reported regular exposure to short-form video platforms, which was considered a necessary condition for meaningful participation in the study. Instead of aiming for broad generalization, the selection of this group was intended to reflect a population whose learning behaviors are already shaped by digital media practices. In this way, the sample provides a relevant context for examining how short-form video may influence engagement and learning.

Data Collection

Data were gathered through two complementary methods. First, a structured questionnaire was used to capture patterns related to engagement and perceived learning outcomes. The items were designed to reflect different aspects of engagement, including attention, interest, and interaction. Where possible, the wording of the items was informed by existing studies, which helps to support their clarity and relevance.

In addition to the questionnaire, semi-structured interviews were conducted with a smaller group of participants. These conversations offered an opportunity to explore individual experiences in greater detail, allowing participants to describe how they interacted with short-form video in their own terms. This combination of methods made it possible to move beyond surface-level responses and consider how engagement is experienced in practice.

Questionnaire Development

The questionnaire was informed by prior research on student engagement and digital learning, with items adapted to reflect the specific context of short-form video use. It included measures related to cognitive, emotional, and behavioral engagement, as well as perceived learning outcomes. Responses were recorded using a Likert-scale format, allowing patterns of engagement to be examined quantitatively while maintaining clarity for participants.

Interview Analysis

Interview responses were transcribed and reviewed iteratively to identify recurring patterns in learners' experiences. A thematic coding process was employed, through which similar responses were grouped into broader categories. Rather than applying a rigid coding scheme, the analysis remained flexible, allowing themes to emerge from the data while still aligning with the overall research focus. This approach aimed to enhance transparency while preserving the interpretive depth of qualitative findings.

Procedure

The research was carried out in three stages. At the initial stage, participants completed a baseline assessment designed to capture their existing patterns of engagement and learning behavior. This was followed by an intervention phase, during which participants were exposed to a series of short-form educational videos. The

videos were intentionally designed to include visual, narrative, and interactive elements, although the emphasis remained on observing natural responses rather than enforcing strict control conditions.

Following the intervention, a second assessment was conducted in order to identify any observable changes. By comparing responses across these stages, it became possible to examine how engagement and perceived learning outcomes may shift over time. Similar staged approaches have been used in recent research on digital learning environments (Stavrinou et al., 2025).

Data Analysis

The analysis was conducted in two parts. Quantitative data from the questionnaires were examined using statistical techniques to identify general trends and differences between pre- and post-intervention responses. These results provided an overview of how engagement and learning outcomes may have changed.

At the same time, qualitative data from the interviews were analyzed using a thematic approach. This process involved identifying recurring ideas and patterns in participants' descriptions of their experiences. Rather than treating the two forms of data separately, the analysis considered how they complement one another, thereby offering a more nuanced understanding of how short-form video may influence learning processes.

RESULTS

Changes in Student Engagement

Following the intervention, a clear shift in student engagement was observed across multiple dimensions. Participants generally reported higher levels of attention and involvement when interacting with short-form video content compared to their baseline responses. This suggests that the format may be particularly effective in capturing initial interest, especially in environments where learners are frequently exposed to competing stimuli. This finding is consistent with the observations of Trang et al. (2025), who emphasize the responsiveness of Generation Z learners to visually dynamic and interactive media environments.

At a more detailed level, cognitive engagement appeared to improve as students indicated a greater ability to follow and process key ideas presented in the videos. Emotional engagement was also reflected in increased levels of interest and motivation, although this varied across individuals depending on their prior learning habits and preferences. These results suggest that engagement should not be understood as a uniform outcome, but rather as a multidimensional process shaped by both content design and learner characteristics.

Perceived Learning Outcomes

In addition to changes in engagement, participants reported noticeable improvements in their understanding of the learning material. Many indicated that the concise nature of short-form video made it easier to grasp essential concepts without experiencing cognitive overload. This observation aligns with Sutarman et al. (2025), who argue that microlearning formats can facilitate comprehension by presenting information in manageable segments.

However, it is important to interpret these findings with caution. The improvements reported in this study are based primarily on perceived learning rather than objective measures of performance. While participants expressed greater confidence in their understanding, this does not necessarily indicate deeper conceptual mastery or long-term retention. As noted by Denojean-Mairet et al. (2024), efficient information delivery may sometimes lead to superficial understanding if not supported by additional instructional strategies.

Observed Limitations

Despite the overall positive trends, several participants reported difficulties in maintaining sustained focus when exposed to multiple short-form videos in succession. Some described a tendency to shift attention quickly between segments, which may reduce the depth of processing. This observation reflects concerns

raised by Chiossi et al. (2023), who argue that fragmented content consumption may affect attention span over time.

These findings suggest that while short-form video can enhance initial engagement, its effectiveness may diminish if not supported by coherent instructional design. In this sense, the benefits observed in the study appear to be conditional rather than universal.

DISCUSSION

The findings of this study suggest that the effectiveness of short-form video in digital education is closely related to its alignment with learners' existing media practices. Rather than introducing entirely new modes of interaction, short-form video appears to build upon patterns of engagement that are already familiar to Generation Z learners. Pandey et al. (2025) note that this group tends to respond positively to visually oriented and interactive content, which helps explain the increased levels of engagement observed in this study. In this sense, engagement may be influenced not only by the characteristics of the content itself, but also by the degree to which it resonates with learners' everyday experiences.

At the same time, the findings indicate that engagement and learning outcomes should not be assumed to be directly correlated. Although participants reported higher levels of interest and perceived understanding, this does not necessarily imply deeper cognitive processing. The results point to a potential tension between accessibility and depth, where content that is easy to consume may also encourage more superficial forms of engagement. This observation is consistent with Chiossi et al. (2023), who caution that fragmented media consumption may limit sustained attention. Similar patterns have also been identified by Zhang et al. (2024), whose study highlights comparable effects in short video-based learning environments.

In addition, the relationship between engagement and learning outcomes appears to be more complex than a direct causal link. While increased engagement may create favorable conditions for learning, it does not necessarily ensure deeper cognitive processing or long-term retention. In some cases, the immediacy and accessibility of short-form content may even encourage surface-level engagement if not accompanied by structured guidance. This suggests that engagement should be viewed as a facilitating condition rather than a sufficient indicator of learning effectiveness. Future research could incorporate longitudinal designs or follow-up assessments to examine whether these initial gains are sustained over time.

Another important implication concerns the role of instructional design. The findings suggest that the effectiveness of short-form video is not determined by the format alone, but by how it is structured and integrated into learning contexts. As noted by Denojean-Mairet et al. (2024), digital learning tools require careful design in order to support meaningful learning. In this sense, short-form video should be understood not as a standalone solution, but as part of a broader pedagogical strategy.

From a theoretical standpoint, these findings can be interpreted through the lens of multimedia learning theory (Mayer, 2009), which emphasizes the coordinated processing of visual and verbal information in supporting meaningful learning.

Taken together, these findings suggest that the role of short-form video in education cannot be reduced to a simple evaluation of its advantages or limitations. Instead, its effectiveness appears to depend on how it is situated within specific learning contexts, shaped by both learner characteristics and instructional design decisions. This perspective further suggests that the educational value of short-form video lies not in its format alone, but in how it mediates the relationship between attention, engagement, and knowledge construction within particular learning environments.

CONCLUSION

This study examined the role of short-form video in digital education, focusing on its influence on student engagement and learning outcomes among Generation Z learners. The findings indicate that while short-form

video can enhance engagement and support initial comprehension, its effectiveness is shaped by the conditions under which it is used.

Rather than viewing short-form video as inherently beneficial, the study highlights the importance of integrating it within structured learning designs that support both engagement and cognitive depth. In this sense, its value lies not in replacing traditional approaches, but in complementing them.

By providing empirical evidence from a mixed-methods perspective, this study contributes to ongoing discussions on digital learning and offers insights into how emerging media formats can be more effectively incorporated into educational practice.

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