

Using TikTok in Education: A Form of Micro-learning or Nano-learning?

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ABSTRACT

Social media platforms have influenced pedagogical practices, and given rise to new theoretical approaches that prioritize connected learning with the aim of improving the learning outcomes. Social media applications have raised the popularity of short videos which were originally created in accordance with micro-learning principles. The proliferation of social media and e-learning has led to the emergence of two overarching concepts: micro-learning and nano-learning. Nano-learning refers to the condensing of micro-content into small units that are controlled and delivered by learners to achieve a single learning objective. In this respect, the social media application TikTok can be a potential educational tool in future since it enables the delivery of small learning units in a short timespan (less than 60 seconds). Designing and delivering creative learning content using TikTok can benefit pedagogical methodologies based on nano-learning principles, thereby facilitating the creation of high-quality e-learning content.

Keywords: Micro-learning, Nano-learning, TikTok, Social media

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Introduction

The convenience and popularity of social media applications have transformed public services in many countries across the globe. Governmental and non-governmental agencies use social media to enhance citizens' engagement with their services and strengthen the relationship between citizens and government institutions. In this context, the birth of social media websites and their considerable influence on new pedagogical methodologies have spurred the formation of new theoretical approaches that prioritize connected learning to improve learning outcomes. In this context, e-learning in normal and crisis environments entails the integration of social media into the learning process. Following the rise of social media,

two distinct approaches have evolved out of the existing e-learning methods. They can be regarded as two branches of educational strategies that center on small chunks of learning and are related to connected learning. These two branches are nano-learning and micro-learning (1). Nano-learning, is based on the principles of nanotechnology, featuring self-contained, small, and unified pieces (2). Accordingly, nano-learning is applied to enable the growth of micro-learning, which is based on dividing micro-content into small chunks that can be packaged and delivered in extremely short increments. For example, nano-learning includes short pieces of audio, video, and graphical content. On the other hand, micro-learning consists of short-term learning activities chunked into small units

to achieve a learning objective (3). Yin et al. (4) have defined micro-learning as a teaching pedagogy whereby the learner requests and controls short units of information. However, both micro-learning and nano-learning are focused on introducing a single objective with scored and unscored assessments (5, 6).

Consequently, researchers attempting to integrate advanced technologies in instructional design have engaged in impassioned discussions with the experts in educational technologies and instructional design. In our recent conversation with Badrul Huda Khan (February 2021), he confirmed that micro-learning is defined as a single interactive learning unit that is objective-centered and focused on the outcome of the unit. That unit is itself delivered in very short units using different media technologies, including wearable, mobile, and tablet technologies. These media can also be a form of analog media, such as flashcards or booklets. Khan also elaborated on the process of designing, developing, and delivering micro-learning, which requires analyzing how and when to integrate media learning with instructional design principles and a specific learning environment. In another conversation we had with Professor Mishra (February 2021), he highlighted the importance of the length of videos designed for micro-learning. Moreover, Prof Idrus (February 2021) emphasized the importance of the instructional design process when creating short videos.

Nano-learning and micro-learning share many similarities; for instance, they both seek to present ways to design, distribute, and utilize small elements of learning. Compared to micro-learning, nano-learning involves further miniaturization of learning. When comparing nano-learning to micro-learning, we divide micro-learning units into sub-units, with a continuous focus on longer units in order to achieve sustained attention and comprehensive understanding through discovery. Such an approach can solve problems and demonstrate creativity in learning objects. Another difference between

micro-learning and nano-learning is that micro-learning can be used in both formal and informal learning environments (5, 6), whereas nano-learning can only be used in informal learning environments (7).

Following the emergence of new social media applications such as TikTok, researchers have further noted the differences between the concepts of nano-learning and micro-learning. The current debates on this topic inspired us to study the similarities and differences between these two concepts as well as the conceptual boundaries separating them in the era of social networking. Therefore, the main contribution of this work is to encourage further debate among researchers and practitioners in the field of instructional design concerning the boundaries between micro-learning and nano-learning and to introduce new social media platforms that are influenced by nano-learning principles and can enrich this approach in learning. For the purpose of this commentary paper, we define nano-learning as a smaller component of micro-learning that involves dividing micro-content into small chunks to address a single objective. Different nano-learning chunks can form micro-learning content. Therefore, this article seeks to address the following question regarding the short videos created in social media applications, specifically TikTok: Can these videos be incorporated into the learning environments as a nano-learning rather than micro-learning approach?

Social Media Applications and the Short Video Industry

Social media applications are defined as internet-based technologies used to create and exchange content (8). These applications provide an environment for creation, openness, conversation, and socialization among users in an online community. Social media enhance the generation and dissemination of knowledge and skills among users with similar ambitions and traits (9). The collaboration atmosphere in social media inspires positive learning attitudes among users. This positive effect is derived from the

interactive experiences of the users engaged in knowledge and content-related activities (10). The demographic characteristics of users vary by the social media applications they use. For example, Facebook and Twitter attract a variety of users who use them for social interaction (11, 12); other social media applications receive less traffic, such as Instagram and LinkedIn (13). Some of these applications may have higher rates of acceptance among university students and faculty.

Social media applications are critical to the popularity of short videos since they allow people to capture memorable moments that range from a few seconds to several minutes; users can also publish their videos online or store them on their devices (14). Different social media applications use short videos to capture users' attention in various contexts, including marketing and education. Indeed, the objective of these applications is to utilize short videos as a means of presenting new ideas and attracting audiences' attention for a short period of time; this is congruent with the principles of micro-learning.

Launched in 2017, TikTok is the fastest growing social media application and has found users in over 150 countries. According to statistics provided by the TikTok team, the platform has more than 800 million users. It was the most downloaded application in 2020, and users spend an average of 41 minutes using the application per day. The majority of users are between the ages of 14 and 30, making the application a potential educational tool (15). There are three categories of TikTok users, namely content creators, content browsers, and learner-creators (16). TikTok features a user-friendly interface for creating, editing, and sharing short videos; users can also comment on and share content with the wider TikTok community (14). TikTok videos last from a few seconds up to 60 seconds. Originally, the videos had a 15-second limit, but TikTok now allows people to repeat a 15-second loop four times, creating a 60-second video. Currently, the application is testing a new

feature that allows users to upload videos of up to three minutes in length. This change could have a huge impact on how people use the application (16, 17).

TikTok attracts young users born after 1996, referred to as Generation Z. The application allows youth to produce creative educational videos that deal with complex topics in maths, physics, and chemistry—topics that may otherwise be boring for students (14-17).

TikTok videos are short, easy to create, and convenient to share (18). Short videos on TikTok are increasingly used to share creative skills and teach others about different topics, including crafting, cooking, sports, drawing, and vocational and technical training. There are hundreds of examples from around the world demonstrating how the short videos on TikTok have been used by teachers in primary and secondary schools as well as higher education institutions to teach a variety of complex topics (12-15). In addition, recent studies have recognized the potentials of TikTok in teaching different topics and sharing values, principles, and skills (17-19).

Short TikTok videos are changing the way skills are taught and learned among people with similar attributes by enabling new forms of communication through visually engaging materials. Given the current popularity and future potential of TikTok, decision makers in primary and secondary schools as well as higher education institutions should consider methods for integrating TikTok videos into pedagogical approaches. Most importantly, incorporating TikTok into teaching and learning practices encourages the production of creative content according to the principles of instructional design. Therefore, short educational videos designed for teaching can be adapted to fulfil learning objectives and facilitate student learning; this approach could help learners understand complex concepts and acquire new creative skills and knowledge.

Designing Nano-learning Content Using TikTok

TikTok can be used to design and support

nano-learning strategies, such as community-based learning where users learn from each other through co-designing and knowledge sharing. Enhancing collaborative learning among users can benefit nano-content design by using the design principles and the "learning by design" approach. Moreover, nano-learning activities can be packaged into 15- to 60-second videos derived from user-generated activities on TikTok. This environment allows nano-learning activities to foster learner engagement. Advanced TikTok features like facial filters, text overlay and voice syncing, set the stage for nano-activities in various forms, including short videos, unscored quizzes, and flash cards. This allows for creation of more engaging content to attract learners of different ages.

Nano-activities on TikTok can be distributed within user-created learning communities (users being learners and educators) and promote learning among different users. With their tight schedules and limited time, learners and educators must multitask when reading and writing emails, scoring assignments, and learning. There are several areas of knowledge and skills that are shared by users on TikTok, ranging from personal experiences and creative skills to more specific subjects, covering culture, sports, cooking, science, and drawing (16). Studies on the use of TikTok in learning environments have revealed that students display positive attitudes towards this application, as they have previous experience using TikTok to acquire various skills and knowledge in their daily lives (17). Moreover, using TikTok encourages learners to engage in different activities (14-17). The commenting feature in this platform enables users to provide information, express opinions, leave feedback, or engage others in conversation. Furthermore, the provided comments reflect the attitudes of the commenters, which could be constructive, judgmental, or irrelevant (20).

Conclusion

By analyzing short videos designed for e-learning purposes, we can conclude that nano-learning is a miniaturized version of

micro-learning. For example, a learning object introduced in a micro-learning setting can be further segmented into small chunks and presented as short video content, such as the 15-second videos on TikTok. Therefore, design and delivery of nano-learning videos can be achieved through the implementation of instructional design principles. Future efforts should be invested in creating nano-learning videos for teaching and sharing creative skills and knowledge in a variety of disciplines. TikTok can be easily incorporated into the learning process, as most teachers and students do already have TikTok accounts.

There are positive and negative implications to the use of TikTok in educational environments. It is crucial to harness the positive aspects and adapt them to the modern approaches in teaching; this can be achieved by establishing TikTok clubs on local and national levels at schools and other institutions. Applying the principles of instructional design and nano-learning to the use of TikTok in educational settings will allow for the dissemination of new knowledge and skills based on creativity and innovation.

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