

Learner Perceptions of Microlearning through the Lens of Gagné's Nine Events

Donna K. Fitch

Samford University

Learner Perceptions of Microlearning through the Lens of Gagné's Nine Events

Analysis and Design Plan

Microlearning is a popular topic in both academic and corporate circles. This form of learning strategy consists of brief lessons less than ten minutes long. Among the benefits ascribed to this method are accommodating learners with short attention spans, particularly Millennials (Chadha & Kumar, 2018; Eldridge, 2017); aiding memory and recall (Kapp & Defelice, 2018); and “tremendously” decreasing cognitive load to facilitate long-term retention of knowledge (Major & Calandrino, 2018).

Project Need

Despite this enthusiasm, little research exists on the design aspects of microlearning, but instead focuses primarily on the steps for transforming one's curriculum into microlearning. If this learning strategy is to find a valid place in the instructional designer's toolkit, as well as a reliable resource for faculty in higher education, microlearning must be shown to be effective, not just popular.

The framework used in this study is a cognitive theory identified by Robert Gagné in his 1965 book *The Conditions of Learning*. This theory, known as the nine events of learning, defines a series of steps in the processing of information, and is an integral part of the pedagogy of instructional design. These events are gain attention, state objectives, stimulate recall of prior learning, present the content, provide guided learning, elicit performance, provide feedback, assess performance, and enhance retention and transfer (University of Florida, 2018).

This study explored learners' identification and perception of these nine events of instruction via the microlearning format. The degree to which these events are present in

microlearning assists instructional designers in exploring the underlying structural foundation on which this strategy exists and encourages further analysis.

Learning Context

The microlearning module was administered to one section of EDUC 302, Research in Special Education, a face-to-face undergraduate course conducted in Samford University's Orlean Beeson School of Education. The video was viewed by the learners as a group. The follow-up quiz was completed on the learners' smartphones or laptops. The research was conducted via focus group in a grounded theory context.

Learning Task

The learning task was primarily one of convenience for conducting the analysis of the microlearning method. The learners viewed a TED-Ed video entitled "Should We Get Rid of Standardized Testing?" (Kempf, 2017, September 19) and completed a brief quiz as a self-check on their learning of the information presented. Following the quiz, the researcher interviewed the learners as a focus group, asking open ended questions about the video concerning what they learned from the format and whether or not they liked the video. The word "microlearning" was not used until after the completion of the focus group.

Learning Objectives

The learning objectives for the microlearning module are:

- Identify the era and purpose of the first standardized tests.
- Describe the uses of modern standardized testing.
- Explain the meaning of percentile as applied to test results.
- Apply the concepts of reliability and validity to measurement situations.

Instructional Strategies

This microlearning module would be used under typical circumstances in a constructivist context (Larson & Lockee, 2014). Learners would be assumed to have experience using web-based videos. The learners would view the video as part of a series of microlearning modules on the subject of assessment. In either a face-to-face class or an online setting, learners would benefit from group discussions (whether in person or asynchronously) and problem solving.

Media

The technology required of the learners to access the microlearning module quiz was a smartphone, tablet or laptop. The video itself was embedded in a webpage and displayed on the classroom laptop, projected to a screen via a ceiling-mounted projector. The researcher documented learners' answers in the focus group interview using a smartphone recording app.

Implementation Plan

The learners should possess basic smartphone, internet and video navigation skills to interact with the microlearning module. The plan was for the learners to view the video on their own internet ready device with a dependable internet connection.

The learners would be introduced to the purpose of the research and sign informed consent forms before the start of the learning module. The researcher would explain that the learners would access the link provided, enter a nickname in place of creating an account, and view a video on the subject of standardized testing. The video in the microlearning module lasted five minutes, forty seconds. A five-question multiple choice quiz followed the video as an opportunity to self-test learning, but the learners' results would not count against them in any way in their coursework. After the learners completed the microlearning video and quiz, the researcher would ask open-ended questions about the module just completed. In conclusion, the

researcher would thank the learners for their participation and explain how to obtain a copy of the research results from their professor.

Evaluation Plan

The evaluation of the lesson itself consists of the learners' completion of the quiz. The learning objectives are congruent with the quiz items. While the quiz would not count as part of the learners' grade, the results would be used as a measure of how successful the video was in presenting concepts and fulfilling the learning objectives.

The evaluation of the microlearning module is the central goal of the research project. This evaluation would be accomplished through asking open-ended questions of the learners in a focus group format. Based on coding of the learner responses, a grounded theory would be constructed related to how well the microlearning module fits the design structure of Gagné's nine events of instruction.

Literature Review

Microlearning is a learning strategy in which content is delivered in chunks of information lasting from two to ten minutes, according to Eldridge (2017) and Kapp and Defelice (2018). Regardless of the specific length of time, microlearning brevity distinguishes it from other learning methodologies. Kapp and Defelice's 2019 definition summarizes the concept as "an instructional unit that provides a short engagement in an activity intentionally designed to elicit a specific outcome from the participant" (p. 11). Kapp and Defelice further break down this definition, pointing out that microlearning modules are self-contained, engaging and active, with a specific design rather than cutting a longer lesson into smaller pieces, as Eldridge (2017) pointed out. The outcome of the unit must be well-defined. The authors further argue that some

microlearning events, rather than focused on learning, are about performance (Kapp & Defelice, 2019).

Major and Calandrino (2018) discuss microlearning in the context of distance learning and cognitive load. They argue that smaller “bursts” of information enhance the cognitive processing of the learner and better serve the adult online student who may be susceptible to overload. Major and Calandrino’s examples of delivery methods for microlearning, such as video, infographics, podcasts and social media, provide inspiration for readers unfamiliar with the breadth of technological possibilities. Combined with their introductory definitions of microlearning and helpful, wide-ranging references, the article provides a useful overview for the newcomer to the topic.

Osaigbovo and Iwegim, in a succinct one-page article, describe the use of Instagram for an undergraduate medical microbiology course in the School of Medicine, University of Benin, Nigeria (2018). They posted an image and descriptive text each week on both Facebook and Instagram, as well as a picture puzzle. Engagement by the students was higher on Instagram. Over 91 percent of participants felt that the microlearning activities enhanced their learning.

A study by Mohammed, Wakil, and Nawroly (2018) also examines the efficacy of microlearning. The authors separated two groups of seventh-grade students in Sulaimani City, Iraq, teaching one group using microlearning methods and the other traditional teaching methods. After six weeks, the researchers tested the students without prior notification and compared testing results between the two groups.

The average passing rate of the traditionally taught students was 64%, while that of the microlearning students was 84%. Moreover, the students’ rating of the microlearning tools ranged from 92 to 97%. While the fail rate on the lessons taught by traditional methods was

28%, no students failed who were instructed with microlearning methods. The microlearning students were also surveyed to evaluate how they felt about the various microlearning tools, as shown in Figure 1.

Design Element

Lacking in the microlearning academic literature is discussion of the design element. Specifically, researchers have not determined if microlearning tools follow any of the structural pedagogy that informs and undergirds traditional learning methods. Some articles discuss design principles, but primarily in terms of elements that the media used to convey the microlearning content must possess. Gabrielli, Kimani, and Catarci, for example, argue that innovative design approaches are required to support learners, including ethnographic observations and participatory design techniques, and evaluation studies (2006). Eldridge points out that most learning practitioners have not received design instruction (2017). He emphasizes the importance of more focus on engagement, limiting learning objectives to one per module, and the personalization of content.

One of the giants in the field of instructional design was Robert M. Gagné. His nine events of instruction, listed previously in this paper, are a sequence of steps forming a framework for effective learning. The present structure seeks to discover to what extent microlearning lessons derive their structure from these events. Gagné himself counseled planning the events before choosing the media with which to implement those events (Reiser & Gagné, 1982), suggesting a consideration of the learning outcomes that support particular kinds of media (Gagné, 1974).

Kerres (2007) explores what instructional design looks like at a microlearning level, and asks if instructional design is still important, as many modern learners now have the opportunity

to choose their own lesson sequence. He goes on to discuss the tension around newer approaches that allow more learner autonomy. The fact that classic approaches such as Gagné's have not been abandoned, Kerres says, may be evidence that these instructional theories continue to have validity. Kerres cites three authors who questioned instructional design models (Jonassen, 1990; Merrill, 1991; Tripp & Bichelmeyer, 1990). Of those authors, Merrill did not see a necessity for "fundamental change" (Kerres, 2007, p. 101) in the structural aspects of instructional design.

The 2019 article by Jahnke, Lee, Pham, He, and Austin studied the design principles used in mobile microlearning platforms. The authors surveyed the literature and interviewed industry professionals in their quest to discover these principles. Thirty-nine articles were chosen for the period 2017 and earlier, while an additional eleven were studied for 2018 and 2019. Additionally, thirty industry reports were selected. Five industry professionals engaged in the development of mobile microlearning platforms responded to their invitation to participate.

Through analyzing the data, Jahnke, et al. arrived at a set of eight design principles found in mobile microlearning platforms, including micro-content, chunked courses, instructional flow, system design, supporting learner needs, supportive social structures, costs, and curriculum (2019, Fig.1). The authors used these themes to evaluate seven microlearning platforms and found considerable variation. EdX was the only platform utilizing all eight themes. Table 1 lists the top seven platforms in order of theme utilization. Although Jahnke, et al. observe that these revealed principles echo Gagné's model of instruction, one must sift through the article to discern this echo, faint as it is. They conclude, as do Kapp and Defelice (2019), that while microlearning is useful for training, it should not be used to elicit more creative learning such as higher levels of Bloom's taxonomy.

Jeong's 2019 study is more closely related to the present study than any other found in the literature. While Jeong never mentions the term "microlearning," he studied Gagné's instructional event sequences as found in audio podcasts, often used as an example of microlearning. Jeong tested the sequence of these instructional events in relation to learning outcomes and learner perceptions. Selecting twenty-six educational audio podcasts on iTunes with either very high or very low satisfaction ratings, the author used sequential analysis to provide some evidence to support Gagné's event sequences. Jeong concluded that rearranging these sequences for different instructional contexts could increase learner efficiency and satisfaction.

These articles demonstrate that the intersection of microlearning and Gagné's nine events of instruction provides rich opportunity for investigation and application. Jeong's study in particular hints at the possibilities for exploring traditional theories and frameworks in light of modern forms of learning.

Development of Instruction

The researcher will introduce herself and her research project to the students a week prior to the focus group interview. She will hand out the informed consent forms to the students in one section, explaining the contents and purpose of the informed consent form. The researcher will also answer any questions, avoiding too much detail so as not to prejudice the students or plant any preconceptions in their minds. The course professor will take up the completed forms, mailing them to the researcher via campus mail in a pre-addressed envelope.

On the day of the focus group, the researcher will ensure all participating students have completed the informed consent form and are excused if they do not wish to participate. The researcher will deliver a briefer version of the research project purpose introduction before

providing slips of paper with the video URL on them. Any questions will be answered. Students will be asked to view the video and complete the quiz, assuring them that the quiz results will not count against their grade.

The microlearning module, a TED-Ed video entitled, “Should We Get Rid of Standardized Testing?” (Kempf, 2017, September 19)¹, will be viewed on student-owned smartphones during class. After viewing the video, the students will take the five-question multiple choice quiz. The original video has three discussion questions in addition to the multiple-choice items. The TED-Ed feature allowing the creation of an edited learning module based on the original will be used to remove the discussion questions in the interest of time. A shortened link will be created to allow students to access the page more easily.

The focus group discussion will be recorded by both the researcher and the advising professor, Dr. Laura McNeill, using smartphones and the Rev Voice Recorder. The recordings will be transcribed using rev.com’s audio to text transcription service.

Implementation

The research project was implemented with twelve undergraduate students enrolled in one section of EDUC 302, Research in Special Education. The class members were all female elementary education majors. Nine of them were twenty years old and three were twenty-one.

The researcher met with the class a week prior to the designated focus group session. The purpose of the research project was explained as detailed in the Development section. The students were unfamiliar with the concept of microlearning, which the researcher defined as a

¹ This video is designated as usable through Creative Commons license, Attribution–Non Commercial–No Derivatives. <https://www.ted.com/about/our-organization/our-policies-terms/ted-talks-usage-policy>

popular learning strategy in which lessons are brief, less than ten minutes long, accessible via smartphone, tablet or laptop, and that often have one learning objective for each lesson.

The researcher explained that during the focus group session, students would view a brief video, about five minutes long, on their smartphone, tablet or laptop, and complete a five-question quiz. All students indicated they possessed at least one of these electronic tools. After viewing the video and finishing the quiz, the researcher asked the students a series of questions related to the video and their reactions to it. The students were told that everyone was welcome to participate and offer opinions, and that there were no right or wrong answers.

Students were also informed by the researcher they would be recorded to aid in study of the results. The results would remain anonymous, and the researcher would destroy the recording when the study was complete. The researcher would send the results of the study to the students' professor on completion, but students were welcome to request personal copies if desired.

The researcher informed the students that Samford University's Institutional Review Board required written consent from each participant. The researcher distributed copies of the form to all the students who were present; one of the students was absent. After explaining the elements of the form and where they needed to sign and initial, the researcher retrieved the completed forms rather than wait for the professor to mail them as proposed in the Development section.

The researcher met again with the student participants a week later during their designated class period for the focus group interview. The student who was absent the previous week completed the informed consent form and received her copy back once it was photocopied. The signed copies of the forms had been scanned by the researcher and the originals returned. All students assented to participation.

Because of the uncertainty that students would have earbuds or headphones with them, the researcher projected the TED-Ed video, “Should We Get Rid of Standardized Testing?” (Kempf, 2017, September 19) on the classroom screen to avoid the noise distraction of twelve smartphones playing at once. The researcher handed out slips of paper providing the URL of the video, and students used their personal smartphones to complete the quiz.

Evaluation

The grounded theory qualitative research method was chosen as the best method to explore the efficacy of microlearning. Because of time constraints, a focus group interview was used to elicit data rather than individual interviews.

The researcher and the advising professor each placed a smartphone on either side of the room to record the focus group interview. The Rev Voice Recorder app was used to capture the student answers and comments. The researcher instructed each student to state her name prior to answering the question to aid in distinguishing responses.

The researcher posed ten questions about the video. The students were actively engaged in answering the questions posed by the researcher. Out of the twelve students, ten contributed to the conversation. Table 2 shows participation frequency by student. In two instances, a student did not identify herself, but she was one of the more active responders.

The researcher’s recording was transcribed by Rev.com. The transcription was compared to the researcher’s recording as well as the advising professor’s recording for instances where the transcript was marked “Inaudible.”

The responses were transferred from the transcription to a two-column table in a Word document and coded based on recurring themes. These themes formed a theory which was

compared with Robert Gagné's nine events of instruction. The researcher drew conclusions about microlearning based on this theory.

Discussion

The students' answers were coded according to grounded theory principles and compared with Gagné's nine events of instruction. Eight of the nine events were present to some extent in the learners' perceptions of the microlearning presentation. Gagné, Briggs, and Wager (1992) pointed out that not all these events would be present in every lesson. In a comment pertinent to microlearning, the authors observe that learners often fill in the missing elements themselves.

Gain Attention

Two methods for gaining learners' attention are through stimulus change or appealing to learners' interests (Gagné, Briggs, & Wager, 1992). Comments made by the learners about the microlearning module related to this event include that the video was visually pleasing, used fun colors and illustrations, had a title that set up the perspective of the learning experience to come, and was entertaining and short. The video appealed to learners' interests by its subject matter of standardized testing, a topic of interest to elementary education majors whose students would face such testing in the future.

Inform Learners of Objectives

This event's purpose is to allow the learners to understand whether or not learning has occurred (Gagné, Briggs, & Wager, 1992). The learners were not given a list of the objectives in advance, but they discerned two of the four objectives in their comments. One objective was, "Identify the era and purpose of the first standardized tests." The history of standardized testing, especially its origins in ancient China for the purpose of selection for government positions, was mentioned frequently by the learners. The second objective, "Describe the uses of modern

standardized testing,” was mentioned in comments related to the positive side of testing, that testing is used for certain times and places, and that testing was not useful for every situation.

The third objective, “Explain the meaning of percentile as applied to test results,” appeared in the form of a learner’s comment that she had never understood how percentile in the context of testing worked until viewing this video. The fourth objective, “Apply the concepts of reliability and validity to measurement situations,” was only mentioned obliquely when one learner observed that two questions on the quiz referenced “reliable and something else.” She could not recall what the meaning was, and pointed out that no other students had talked about these concepts.

Stimulate Recall of Prior Learning

This learning event refers to the need in new learning for the combining of ideas (Gagné, Briggs, & Wager, 1992). Learners in the focus group connected their previous knowledge of standardized testing with the information in the video. The students commented on previous dialogue they had heard about negative aspects of testing, the implications of testing, the importance of testing related to “No Child Left Behind,” and the competition of the United States with the Soviet Union.

Present the Content

Gagné, Briggs, and Wager (1992) phrase this learning event as “presenting the stimulus material” (p. 193). The authors discuss the importance of features that assist learners in perceiving information, such as bold print, underlining, arrows and outlining. Using a variety of examples is also a vital element of this event.

This event of instruction was perceived by learners in the focus group, as evidenced by references to the example in which a ruler was broken while attempting to measure a pineapple,

illustrating the point that a tool such as a standardized test must be applied in the appropriate circumstance. The learners also commented on situations in which testing is not helpful, such as a math word problem given to a student with a reading impairment. Various features of animation in the video were also mentioned, emphasizing the importance of assisting learners in perceiving information. One learner appreciated the use of diagrams in explaining how percentiles were used in standardized testing.

Examples were less helpful in the case of reliability and validity, a chief point of emphasis in the video. Learners did not recall this information, as mentioned by one student, who remembered “reliable” but not validity.

Providing Learning Guidance

“Learning guidance” refers to the providing of hints or questions through direct or indirect prompts to help the learner to various degrees. Quick learners need fewer prompts, while slower learners may require more. Learning new information requires direct prompts, i.e. the answer itself, while reminding students of prior knowledge indicates the use of indirect prompts (Gagné, Briggs, & Wager, 1992).

Participants in the focus group interview perceived guidance in the discussion of the history of standardized testing. This guidance was direct, since most of the learners were unfamiliar with the topic. The video’s unique animation style influenced the learners’ positive opinion of standardized testing and its use as a tool appropriate to certain circumstances.

The quotation at the beginning of the video, “The hardest part of learning something new is not embracing new ideas, but letting go of old ones” (Rose, 2016), provided a particular “ah-ha!” moment for one student. The student realized the meaning of the quotation in relation to the subject of standardized testing, providing her with an indirect prompt.

Elicit Performance

Following learning guidance, according to Gagné, Briggs, and Wager (1992), learners should provide some evidence that learning has taken place. The focus group interview itself showed learning had occurred, through their answers about the video. Many of the students' answers involved the history and original purpose of standardized testing, as well as the idea that a test is a tool for certain purposes, as exemplified by the illustration of trying to measure a pineapple with a ruler.

Provide Feedback

Learners should be given some understanding of the correctness of their performance, with the caveat that the function of providing feedback to learners is more important than the content (Gagné, Briggs, & Wager, 1992). In the case of the microlearning video, a five-question quiz provided feedback. The results of this quiz are shown in Figure 2.

Assess Performance

Gagné, Briggs, and Wager (1992) stress that assessment of outcomes is a complicated matter involving questions of reliability and validity. Reliability, according to the authors, is determined by multiple repetitions of the performance to eliminate the element of chance. Validity of outcome is determined by how accurately the performance reflects the objectives under “conditions that make the observation *free of distortion*” (p. 197, italics in the original).

Reliability of the learning event is unable to be determined, given the finite nature of this research project. Learners did respond to objectives as discussed in the section entitled “Inform Learners of Objectives,” thus hinting at the validity of the outcome. Since the video was shown to all the learners at once with no prior knowledge of its existence, the conditions were free of distortion.

Enhance Retention and Transfer

This event of instruction relies on long-term observation of the learners. Gagné, Briggs, and Wager (1992) explain that retention and transfer are verified through exposing students to situations different from the original experience to determine if the learners apply previous learning to the new experience. As was the case with assessing performance, repeat encounters with the focus group members were not part of the research project.

Conclusion

This research project measured learners' perceptions of microlearning through the lens of Gagné's nine events of instruction. Undergraduate students were introduced to a microlearning module consisting of a five-minute video and five-question quiz. The students were asked in a focus group interview a series of ten open-ended questions designed to elicit their responses to the video.

Few, if any, studies of this type appear in the literature examining the instructional design aspects of microlearning, although short lessons consisting of highly visual elements are a popular form of training. The scarcity of these studies and the popularity of the format combine to increase the importance of further investigation of the effectiveness of microlearning.

The microlearning module used in this project showed numerous learner perceptions of seven of the nine events. Student quiz results indicate success in learning the content, although with no assurance of long-term results. The project stands as a robust starting point for other research in this area, and should be repeated in a classroom setting with a range of types of microlearning media. The instructional designer, teacher or trainer may be more confident in using microlearning as a valid form of learning, regardless of its popularity.

References

- Chadha, S., & Kumar, S. A. (2018). From macro to micro. *Human Capital*, (July), 24-27.
- Eldridge, B. (2017). Developing a microlearning strategy with or without an LMS. *eLearning & Software for Education*, 1, 48-51. doi:10.12753/2066-026X-17-007
- Gabrielli, S., Kimani, S., & Catarci, T. (2006). The design of microlearning experiences: a research agenda. In T. Hug, M. Lindner, P. A. Bruck (Eds.), *Microlearning: Emerging Concepts, Practices and Technologies After e-Learning. Proceedings of Microlearning 2005: Learning & Working in New Media* (pp. 45-53).
- Gagné, R. M. (1965). *The conditions of learning*. New York, NY: Holt, Rinehart & Winston.
- Gagné, R. M. (1974). Educational technology and the learning process. *Educational Researcher*, 3(1), 3-8. <https://www.jstor.org/stable/1175241>
- Gagné, R. M., Briggs, L. J., & Wager, W. W. (1992). *Principles of instructional design*. (4th ed.) Fort Worth, TX: Harcourt Brace College Publishers.
- Jahnke, I., Lee, Y.-M., Pham, M., He, H., & Austin, L. (2019). Unpacking the inherent design principles of mobile microlearning. *Technology, Knowledge and Learning: Learning Mathematics, Science and the Arts in the Context of Digital Technologies*. <https://doi-org.ezproxy.samford.edu/10.1007/s10758-019-09413-w>
- Jeong, A. (2019). Comparing instructional event sequences in audio podcasts with low versus high user satisfaction. *TechTrends: Linking Research & Practice to Improve Learning*, 63(5), 559-563. doi: 10.1007/s11528-018-0369-3
- Jonassen, D. H. (1990). Thinking technology: Toward a constructivist view of instructional design. *Educational Technology*, 30(9), 32-34.
- Kapp, K., & Defelice, R. (2018). Elephant-sized impact. *TD: Talent Development*, 72(7), 26-30.

- Kapp, K. M., & Defelice, R. A. (2019). *Microlearning: Short and Sweet*. Alexandria, VA: ATD Press.
- Kempf, A. (2017, September 19). *Should we get rid of standardized testing?* [Video file], Retrieved from <https://youtu.be/YtE0OsRWeYI>.
- Kerres, M. (2007). Microlearning as a challenge for instructional design. In T. Hug (Ed.), *Didactics of microlearning: Concepts, discourses and examples* (pp. 98-109). Münster, Germany: Waxmann. Retrieved from <https://play.google.com/books/reader?id=J0-KAwAAQBAJ&printsec=frontcover&pg=GBS.PA98>
- Larson, M. B., & Lockee, B. B. (2014). *Streamlined ID: A practical guide to instructional design*. New York, NY: Routledge.
- Major, A., & Calandrino, T. (2018). Beyond chunking: Microlearning secrets for effective online design. *Distance Learning, 15*(2), 27-30.
- Merrill, M. D. (1991). Constructivism and instructional design. *Educational Technology, 31*(5), 45-53.
- Mohammed, G. S., Wakil, K., & Nawroly, S. S. (2018). The effectiveness of microlearning to improve students' learning ability. *International Journal of Educational Research Review, 3*(3), 32-38. doi: 10.24331/ijere.415824
- Osaigbovo, I. I., & Iwegim, C. F. (2018). Instagram: A niche for microlearning of undergraduate medical microbiology. *African Journal of Health Professions Education, 10*(2), 75. doi: 10.7196/AJHPE.2018.v10i2.1057
- Reiser, R. A., & Gagné, R. M. (1982). Characteristics of media selection models. *Review of Educational Research, 52*(4), 499-512. <https://www.jstor.org/stable/1170264>

Rose, T. (2016). *The end of average: How we succeed in a world that values sameness*. New York, NY: HarperOne.

Tripp, S. D., & Bichelmeyer, B. (1990). Rapid prototyping: an alternative instructional design strategy. *Educational Technology Research and Development*, 38(1), 31-44.

University of Florida, Gainesville, Center for Instructional Technology & Training. (2018).

Gagné's 9 events of instruction. <http://citt.ufl.edu/tools/Gagnés-9-events-of-instruction/>

Tables

Table 1

Mobile Microlearning Platforms Using Pre-Determined Design Themes

Rank by No. of Themes Utilized	Platform
1	EdX
2	TalentLMS
3	Skillshare
4	WizIQ
5	Unleesh
6	Udemy
7	Lynda.com

Note. Authors did not indicate how many themes were present in each platform, except that EdX had all eight represented. Jahnke, I., Lee, Y.-M., Pham, M., He, H., & Austin, L. (2019). Unpacking the inherent design principles of mobile microlearning. *Technology, Knowledge and Learning: Learning Mathematics, Science and the Arts in the Context of Digital Technologies*. <https://doi-org.ezproxy.samford.edu/10.1007/s10758-019-09413-w>

Table 2

Student Contributions to Focus Group

Student No.	Times Speaking
1	8
2	7
3	6
4	5
5	4
6	4
7	3
8	2
9	1
10	1
11	0
12	0

Figures

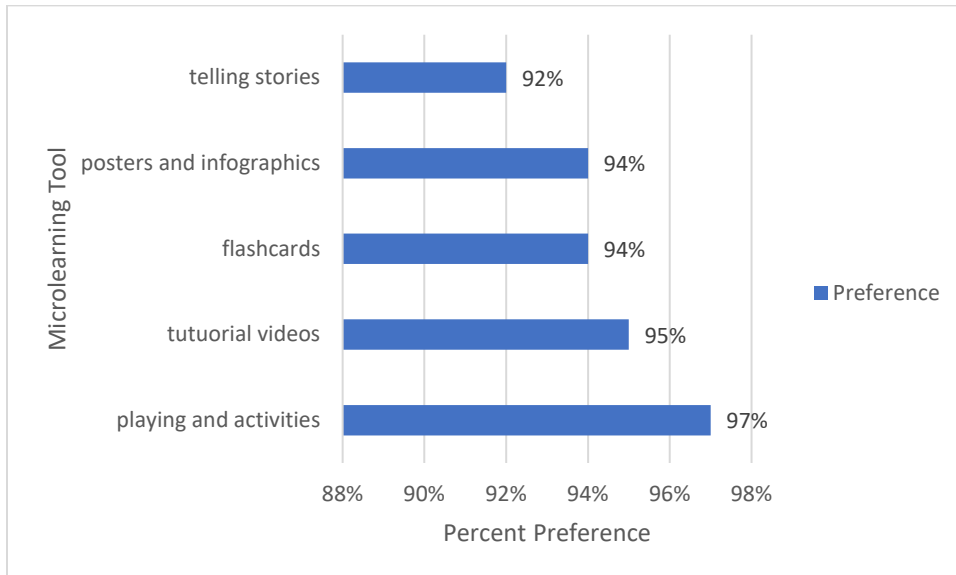


Figure 1. Student preferences in microlearning tools. This figure illustrates the percent of students who enjoyed a particular tool. Mohammed, G. S., Wakil, K., & Nawroly, S. S. (2018). The effectiveness of microlearning to improve students' learning ability. *International Journal of Educational Research Review*, 3(3), 32-38. doi: 10.24331/ijere.415824

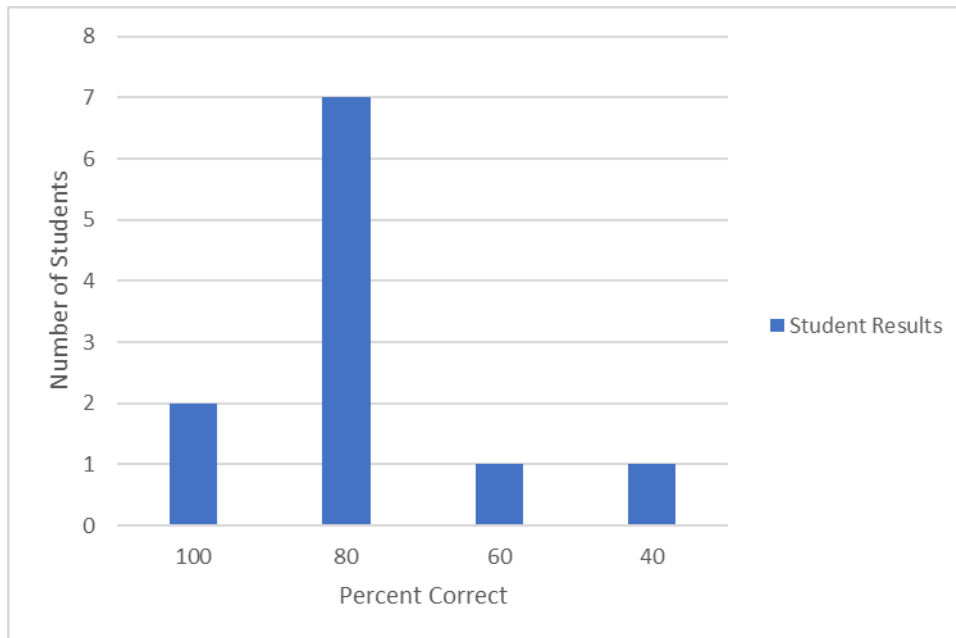


Figure 2. Student scores on microlearning quiz. This figure illustrates the number of students who scored what percent correct on the five-question quiz following the microlearning video. Twelve students took the quiz, but one completed only one question. This student's results are not counted in this figure.

Appendix 1.

Focus Group Interview Script

Shortlink URL: DonnaKFitch.com/OBB

Actual URL: <https://ed.ted.com/on/XWbSnQcp/>

Donna K. Fitch, Graduate student in the Instructional Design & Technology program working on my capstone project for IDTE 599. Dr. Laura McNeill, instructor in the IDTE program.

As you may recall from last Thursday, I am requesting your participation in a research project which has been approved by Samford's Institutional Review Board (IRB). Because the study is limited to one course, the population is very small and your participation is very important.

Today you have the opportunity to participate in a focus group. As we defined it last week, a focus group is a group of interacting individuals having some common interest or characteristics brought together by a moderator, who uses the group and its interaction as a way to gain information about a specific or focused issue. The focus groups results will be used to examine microlearning as an educational tool for undergraduate students. Microlearning, as we talked about last week, is a popular learning strategy in which lessons are brief, less than 10 minutes long, accessible via smartphone, tablet or laptop, and that have one learning objective for each lesson.

Today you will view a brief video on your phone or other device. Is there anyone here who does not have a smartphone, tablet or laptop? After you view the video and answer the questions contained in the microlearning, I will ask a series of questions related to the video and your reactions to it. This will be a group discussion. Everyone is welcome to participate and offer

opinions. There are no right or wrong answers. Depending on the course of the discussion I may ask follow-up questions to make sure I understand your thoughts and feedback.

As this is a research project, Dr. McNeill and I will record the discussion. After the recording is transcribed and analyzed, it will be deleted. All information gathered from the study will remain anonymous. Your identity will not be available to anyone other than the researcher. The discussion should take about 40 minutes of class time.

I will send a copy of the results to Dr. Hilsmier to share with you, but you may request an individual copy of the results by contacting me at dkfitch@samford.edu.

As I mentioned last week, the Samford IRB requires me to obtain written consent from all study participants. Is there anyone here today who was not here last Thursday? [If so, hand out form. Return copies of their signed forms with my signature.]

[Hand out URL slips] This is the shortlink for the video. Please watch the video and complete the 5 questions following it. These questions do not count toward a grade.

Appendix 2.**Focus Group Interview Questions**

1. What was your first impression of the video? Why did you think that?
2. After watching the video, how would you define the term, “standardized testing,” to a friend?
3. Thinking about that same friend, how would you explain the main goal or purpose of this video?
4. On a scale from 1 to 10 (10 being the most knowledgeable), how knowledgeable were you about the concept and history of standardized testing as described in the video?
5. What did you find most compelling about the video content? Why?
6. What main words or phrases come to mind first when you think about this video?
7. What changes would you recommend making to this video?
8. What did you like least about the video? Why?
9. Think back to watching the entire video. What is one thing you remember most about standardized testing from the video?
10. Is there anything we missed?

Appendix 3.

Media Used

Kempf, A. (2017, September 19). *Should we get rid of standardized testing?* [Video file],

Retrieved from <https://youtu.be/YtE0OsRWeYI>.