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Engaging Graduate Students Through a Microchallenge: Providing Purpose for New Tool Exploration

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This paper reports the design, development, and implementation of a microchallenge in a graduate level online course. The purpose of the microchallenge was to introduce Twitter to students with a structured, but fun activity. The design process involved conceptualizing the week-long challenge with daily tasks aligned with course objectives. Technological tasks involved coordinating classroom based online communication tools to facilitate the microchallenge. The results demonstrate that students generally enjoyed the activity which fostered active and meaningful knowledge sharing, networking, community development, and learning practices. Implications for social media-based course activity design were discussed.

Keywords: Student engagement, microchallenge, Twitter, social media

Introduction

Social media has been used in higher education courses for a variety of purposes, often with the assumption that it will be familiar and motivating to students. However, this is not always the case. In a class with students who are social media enthusiasts, there are likely to also be students who are reticent users. Also, the ways students use social media in their personal lives may differ from the ways they are asked to use it in the learning or professional context. As a result, introducing social media into the higher education classroom may not be as seamless as it initially sounds.

Public social media platforms such as Instagram and Twitter (renamed X in 2023 but referred to as Twitter throughout this manuscript) can be intimidating for inexperienced users introduced to them in the classroom setting. Inexperienced users may worry about accidentally breaching social norms or taking privacy risks. Even experienced users may have concerns about privacy and context collapse when initially using social media to support their studies. They also may be reticent to post to a class space until someone else populates the space with content and interaction partners are present. For these reasons, among others, the way an instructor introduces social media to a class can affect how students perceive and use it.

This study presents one approach to introducing social media to students, with low-stakes, optional activities constituting a microchallenge. This microchallenge is situated in a graduate-level online class, and focuses on Twitter use, but the design and implementation of the microchallenge might also be used with students at other levels, classes learning through other modalities, and different social networking sites. The microchallenge allows students to experience the tool through guided exploration and sharing and without any stress about grades. Once they have completed the microchallenge, they should have developed skills and networked connections that provide a foundation for subsequent coursework on that social media platform. In this case study, the microchallenge activity rationale and design are shared, along with details about student participation and perceptions.

Literature Review

Social Media Use for Learning Purposes

Social media has been steadily and widely used for various purposes including social interactions, the maintenance of interpersonal relationships, the expansion of social ties, communicative functions, information seeking and sharing, entertainment, passing time, self-documentation, and self-expression (Alhabash & Ma, 2017; Malik et al., 2019; Whiting & Williams, 2013). Although social media platforms were not initially designed with the explicit goal of facilitating learning activities, their inherent capabilities for content sharing, multimedia integration, networking have positioned them as a viable option for such educational purposes (Malik et al., 2019; McLoughlin & Lee, 2010; Tess, 2013). A diverse array of learning activities, such as networked knowledge activities (Dennen et al., 2020) can be easily observed through the content posted by social media users. The interest in and use of social media for educational purposes, both in formal and informal learning settings, is on the rise (Malik et al., 2019).

Twitter stands as one of the popular social media tools (Alhabash & Ma, 2017). Its microblogging feature enables users to craft real-time messages, which are subject to a character limit, now extended to 280 characters for user with a free account. Twitter also offers an array of functionalities, including hashtags, likes, mentions, and replies/retweets, that enable users to establish connections, initiate, and participate in multidirectional communications and conversations with other Twitter users (Erhel et al., 2022; Steckenbiller, 2016). Furthermore, the multimedia format of Twitter, which includes images, videos, and text, has garnered recognition for its effectiveness in various modes of communication and representation. With these affordances, Twitter's value and impact as a learning tool extend significantly across diverse domains and contexts (Malik et al., 2019). Students and professionals from various fields utilize Twitter to connect with peers and the broader public, primarily with the goal of sharing discipline-specific and relevant information while pursuing their academic interests and professional learning goals, as well as promoting professional growth and networking (Cho & Rangel, 2016; Malik et al., 2019; Veletsianos & Kimmons, 2016).

Twitter Use in Formal Classrooms

Recent literature reviews have uncovered Twitter's strong potential as a supportive tool in formal educational settings. These reviews have highlighted a range of positive outcomes associated with the use of Twitter in classrooms, including enhancements in motivation, communication, inclusion, engagement, learning and the development of communities of practice (Erhel et al., 2022; Hodges, 2016; Malik et al., 2019). Additionally, the literature has reported enhanced retention rates, student grades, and a heightened intention to incorporate Twitter into future teaching practices. Various instructional approaches have been employed to integrate Twitter into classroom settings, such as assigning students to create tweets regularly and facilitating discussions using hashtags (Erhel et al., 2022; Hawkins, 2015; Malik et al., 2019). Twitter was also used as either a primary or supplemental communication channel, responding to students' questions and sharing course-related information. Other Twitter-integrated activities have been also purposely designed to foster reflective thinking, collaborative learning, enhance social presence, assess student learning, and reflect upon teaching practices (Erhel et al., 2022; Malik et al., 2019).

On the other hand, prior research has consistently highlighted the adverse aspects associated with the integration of Twitter in formal educational settings. These investigations have brought to issues such as inappropriate usage (e.g., managing discussions in large classes becomes unwieldy), an excessive presence of Twitter in the classrooms, an overwhelming volume of tweets, limitations stemming from the necessity for concise text (e.g., resulting in weaker grammar quality and restricted freedom of expression), students' unfamiliarity with Twitter leading to negative perceptions, student-instructor resistance, difficulties in assessing the credibility of shared information and sources, lack of awareness about guidelines for using Twitter for educational purposes, internet access issues, distractions, addictive behaviors, online safety, privacy concerns, online reputation concerns, and context collapse that occurs when social and academic worlds are mixed (Cho & Rangel, 2016; Erhel et al., 2022; Hawkins, 2015; Kinnison et al., 2017; Lackovic et al., 2017; Malik et al., 2019; Manca & Ranieri, 2016; West, 2017).

As discussed previously, research on the integration of social media, including Twitter, into formal learning contexts is expanding. However, the mixed results and concerns arising from these studies demonstrate the need for research that explores diverse instructional approaches within various formal learning settings. Additional considerations include careful advanced planning and providing clear explanations of how Twitter should be utilized within a course, along with expectations for its use (Lackovic et al., 2017; Osgerby & Rush, 2015; Whiting & Williams, 2013). This study contributes to this research gap by describing the design and use of a week-long microchallenge named the "Twitter days of the week" challenge. Microchallenges are a form of microlearning, or learning based on small-scope

learning objectives and short-duration, often independent experiences (Corbeil et al., 2021). Although often thought of as learning from standalone learning objects (Word & Dennen, 2021), microlearning can also involve experiential learning. Microlearning becomes a challenge when the activity is optional, and presented to learners as a practice or extension activity (Dennen et al., 2024). Optional challenges run counter to suggestions that Twitter-based learning activities be mandatory, to motivate learners (Kunka, 2020; Malik et al., 2019), but the decision to make Twitter use optional respects student concerns about issues such as privacy and context collapse (Dennen & Burner, 2017).

In this study, an optional challenge is appropriate because the microchallenge was designed to provide a practice opportunity for students, but completion of the challenge was not necessary for attaining course learning objectives.

Purpose and Research Questions

The purpose of this study is to evaluate a social media-based microchallenge activity. In order to evaluate the activity, we also provide a comprehensive account of the design, development, and implementation of the activity.

This microchallenge was integrated into an online graduate class with the purpose of providing an optional means for students to practice using Twitter with their classmates. The microchallenge activity, titled "Twitter days of the week challenge" lasted for one week, and students completing the full challenge were offered a digital badge as a reward (see Arslan et al. (2022) and Dennen et al. (2024) for descriptions of microchallenge badge systems). The microchallenge did not have a direct relationship to student grades. Two research questions guided this study:

1. How did students engage in the microchallenge?
2. How did students perceive the microchallenge?

Together, these questions represent an effort to evaluate one cycle in the ongoing design and teaching of a course across multiple terms. By answering these questions, we offer instructors, instructional designers, and educational researchers with a clear example of how microchallenges can be designed and implemented used to support student exploration in a low-stakes, communal activity.

Methods

Research Design

A case study research design was used to explore how students engaged in and perceived this microchallenge learning experience. Specifically, this is an intrinsic case study (Stake, 1995), exploring a specific, unique instance of a class activity. The case considers the design of the activity, and the resulting outcomes. In doing this, it connects the intention behind a designed artifact – in this study, the microchallenge activity – to the practical implementation of that design, presenting it to other scholars and practitioners who may discuss and build upon the case (Breslin & Buchanan, 2008). Both qualitative and quantitative data are used to support the case, which is typical of case studies (Guetterman & Fetters, 2018). The study was approved by the researchers' Institutional Review Board.

Participants and Class Context

Participation in this study was bound by membership in a class. The participants are 24 graduate students, their instructor, and their teaching assistant. The instructor had previously taught this class 13 times, and is the original course designer. The teaching assistant was previously a student in the class, and this was their second year as the teaching assistant. The class was offered during a 12-week semester.

The class is an online graduate-level class focused on learning technologies. In this class, students are introduced to a broad range of learning tools and they explore ways that these tools might be used to support learning and performance. The class used a digital badge system, in which students were awarded badges for completing optional microchallenges related to practicing with these tools (see Arslan et al. (2022) for a full description of this system).

Designing for Learner Practice and Engagement

Per the course learning objectives, students will learn to identify the strengths and weaknesses of various tools and then to design educational experiences and performance supports using those tools. Twitter has been among the many

tools used by learners in this class since the first offering. Twitter use has always been optional, in part out of concerns for student discomfort and privacy and in part because the course introduces students to many tools but allows for choice in which ones students actually use. Because Twitter is public, all students in the class can view tweets posted to the class hashtag even if they choose to not post anything themselves.

The instructor included Twitter on the list of tools covered in the course because of the perceived value of Twitter to both educators and learners. She wanted her students to learn about potential educational uses of Twitter, including passive options such as learning by following and consuming the content posted by others, and active options such as participating in a Twitter chat. To support learning about Twitter, the instructor included articles about educational uses of Twitter among the course readings, developed a page within the Learning Management System (LMS) with resources to help students learn how to use Twitter effectively, and posted discussion board topics about using Twitter. Collectively, these efforts provided students with information about Twitter and space to ask questions and express their opinions about the platform, but did not give them any practical experience with it.

During earlier class offerings, students were generally encouraged to try using Twitter – and some students did – but their contributions were temporally scattered, and the class did not offer a specific activity to encourage simultaneous student exploration of Twitter. Based on past experiences, the instructor was aware that some students would be unlikely to participate on Twitter without overt encouragement and direct guidance. Past students had expressed a distrust of the platform and a sense that it was a space where people alternatively boasted of their accomplishments, overshared about their everyday lives, or engaged in conflict-laden debates.

The instructor sought to develop a class activity that would encourage students to practice Twitter use at the same time and to give purpose to their tweets, helping students see the different ways that professionals use Twitter to connect with each other and share knowledge. Criteria for this activity were:

- It should engage students in authentic Twitter activities or trends (purpose = experience the culture of Twitter)
- It should engage students across multiple days (purpose = multiple instances of practice to Twitter)
- It should be related to the course topic (purpose = relevance to learning objectives)

Additionally, the instructor had the idea to post the activity to students as a microchallenge, inspired by an earlier class when she used the word "challenge" informally to encourage students to engage in an activity, finding that the term motivated them.

The microchallenge met the first two criteria by drawing upon existing Twitter hashtag trends that encourage people to tweet specific items on specific days, with an alliterative title (e.g., #ThrowbackThursday). Then the instructor adjusted the specific hashtag activities to align with the course objectives, meeting the third criterion. The daily hashtags and challenge directions appear in Table 1.

Table 1
Summary of daily microchallenge activities

Challenge hashtag	Challenge directions	Purpose
#MemeMonday	Share a meme related to online life, make us laugh	Start with an easy and fun activity, practice posting images
#ToolboxTuesday	Share one of your favorite online tools	Share online tools, practice with posting links and possibly @mentions
#WonderingWednesday	Ask a question about online tools, online life, online topics, and hopefully get answers	Encourage interaction among peers
#TBT or #ThrowbackThursdays	Post a technology memory or throwback, preferably with a visual (e.g., #TBT to my computer in elementary school)	Practice posting images
#FollowFriday	Recommend an account for us to follow	Build Twitter networks, recognize classmates, practice with @mentions
#ShoutoutSaturday	Give a shoutout to a classmate who's done good, written a cool blog post, etc.	Recognize classmates, practice with @ mentions, potentially connect with other

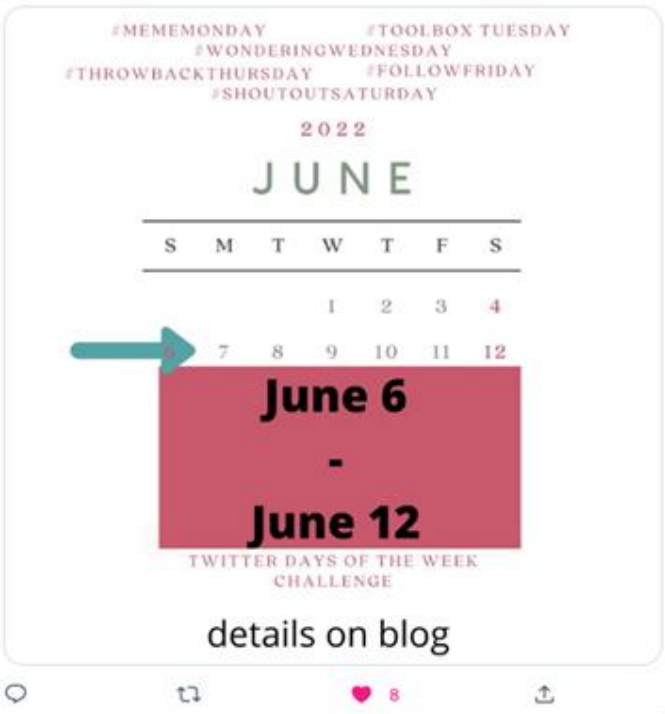
		course communication channels (e.g., blogs)
#SumItUpSunday (for those earning the badge)	Gather your six posts and embed them in a blog post where you write about the challenge	Summarize and reflect, practice with embedding tweets into other tools

The instructor announced the microchallenge across multiple course social media channels (see Figure 1 for the announcement graphic) and formally introduced the challenge on the course blog. Students were given the following directions:

> *Twitter Days of the Week Challenge Directions*
> What to tweet? Always a dilemma, right? But people have been coming up with topics or trends for
> each day of the week since the beginning of Twitter.
> Here's a Twitter challenge that will keep you posting throughout the week.
> Participate as much or as little as you like. There's a badge in it (along with one of your weekly blog
> posts and learning a new tech skill) for folks who do it all.
>
> *Here's what to do:*
> Each day has a theme/topic. Post to Twitter using the class hashtag and the day's hashtag.
>
> [List of directions as summarized in Table 1]

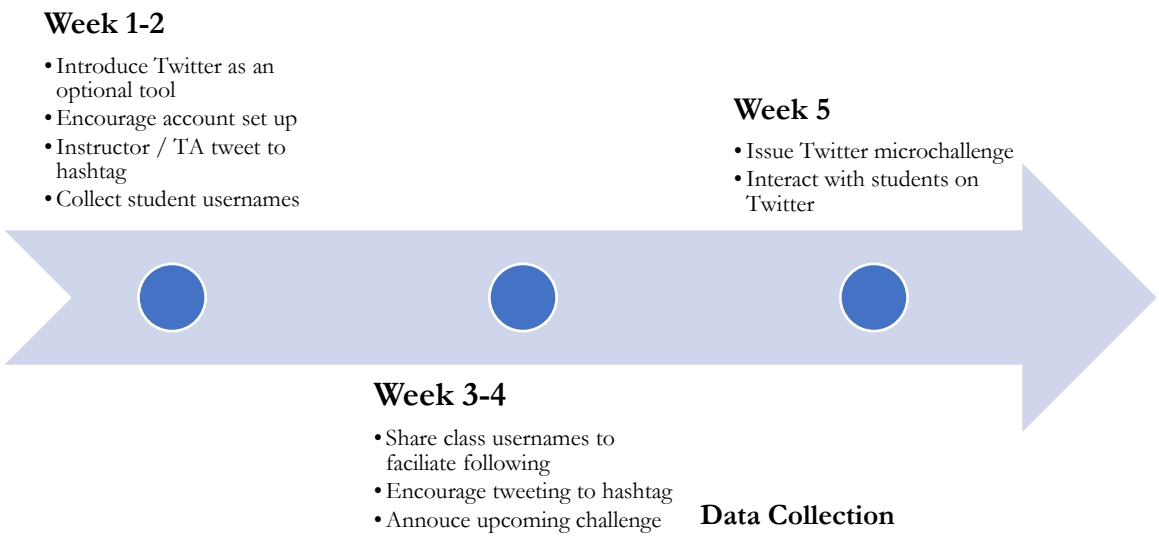
The course blog was a space where the instructor regularly posted items of interest to the students. Additionally, students were required to maintain their own blogs throughout the course. These student blogs were the space where microchallenge participants were asked to write a reflection on #SumItUpSunday, embedding their tweets from the week and discussing their experience during the week. Students who completed all seven of the daily tweets for the microchallenge were offered a digital badge to acknowledge their work.

Figure 1
The challenge graphic posted by the lead instructor



The microchallenge was implemented in Week 5 of the 12-week class. Students had previously been encouraged to set up Twitter accounts, share their usernames with the class, and follow and tweet to the course hashtag. The microchallenges was not issued earlier because the instructor wanted to allow time for students to become familiar and comfortable with the blog assignment and to begin to develop a sense of class community before engaging them with an optional activity on another platform. By Week 5 she felt that even the students who were unfamiliar and reticent Twitter users might be ready to try using the platform. Figure 2 outlines how Twitter was introduced and used in the course during the semester of this study.

Figure 2
Twitter introduction in course prior to microchallenge



Data for this study consists of course teaching artifacts (learning materials, aggregate responses to a student information sheet, the course Twitter hashtag archive), course design artifacts, instructor reflective notes, and student reflective blog posts. All data were collected naturally and unobtrusively, during the design and teaching of the course.

Data Analysis

To examine student engagement and answer the first research question, the course Twitter hashtag archive was examined. While we were aware of various automated tools that collect tweets, we encountered inconsistencies with these services. Therefore, we opted to manually save and count tweets as they occurred, and later verified them using an automatically generated archive of the hashtag. This manual collection and cross-check process was feasible due to the relatively low volume of tweets. We also examined the content of the tweets, to determine their alignment with the microchallenge. To address the second research question, we examined student reflections on the microchallenge that were shared on their blogs, open coding for themes related to how students perceived and experienced the microchallenge.

Results

Student Engagement in the Microchallenge

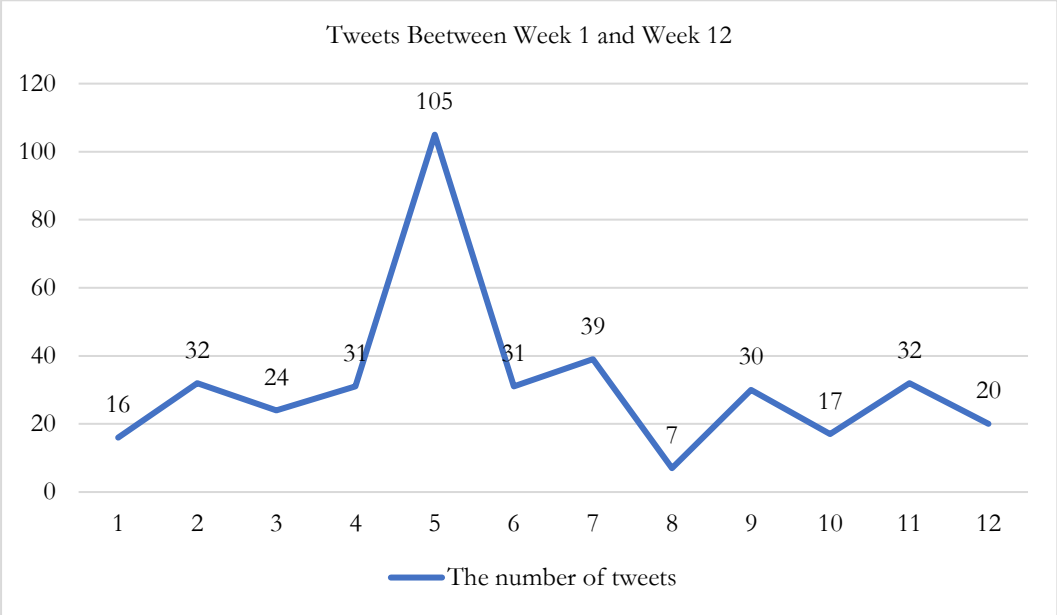
General student background information was collected via an ungraded student information survey during the first week of the class. This data is helpful for understanding who was participating in the class and, potentially, in the microchallenge. As the class began, 11 students (*45.8%*) indicated that they had previously used Twitter. On average, students reported that on a typical day they spent 5.93 hours online for work and school, and an additional 2.55 hours for pleasure. Some of their typical activities included watching videos, scrolling through TikTok, looking at Instagram posts, reading blogs, and playing online games. Of the 24 students, only 3 (*12.5%*) reported having an active posting

presence online. Although most students were not active posters, 13 (*54.2%*) were still comfortable with posting online. Still, 11 (*45.8%*) described their feelings about posting online using terms like *uncertain*, *weary*, *hesitant*, and *nervous*.

Overall, 17 students (*70.8%*) created Twitter accounts and shared their usernames with the class. Fifteen students *(62.5%)* engaged in at least one day of the challenge, and 10 *(41.6%)* students earned the corresponding badge by completing the whole microchallenge. Additionally, one student did not tweet but made a blog post about each challenge in her blog journal, showing the greater reach of the overall microchallenge.

Figure 3 demonstrates tweets that involved the course hashtag between Weeks 1-12 of the course. Week 1 was the second lowest, with 16 tweets. The small number of Week 1 tweets was expected as students were adjusting to the class and course activities. During Week 8 the hashtag had the lowest number of tweets which reflects a digital detox microchallenge that was issued that week, leading many students to not use social media that week. In Week 5, when the microchallenge occurred, there were 105 tweets, tripling the counts of prior weeks. Most of these tweets (*N = 92, 87.6%*) were related to the microchallenge.

Figure 3
Tweets to class hashtag by week



It should be noted that the 105 tweets during Week 5 were tweets that specifically incorporated the class hashtag. Throughout the course, and certainly throughout Week 5, students tended to reply to each other's tweets without including the hashtag. Additionally other student Twitter activity (e.g., building and engaging with a network outside of the class, which was encouraged) occurred but did not include the class hashtag and thus does not appear in Figure 3.

After the microchallenge, tweets to the class hashtag returned to lower levels. These lower levels do not reflect a failure of the microchallenge, because the class curriculum moved onward to other platforms, assuming students could now use Twitter in a more independent manner. To that end, the instructor noted that some students were active on Twitter throughout the remainder of the class, just not necessarily posting to the class hashtag. Students were seen joining Twitter chats, retweeting content, and sharing their own original content on the platform during weeks 6-12.

Finally, the number of students participating in this microchallenge is noteworthy. The course offered students 14 tool-based microchallenges and 6 hidden "Easter egg" microchallenges, and this microchallenge had the highest participation rate.

Student Perceptions of Twitter Days of the Week Challenge

The students participating in the microchallenge were required to collect their tweets from the week and embed those tweets into a blog post, which they did. These ten students blogged about their Twitter microchallenge experiences, and an additional two students wrote about their perceptions of the challenge. In these blog posts, 8 students directly commented that the activity had been fun, with 5 commenting that it was an effective way to connect with classmates. Additionally, 5 students found that the microchallenge gave them a way to connect Twitter use to their field. Three mentioned specifically that they had learned about new tools through #ToolboxTuesday, and another three claimed this was an opportunity for them to finally figure out how Twitter works. One student commented, "After resisting Twitter for years, here I am posting daily and enjoying it!" Finally, two students indicated that they were already thinking about how they might incorporate Twitter and hashtags into their work settings. Below are two illustrative statements from student blog journals.

> *This was fun! I loved seeing everyone discuss the tools they use and #WonderingWednesday was probably my favorite. We all have different backgrounds and experiences, yet use many of the same big tools. (Many MySpace users in the class). Aside from the major ones, I learned about some tools I'd never heard about because of #ToolboxTuesday! I can't wait to do more challenges like this one.* 😀

> *As an avid tweeter, I truly enjoyed using my skills with learning. Tweeting every day is easy, but bringing instructional design into it was an encouraging experience.*

Discussion

The Twitter Days of the Week Microchallenge was designed to engage students in tweeting with purpose alongside their classmates, helping them develop course-relevant familiarity with the platform. The design process and implementation of the microchallenge aligned with the recommendations of other researchers (Gammon & McGranahan, 2015; Rohr et al., 2023). Specifically, the microchallenge (a) had clear goals that were relevant to the use of Twitter; (b) was presented with specific instruction about student expectations; and (c) was situated in a larger context (the class) that provided social media guidelines to help students make productive and safe use of the platform.

This study explores how well the microchallenge design met its goals. Through the microchallenge, students interacted with content and developed skills that were germane to course concepts, which helped ensure it was compelling to students (Arslan et al., 2022). The challenge gave students structure for practicing Twitter use, reducing the tensions around what to tweet, mitigating a concern raised in an earlier study (Lackovic et al., 2017). It was also brief and focused, lasting just a week and never taking more than a few minutes a day to complete. In other studies, these short learning "nuggets" have been well-received by students (Reynolds & Dolasinski, 2023). Essentially, this study shows that microchallenges can be designed to enhance required learning experiences by preparing students to work with a tool that may later be required as part of their coursework or even in their careers.

The first research question focused on student participation and the second focused on student perceptions. The microchallenge was optional but nonetheless engaged half of the class and produced a higher number of tweets to the class hashtag than during other weeks. The optional nature of the activity resulted in less than full-class participation about one-half of the students engaged in the microchallenges. These participation rates would be low for a required activity, which could undermine the potential benefits (Hawkins, 2015; Pollard, 2014; Tang & Hew, 2017). Other studies of optional learning challenges have found that students are still primarily grade-motivated, participating for extra credit (Hodges, 2016; Lin et al., 2013). Extra credit was not offered in this study, but students still expressed positive attitudes toward the microchallenge, calling it "fun" and noting how it helped them get acquainted with and inspired to use Twitter. Even non-participating students were aware of the microchallenge, with one blogging about it. This affirms how the value of microchallenges can extend to others who read the challenge or vicariously experience it by observing classmates (Dennen et al., 2024).

Although this study focuses specifically on a platform-introduction microchallenge, the microchallenge alone is not meant to be the main event in a class context. Instead, the microchallenge is intended to introduce the platform in a manner that swiftly motivates students to become relevant with critical features and to develop a sense of class community on the platform. By spending class time in this way, students ideally will be prepared to continue using the platform in or out of the classroom with a more direct focus on class-related content. Prior research has established

that technology can increase student's cognitive load by introducing new elements that are not directly relevant to the learning task (Skulmowski & Xu, 2022). Additionally, learners need support in order to engage in effective network-based knowledge sharing (Hsiao et al., 2013). Without the microchallenge as means to introduce both tool and task, students might struggle with extraneous cognitive load when trying to simultaneously learn to use a platform and use it for learning.

Ideally, a microchallenge will encourage students to develop skills they will need for future course assignments. In this study, the target skills were related to communicating and sharing information in a public online space. Whereas these students might choose to continue using Twitter throughout the class and to incorporate its use into one or more of their course assessments, they could opt to not use Twitter at all. Nonetheless, the students were exposed to ways that Twitter might be used to support professional networking and community development. Conceptually, this exposure was reinforced by course readings about personal learning environments (Dabbagh & Kitsantas, 2012) and professional learning networks (Trust et al., 2017).

Since the data for this study were collected, Twitter has rebranded as X and changed its interface. At the present moment, students who are not logged in to X are unable to see what others have posted. This change limits the utility of X as an optional, open platform for student microchallenges, although it would still function as a tool accessible to the whole class if use was mandatory. However, X is not the only platform that can support such challenges. The class studied here went on to engage in an Instagram Days of the Week microchallenge later in the term, and experienced several other microchallenges that involved a variety of online platforms.

Limitations

This study has two major limitations. First, we did not examine the non-participants' perspectives or reasons for not completing the challenge. We do not know if they would have had similarly positive experiences if they had participated alongside their classmates, nor do we know if they experienced it vicariously, observing what their classmates contributed without directly posting on Twitter themselves. While it made sense for the microchallenge activity to be optional in the context of this class, future research might explore why some students do not participate.

Second, we did not examine the ongoing effects of participation in this challenge. The data shows that after a surge in tweets during the challenge, tweets to the class hashtag settled back down to a level comparable to the weeks prior to the challenge. During these subsequent weeks, Twitter was no longer a primary tool focus within the class. However, we do not have data about the extent to which students continued their Twitter journey in general, posting and interacting with people without using the class hashtag. That was intentional; we did not want to cause discomfort associated with following their accounts in general and specifically posts that were not tagged for the class or in response to posts tagged for the class. Additionally, we did not collect explicit data about how students planned to use Twitter after the class ended. As a result, while we know that the students who completed the microchallenge were able to use a variety of Twitter functions and had positive experiences during the microchallenge, we cannot suggest that the microchallenge enabled any type of behavioral change. However, we feel confident that this form of microchallenge could be used in another class to precede ongoing use of a target tool like Twitter, and in this scenario, it becomes feasible to measure how well the microchallenge activity prepared students for subsequent coursework.

Conclusion

This case study shows how a focused, structured microlearning challenge can be used to unite students in learning to use a new tool. As a precursor to more substantive tool use, the microchallenge provides students with structure and interaction partners for their initial tool exploration process. The multi-day, multi-part nature of the Twitter days of the week challenge was beneficial for this purpose because it supports the sustained daily practice of small Twitter skills. Helping students develop and reinforce these skills in small chunks and in a low stakes context may build their confidence and future success.

Although this study did not collect data about student motivation and skill-building confidence, future studies might explore how this approach helps students acclimate to new tools and technology environments and its effect on cognitive load. Additionally, future research could determine the optimal scope and duration of this form of microchallenge. As use cases are developed and ideally shared, whether through empirical research or practice-based sharing, the field will have a greater pool of examples to guide educators. These examples could show the breadth of learning supported by microchallenges.

This study has implications not only for instructors interested in microchallenges, but also for instructors who might wish to use SNS in their classes. These findings demonstrate the importance of recognizing the cognitive load associated with learning new tools, and offering opportunities to develop the requisite knowledge and skills prior to fully implementing a tool to explore the subject matter of a class. The microchallenge structure is easily emulated by developing a series of small tasks for students to attempt on a SNS tool over a short period of time, such as a week. By connecting tasks to days, it suggests that students must return to the tool multiple times, continuously reinforcing their skills and encouraging ongoing interactions with peers.

The microchallenge was optional in this class, as (challenges typically are), but the same activity structure could be implemented more formally as a required and graded learning activity. In this sense, the microchallenge would be used to formally support the development of a prerequisite skill. However, microchallenges can have benefits beyond helping students learn a tool. When implemented in a collaborative environment, they may also foster the development of a stronger interpersonal connection among students and perhaps also a sharing culture within the class.

References

Alhabash, S., & Ma, M. (2017). A tale of four platforms: Motivations and uses of Facebook, Twitter, Instagram, and Snapchat among college students? Social Media + Society, 3(1), 2056305117691544. https://doi.org/10.1177/2056305117691544

Arslan, Ö., Dennen, V., & Bong, J. (2022). Engaging learners with challenges and badges: Designing and evaluating a microlearning system. International Journal for Educational Media and Technology, 16(2), 14-24. https://ijemt.org/index.php/journal/article/view/290

Breslin, M., & Buchanan, R. (2008). On the case study method of research and teaching in design. Design Issues, 24(1), 36-40. http://www.jstor.org/stable/25224148

Cho, V., & Rangel, V. S. (2016). The dynamic roots of school leaders' Twitter use: A structurational perspective on technology use. Journal of School Leadership, 26(5), 837-864. https://doi.org/10.1177/105268461602600505

Corbeil, M. E., Corbeil, J. R., & Khan, B. H. (2021). A multidimensional roadmap for implementing effective microlearning solutions. In R. Corbeil, B. H. Khan, & M. E. Corbeil (Eds.), Microlearning in the digital age: The design and delivery of learning in snippets (pp. 3-13). Routledge.

Dabbagh, N., & Kitsantas, A. (2012). Personal learning environments, social media, and self-regulated learning: A natural formula for connecting formal and informal learning. The Internet and Higher Education, 15(1), 3-8. https://doi.org/10.1016/j.iheduc.2011.06.002

Dennen, V. P., Arslan, Ö., & Bong, J. (2024). Optional embedded microlearning challenges: Promoting self-directed learning and extension in a higher education course. Educational Technology & Society, 27(1), 166-182. https://doi.org/10.30191/ETS.202401_27(1).SP04

Dennen, V. P., & Burner, K. J. (2017). Identity, context collapse, and Facebook use in higher education: Putting presence and privacy at odds. Distance Education, 38(2), 173-192. https://doi.org/10.1080/01587919.2017.1322453

Dennen, V. P., Word, K., Adolfson, D., Arechavaleta, V., He, D., Hsu, C.-W., Hur, J., Jung, D., Kent, H., & Russell, A. (2020). Using the networked knowledge activities framework to examine learning on social networking sites. Proceedings of the International Conference on Web-based Communities and Social Media 2020 (pp. 165-172). IADIS Press.,

Erhel, S., Michinov, N., Noël, A., & Gonthier, C. (2022). Tweet to teach: Using a twitter-based instructional method to improve student motivation and academic outcomes in higher education. The Internet and Higher Education, 55, 100876. https://doi.org/10.1016/j.iheduc.2022.100876

Gammon, M. A., & McGranahan, C. (2015). Theory through application: A study in the use of social media for teaching. The Journal of Faculty Development, 29(2), 23-32.

Guetterman, T. C., & Fetters, M. D. (2018). Two methodological approaches to the integration of mixed methods and case study designs: A systematic review. American Behavioral Scientist, 62(7), 900-918. https://doi.org/10.1177/0002764218772641

Hawkins, T. L. (2015). "Can you tweet that?": Twitter in the classroom. Feminist Teacher, 25(2-3), 153-168. https://doi.org/www.muse.jhu.edu/article/619252

Hodges, K. E. (2016). Enhancing student engagement and learning via the optional Biodiversity Challenge. Global Ecology and Conservation, 5, 100-107. https://doi.org/10.1016/j.gecco.2015.11.010

Hsiao, Y. P., Brouns, F., Kester, L., & Sloep, P. (2013). Cognitive load and knowledge sharing in learning networks. Interactive Learning Environments, 21(1), 89-100. https://doi.org/10.1080/10494820.2010.548068

Kinnison, T., Whiting, M., Magnier, K., & Mossop, L. (2017). Evaluating #VetFinals: Can Twitter help students prepare for final examinations? Medical Teacher, 39(4), 436-443.

https://doi.org/10.1080/0142159X.2017.1296561
Kunka, B. A. (2020). Twitter in higher education: Increasing student engagement. Educational Media International, 57(4), 316-331. https://doi.org/10.1080/09523987.2020.1848508
Lackovic, N., Kerry, R., Lowe, R., & Lowe, T. (2017). Being knowledge, power and profession subordinates: Students' perceptions of Twitter for learning. The Internet and Higher Education, 33, 41-48. https://doi.org/10.1016/j.iheduc.2016.12.002
Lin, M.-F. G., Hoffman, E. S., & Borengasser, C. (2013). Is social media too social for class? A case study of Twitter sse. TechTrends, 57(2), 39-45. https://doi.org/10.1007/s11528-013-0644-2
Malik, A., Heyman-Schrum, C., & Johri, A. (2019). Use of Twitter across educational settings: A review of the literature. International Journal of Educational Technology in Higher Education, 16(1), 36. https://doi.org/10.1186/s41239-019-0166-x
Manca, S., & Ranieri, M. (2016). "Yes for sharing, no for teaching!": Social media in academic practices. The Internet and Higher Education, 29, 63-74. https://doi.org/10.1016/j.iheduc.2015.12.004
McLoughlin, C., & Lee, M. J. (2010). Personalised and self regulated learning in the Web 2.0 era: International exemplars of innovative pedagogy using social software. Australasian Journal of Educational Technology, 26(1), 28-43. https://doi.org/10.14742/ajet.1100
Osgerby, J., & Rush, D. (2015). An exploratory case study examining undergraduate accounting students' perceptions of using Twitter as a learning support tool. The International Journal of Management Education, 13(3), 337-348. https://doi.org/10.1016/j.ijme.2015.10.002
Pollard, E. A. (2014). Tweeting on the backchannel of the jumbo-sized lecture hall: Maximizing collective learning in a world history survey. The History Teacher, 47(3), 329-354.
Reynolds, J., & Dolasinski, M. J. (2023). Microlearning: Exploring hospitality student preferences of multi-sensory/multi-modality tools within various contexts. Journal of Human Resources in Hospitality & Tourism, 22(4), 513-533. https://doi.org/10.1080/15332845.2023.2207976
Rohr, L. E., Costello, J., & Squires, L. (2023). Exploring students' Twitter use in the online classroom across 4 years. E-Learning and Digital Media, 0(0), 1-18. https://doi.org/10.1177/20427530231167644
Skulmowski, A., & Xu, K. M. (2022). Understanding cognitive load in digital and online learning: A new perspective on extraneous cognitive load. Educational Psychology Review, 34(1), 171-196. https://doi.org/10.1007/s10648-021-09624-7
Stake, R. E. (1995). The art of case study research. SAGE.
Steckenbiller, C. (2016). Am kürzeren Ende der Sonnenallee in 140 characters or less: Using Twitter as a creative approach to literature in the intermediate German classroom. Die Unterrichtspraxis/Teaching German, 49(2), 147-160. https://doi.org/10.1111/tger.12008
Tang, Y., & Hew, K. F. (2017). Using Twitter for education: Beneficial or simply a waste of time? Computers & Education, 106, 97-118. https://doi.org/10.1016/j.compedu.2016.12.004
Tess, P. A. (2013). The role of social media in higher education classes (real and virtual) – A literature review. Computers in Human Behavior, 29(5), A60-A68. https://doi.org/10.1016/j.chb.2012.12.032
Trust, T., Carpenter, J. P., & Krutka, D. G. (2017). Moving beyond silos: professional learning networks in higher education. The Internet and Higher Education, 35, 1-11. https://doi.org/10.1016/j.iheduc.2017.06.001
Veletsianos, G., & Kimmons, R. (2016). Scholars in an increasingly open and digital world: How do education professors and students use Twitter? The Internet and Higher Education, 30, 1-10. https://doi.org/10.1016/j.iheduc.2016.02.002
West, S. (2017). Confronting negative narratives: The challenges of teaching professional social media use. Business and Professional Communication Quarterly, 80(4), 409-425. https://doi.org/10.1177/2329490617723118
Whiting, A., & Williams, D. (2013). Why people use social media: A uses and gratifications approach. Qualitative Market Research: An International Journal, 16(4), 362-369. https://doi.org/10.1108/QMR-06-2013-0041
Word, K., & Dennen, V. (2021). Sharing microlearning materials as Open Educational Resources (OER). In R. Corbeil, B. H. Khan, & M. E. Corbeil (Eds.), Microlearning in the Digital Age: The Design and Delivery of Learning in Snippets. New York: Routledge (pp. 200-213). Routledge.