

**COVID-19**

# Using memes to promote student engagement and classroom community during remote learning

Kevin Tu<sup>1,2</sup>  | Angela Sun<sup>1,3</sup> | Daniel M. Levin<sup>1</sup>

<sup>1</sup>Department of Teaching and Learning, Policy and Leadership, University of Maryland, College Park, Maryland, USA

<sup>2</sup>Department of Cell Biology and Molecular Genetics, University of Maryland, College Park, Maryland, USA

<sup>3</sup>Fischell Department of Bioengineering, University of Maryland, College Park, Maryland, USA

**Correspondence**

Kevin Tu, Department of Teaching and Learning, Policy and Leadership, University of Maryland, College Park, MD 20742, USA.

Email: [ktu@umd.edu](mailto:ktu@umd.edu)

**Abstract**

As colleges moved to online teaching during the COVID-19 pandemic, many instructors found it difficult to maintain student engagement and classroom community in the virtual environment. We developed a semester-long activity for a molecular biology research methodology course where students created, and shared original memes related to course content with peers through group chat. Surveys and semi-structured interviews revealed that the exercise was effective in promoting student engagement, a sense of community, and relieving stress.

**KEYWORDS**

active learning, assessment of educational activities, distance learning, integration of research into undergraduate teaching, memes, molecular biology, teaching and learning techniques methods and approaches, using simulation and internet resources for teaching

**1 | INTRODUCTION**

The abrupt transition to remote learning during the COVID-19 pandemic has been difficult for students and instructors alike, with a decline of student engagement and peer-to-peer socialization in STEM courses.<sup>1–3</sup> Students were particularly limited in their ability to interact with each other in and out of class.<sup>3</sup> These measures are important as they are associated with improving students' sense of community and learning outcomes.<sup>4,5</sup> Thus, special attention should be given towards active learning and creating opportunities for increasing both synchronous and asynchronous interactions among students to help them feel the social presence of others in the class.<sup>6</sup>

Here, we describe a semester-long activity in which students created and shared original memes related to course content. The activity was deployed during pandemic remote learning as well as during the transition back to in-person learning in a molecular biology

research methodology course at the University of Maryland.

**2 | DESCRIPTION OF EXERCISE**

Following weekly online, asynchronous lectures, students were encouraged to create original memes that were related to course content and share them to a group chat on GroupMe. GroupMe functionality allowed students to “like” each other's memes and interact with each other. To create memes, students used accessible online meme creators such as ImgFlip or the mobile app Mematic. Examples of memes from this activity are provided in Figure 1.

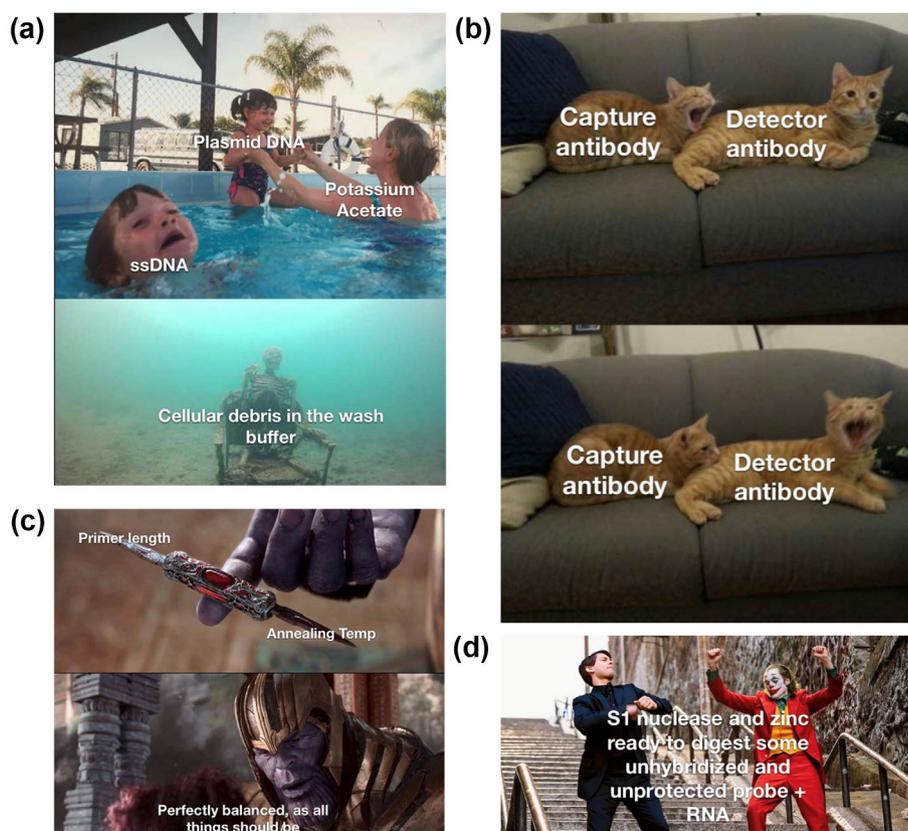
**3 | STUDENT RESPONSE**

Eighteen out of twenty students participated in the activity. At the end of the semester, a questionnaire was

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**FIGURE 1** A selection of memes that were shared by students for (a) miniprep, (b) ELISA, (c) PCR, and (d) nuclease protection assay techniques



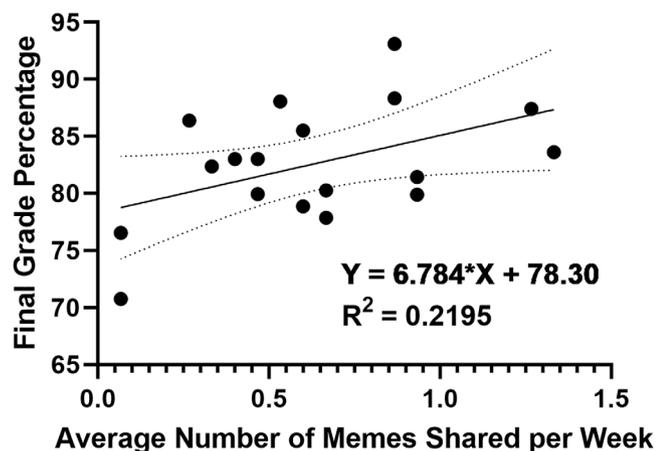
**TABLE 1** Questionnaire results of student perceptions of the meme activity

Q: How did memes impact the following?	Percent answered		
	Positively	No effect	Negatively
Connecting with peers	100% (20)	0% (0)	0
Relieved stress	95% (19)	5% (1)	0
Relatability of course content	85% (17)	15% (3)	0
Engaging with course content	85% (17)	15% (3)	0
Understanding of course content	60% (12)	40% (8)	0
<b>Q: Speak about your experience with the memes in the class</b>			
“When learning about gel electrophoresis, I remember making a meme about a specific reagent, which helped me better remember its function.”			
“After the midterm some people shared the same sentiment after the exam of feeling challenged [through memes] and it was reassuring knowing I was not in the same boat.”			
“Memes made a good touchstone for both the class content and were very effective in promoting camaraderie. When I saw memes that touched on the same feelings that I had about the content it fostered a feeling of solidarity, especially when completing the more difficult parts of the class.”			

distributed to the course. Collectively, students sent approximately 15 messages/week into the GroupMe.

Likert-style and open-ended questions revealed that students felt as if the memes were an effective way of

connecting with other peers, relieving stress, and engaging with content (Table 1). The number of memes that students posted was significantly but weakly correlated to student final grade, which suggested that more active participation



**FIGURE 2** Students' final grades were weakly correlated with the number of memes posted per week. Dotted lines represent 95% confidence interval. Regression ANOVA ( $p < 0.05$ )

**TABLE 2** Themes from semi-structured interviews with examples

<i>Theme: Creating a relaxed environment in which to learn</i>	100% (6/6)
"I'm not in GroupMees for other classes because... it stresses me out. Everyone's like, 'Oh, the grades just dropped. I got this [score]. I got [score]'. I do not need to know what other people are doing in the class... In this class, every time I open the GroupMe, it wasn't like, 'oh my god, there's so many things I have to get done'. It was always like, 'Oh, this is pretty funny'."	
"I think they definitely decreased the stress I felt towards the course... They also reminded you that everyone was feeling the same way and kind of in the same boat."	
<i>Theme: Connecting with peers through humor</i>	83% (5/6)
"Looking through the memes and 'liking' the ones that I liked was also kind of fun, because t's kind of nice to have solidarity and be like, 'oh, somebody else thought that was funny' or 'somebody else's having trouble with this too'. It's like a crease a nice sense of solidarity with your fellow classmates, which I definitely liked."	
"Yeah, I think, honestly, like, I did not know a lot of the students in the class... I think the memes just kind of brought everyone together, even if we were not necessarily friends outside of class, or did not really talk that much outside of class, we would 'like' each other's memes. The memes were a cool way to get the class engaged and talk to each other and build like a better relationship with the instructor."	
<i>Theme: Engaging in course content</i>	50% (3/6)
"I think they were pretty much entirely net positive impact when you are both making and looking at memes for comprehension. And especially when making your own memes... if I'm going to make somebody laugh, I want them to be laughing about something that might teach them something that I had to teach myself when I was making memes."	
"Making memes is not hard. So it's kind of like going through flashcards on Quizlet or something. It's kind of like a gamification of the content, which I think is really good for, at least for me, internalizing and conceptualizing like the subject matter."	
<i>Theme: Understanding material through different modalities</i>	50% (3/6)
"I'm a pretty visual learner. So I liked making a meme related to the class material, because it helped me apply, like what we were doing in class in a fun kind of way."	

in this meme creation activity may have slightly boosted student performance (Figure 2). Alternatively, students who chose to create and share more memes may have been those who were already more engaged in the class.

Six of the students were randomly selected to participate in a semi-structured interview, where they were invited to speak about their experiences creating memes.

All interviewees actively engaged in the meme-creation activity. The transcripts from these interviews were coded and themes were identified using grounded theory (Table 2).<sup>7</sup> The memes created a relaxed learning environment, connected peers through humor, and helped students learn the material through different modalities.

All students appreciated the opportunity to create memes and thought the activity was a unique method of engagement. The students who actively created memes viewed the activity as a way to express their creativity and humor. Students who created memes less regularly enjoyed the creativity and humor that their peers put forth. For both groups, students engaged in the course content and with fellow classmates. The results of this study suggest that this activity could be implemented to

promote peer-socialization and can be adapted for a variety of courses.

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## CONFLICT OF INTEREST

The authors have no conflict of interest to disclose.

## ORCID

Kevin Tu  <https://orcid.org/0000-0002-0089-3932>

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