The intersection of new literacies, academic identities, and critical scholarship: emerging learning practices of graduate students on Twitter

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Abstract: This qualitative case study explored two graduate students' process of identity expression and development as emerging scholars by examining their new literacies on Twitter over five years. The study has implications for educators, graduate students and administrators in higher education as the findings shed light on graduate students' critical new literacies practices such as information sharing, purposeful amplification of the marginalised on campus, and attention to technoethics. The study suggests that social media, specifically Twitter, can serve as a useful space for knowledge building and the development of identities and technoethics. Twitter, as a space to organise participatory practices, may enable the development of new processes of identification that contribute to critical individual and social change.

Keywords: new literacies; identity; literacy; Twitter; scholarship.

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1 Introduction

Recently, scholars, futurists and educational researchers identified a number of trends that may represent important advances in the field of teaching and learning, including the importance of digital fluency achieved through a focus on digital literacy skills, incorporating evidence-based instructional design models and the pressing need to integrate insight from the learning sciences in order to support learners' social-emotional needs (Alexander et al., 2019; Brown et al., 2020). In both of these reports, compiled from interviews with hundreds of educational scholars around the world, there is an acknowledgement of attempts to tackle some of education's wicked problems, such as the attempt to reverse decades of disinvestment in public education; efforts to close the digital divide by providing opportunities to learn and spiralling educational costs associated with earning a college degree. Scholars who research wicked problems emphasise that these complex, global problems require innovative approaches that can span a range of social, cultural, political contexts (Rittel and Webber, 1973). These problems arise in the context of global dilemmas such as climate change, the pandemic (i.e., Covid-19), rising economic inequality, and initiatives to ensure human rights for marginalised populations. Undergirding both the theoretical advances, and the challenges in achieving them, are a range of material and symbolic conditions grouped under the umbrella of *equity* [emphasis added] (Tawfik et al., 2016). Tawfik et al. (2016) argued that within education, technological approaches to addressing issues of equity often have the unintended consequence of reinforcing existing inequity (p.602). Thus, educational technologists find themselves in a serious tension where global challenges that require innovative and unique approaches are no panacea for solving long-standing societal ills; in fact, technological solutions can reinforce social, political and economic marginalisation (Feenberg, 1991; Morozov, 2013; Tawfik et al., 2016). At the same time, a number of educational researchers and practitioners have argued that, in order to be able to fully participate in the global economy that relies on a host of complex meaning-making systems, learners need not only to be digitally literate, but should be able to problem-solve using a range of collaborative and social learning practices. More recently, educational researchers have suggested that an important dimension of digital literacy is the ability to communicate, collaborate and participate with social media (Manca et al., 2021). Against the backdrop of societal challenges known as wicked problems that exist in a vastly inequitable world, this study attempts to investigate how a group of emerging scholars learn to participate through the use and development of innovative literate and social practices that fall under the umbrella of smart teaching and learning practices.

Over the past decade, scholars have developed theoretical frameworks that leverage digital literacies, professional learning skills and growth-oriented competencies in order to advance smart teaching and learning. Central to the development of these smart teaching and learning practices is the use of social media as a learning space (Selwyn and Stirling, 2016) that can facilitate the development of valuable digital literacies and skills, support the coordination of complex learning initiatives that tackle these wicked problems, and can leverage advances in data analytics to promote iterative processes of revision, reflection and adaptation (De Fresno García et al., 2016; Sangrà et al., 2019). It has been suggested that social media can serve as an important learning space that blends dimensions of both formal and informal learning by harnessing learners' authentic interests, mediated by networked participants, to develop valuable knowledge-building practices (Greenhow and Lewin, 2016).

Research is emerging that explores the range, dimensions and experiences of learning with social media, most notably focused on higher education (Chawinga, 2017; Manca and Ranieri, 2016), though recent work has explored social media learning practices in K-12 learning environments (Galvin and Greenhow, 2020; Kimmons et al., 2018). This line of research has shown that social media afford informal learning, forging and sustaining relationships, bridging online and offline networks and providing channels for self-expression, creativity and increased engagement in learning materials (Boyd and Ellison, 2007; Greenhow and Askari, 2017; Piotrowski, 2015). Graduate students, the focus of the study, have been found to use social media as spaces where they can connect with other graduate students and scholars, seek potential collaborators, create social presence, keep up with research trends, share scholarship, develop their professional identity and build professional networks (e.g., Greenhow et al., 2019; Li and Greenhow, 2015; Romero-Hall, 2017). Though previous studies have examined how graduate students used social media, there is still a need for studies that attend to "how participants understand their experiences and place within the Twitter community and beyond" (Greenhow and Gleason, 2012, p.474).

This study explores graduate students' use of a popular social media space, Twitter, for meaning-making purposes, such as the development of digital literacy and associated skills, and the construction of critical knowledge-building communities, such as professional learning networks (Trust et al., 2018). Aiming to contribute theory to this emerging research field, this study investigates how, over the course of five years, two graduate students participate on Twitter as emerging scholars. This study aims to inform educational researchers about the purposes, perceptions and experiences of graduate students on Twitter, focusing specifically on how they develop academic identity. It is hoped that this study will make a contribution to the field of smart learning practices through educational technology.

2   Literature review

With its wide adoption by learners and educators, social media has been playing a salient role in education, specifically in higher education (Junco, 2015; Manca and Ranieri, 2017a). Previous research in this area has provided empirical evidence of how social media can support learning and teaching in the 21st century. In line with the social constructivist view of learning, social media participation can enhance the learning process and learning outcomes by increasing student engagement with course-related activities, encouraging co-construction of knowledge by way of constructive debates, and

creating opportunities for informal learning (Evans, 2014; Greenhow and Lewin, 2016; Junco et al., 2011; Romero-Hall and Li, 2020). However, in a recent study investigating education students' participation in a scaffolded Twitter Personal Learning Networks (PLN) assignment and its short- and long-term implications, Krutka and Damico (2020) found that the assigned social media participation did not promote the continuing use of Twitter for PLN building. That is, while some students were able to forge new connections and benefit from information-sharing and other knowledge-based practices, the authors also found that students' Twitter practices did not mimic the engaged, sustained participation often seen in other affinity spaces.

Social media is also becoming increasingly visible in academia and has been used for both personal and professional purposes (Knight and Kaye, 2016; Manca and Ranieri, 2017b). To examine higher education faculty' social network practices on Twitter, Veletsianos (2012) qualitatively analysed the tweets of 45 scholars and found that academics engaged in sharing information and resources, expanding learning opportunities for their students, requesting assistance and offering suggestions, and connecting and networking with other scholars. The relationship between social media for professional development has also been examined (Bruguera et al., 2019), with their review noting that Twitter is a space for informal learning through the affordances of connection making and becoming informed.

Recently, educational researchers have begun to explore the complex dimensions of identity development that can occur through a number of social media spaces, including Twitter. This strand of research takes for granted that multiple dimensions of one's social life (i.e., professional and personal) will be engaged through social media. Situating their work in a learning ecology framework, Veletsianos et al. (2019) found that academic identity expressed on social media is influenced by personal and professional factors, suggesting that educational researchers take into account social, cultural and political contexts when analysing academic social media use. Jordan's (2020) large scaled survey study supports the alignment between online academic identity and personal as well as professional beliefs of identity. Veletsianos and Stewart (2016) investigated scholars' self-disclosure practices on social media, finding that scholars with non-dominant identity backgrounds often make tactical decisions to express these critical identities.

For graduate students, who are still developing as professional scholars, it may be the case that social media practices exhibit a wide range of purposes, identity practices and networked affiliation. Scholarship in this area is beginning to emerge, with research exploring graduate students' academic uses of social media. For example, graduate students use social media to provide an alternative space to connect with their program, practice social scholarship, stay up-to-date on events in their field and build an expansive academic network that is not limited by geographical distance. Graduate students reported using Twitter primarily for networking purposes, such as connecting with peers and faculty. In addition, some students reported using Twitter to find and share information related to research interests (Greenhow et al., 2017; Romero-Hall, 2017). The current study contributes theoretical generalisation to this line of work, and extends it through its methodological approach.

The current study is part of a larger study (Gleason et al., 2020; Karakaya et al., 2020) that investigates how graduate students use social media for a range of educational purposes. This work explores how graduate students demonstrate their process of academic identity development over an extended period of time (i.e., five years). One way scholars perform identity on social network sites is through the use of new literacies, such as information-sharing, live-tweeting, and hashtagging. This work theorises that

new literacies – conceptualised as situationally-specific skills, strategies and practices required by digital and social media (Coiro et al., 2008; Knobel and Kalman, 2016), such as those that emerge through participation on social network sites such as Twitter – offer rich opportunities to develop a range of academic identities.

This study is informed by two related conceptions of learning. First, a theoretical conception of learning as situated social practice in particular learning contexts (Lave, 2019; Lave and Wenger, 1991), specifically focused on how people develop identity through increasing participation in practice: "Becoming more knowledgeably skilled is an aspect of participation in social practice. From that perspective, crafting identities in practice becomes the fundamental project subjects engage in – it is a *social* process" (Lave, 2019, p.95). Inherent in this belief is that the participant is a constitutive part of a larger collective, and that this dialectical relationship (i.e., the individual and the collective) is dynamic and reconstitutive. That is, envisioning learning as identity involves a focus on changing practices of participation in social activities, which lead to the development of new identities – both the individual and social practices are changed. Second, and related to the first, is that identity expression and production occurs through people's literacy uses and practices, especially through the use of digital media and internet-related communications, which has been grouped under the umbrella term *new literacies* [emphasis added] (Albers et al., 2014; Coiro et al., 2008; Mills, 2010). Albers et al. (2014) argued for theoretical linkage between a study of new literacies, and broader social, cultural, and political futures, investigated through a host of new methodologies, including digital analyses: "We need to find new ways of connecting persons and their personal troubles with social justice methodologies" (p.12).

When people engage with digital media as networked individuals, such that their followers can detect certain identity performances, it may signal opportunities for learning and development that bear more scrupulous investigation. Digital media, then, are not just tools to be used productively to demonstrate particular competencies, but are also spaces for the production of identity through participation in a range of literate practices. Specifically, we focused on exploring the following research questions: *What new literacies do graduate students engage in on Twitter and how may they suggest particular identities?* and *What might we learn about teaching and learning practices with Twitter from graduate student practices?* In particular, we are interested in taking a critical eye to how graduate students are involved in acts of social becoming through new literacies on Twitter, and how these acts of becoming (personal troubles) may be connected to broader social, cultural and political issues that are worth exploring.

3   Methods

This study employed a case study approach (Erickson, 1986; Evers and Wu, 2006; Flyvbjerg, 2006) aligned with interpretative, qualitative research methodology (Eisenhart, 2009; Maxwell, 2005). In addition, it is informed by research approaches born of digital, virtual, or cyber methods (Boyd, 2015; Davis, 2014; Markham, 2020) based in a world of networked individuals (Rainie and Wellman, 2012), in which individuals are linked through technological platforms with other people who share loose affiliations, often based on particular affinities. The current study identified as its case an in-depth exploration of graduate students' identity expression and development on Twitter. To gain insights into the graduate students' understandings, practices and perceptions about the range of meanings and possibilities of Twitter use, informed by

digital research methods considered to be exemplars (Veletsianos et al., 2019), data collection and analysis was from an extended period of time (i.e., longitudinal in nature). The resulting in-depth and rich description serves to better readers' understanding of the case and the applicability of the findings in other settings (Alpi and Evans, 2019).

3.1   Participants

Since the purpose of the study was to investigate graduate students' new literacy practices in developing social and academic identity on Twitter, we adopted convenience sampling and purposeful sampling. To recruit potential participants, a short survey about social media use was sent to graduate students at the authors' institution and distributed to graduate student members at the 2019 Society for Information Technology and Teacher Education (SITE) conference. We collected 18 responses. After examining the responses, we selected two graduate students who have had a Twitter account for at least 5 years. The five-year timespan was used because we looked to better understand the new literacies demonstrated by the participants through analysing longitudinal data. The two participants were graduate students at different institutions and actively participating on social networking sites, including Twitter. A brief biography for each participant is provided below:

Brandon is currently a PhD candidate at a large, public university in the midwestern USA. He has been on Twitter since 2009 and considers himself to be an active Twitter user, conceptualised as someone who interacts with the platform every day, or almost every day when interviewed, Brandon reported he initially pushed back against use of Twitter…sceptical of digital/social media for attention purposes in the early days of using Twitter.

Tom is currently an assistant professor at a large public university in the midwestern USA, and was a graduate student when he was enrolled in the study. He has also been on Twitter since 2009 and, like Brandon, reports that he is an active user. Tom's practices over time reflect an intersection of multiple aspects of his personal and academic life.

3.2   Data collection

After identifying participants, two of the researchers conducted a semi-structured interview with each. The interviews were conducted using a common video-conferencing tool and lasted between 40 minutes and 60 minutes each. Researchers asked questions that investigated, broadly, participants' practices on Twitter. More specifically, participants were asked about their purposes for using Twitter; with whom, and how, they interacted; and their perceived benefits of this participation. We also asked the participants to give examples of posts that were meaningful in the expression and production of identity. Interviews were stored on a password protected local drive and transcribed verbatim. In order to better understand the relationship between identity production and new literacies practices, we requested participants to share their Twitter archive with us.

3.3   Data analysis

Researchers analysed the transcripts and examined the participants' Twitter archive data from the past 5 years. Weekly analytic memos helped to develop the codes from the interviews and Twitter data. Following qualitative research methodology (Saldaña,

2016), data was analysed in two rounds by the second and third author. During the first round, interview and Twitter data were analysed independently by two researchers and compared for similarities and differences. The second round of analysis included axial coding to group similar codes. Then, the three researchers created codes together and relabelled the codes into conceptual categories, and linked categories with subcategories. After two rounds of coding, we explored the relationship between major categories and summarised emerging themes.

Table 1   Sample data-driven codes, definitions and examples

Code	Description	Example
Information sharing	Participants like to share information on Twitter about their research interests, to build community and make connections, and to share personal affinities.	"If I'm working on something that I feel like it is worth sharing, which is definitely not every day, so I'm not a let me share what's going on in my life everyday kind of person. But if, you know, if I get good news or in wrestling with a rejection, disappointment, doing some interesting visualisations with social network analysis, these are really cool, I really like this, let me share that. Generally, generally I'm retweeting and amplifying others." (Brandon)
Amplifying marginalised voices	Both Brandon and Tom engaged in a process of amplification of marginalised voices, especially those that are often hidden or excluded from dominant perspectives or culture. Both participants used a number of new literacies to amplify marginalised voices, including tweeting, retweeting, sharing images, tweet-streaming (i.e., tweeting a series, or stream, of related ideas on a particular topic), and quote-retweeting (e.g., commenting on others' tweets).	"I think particularly for students who are minoritised identities – people of colour, black students, queer people, first-generation students – it's important for other people to see our successes." (Tom)
Attention to technoethics	Participants reported that one outcome of their Twitter use was gaining knowledge about the importance of technoethics, focused on Twitter-specific notions of privacy and data gathering. For example, conceptions of publicness on Twitter may lead some internet researchers to collect data without participant permission.	"When you're doing internet-related ethnography, if they're public tweets, you don't have to get their permission because they're public. That didn't feel good to me. So, I abandoned that methodology."

4   Findings

In this study, graduate student participants primarily used Twitter for three purposes: one, to share information and build connections; two, to amplify marginalised perspectives and, three, to develop technoethical research perspectives. We will report findings from both participants for each of the three themes.

4.1 Finding 1: Information sharing

Both Tom and Brandon used a range of new literacies to share information about their research interests, to build community and make connections and to share personal affinities.

Tom: Tom's information-sharing practices fell into three broad themes – contributing personal and professional information related to scholarship; making connections and building community; and sharing popular culture and current events.

For the first theme (e.g., scholarship), Tom shared both the process and products of his academic process, such as passing preliminary exams. Tom reported that his months-long effort was now complete, as he had achieved the "fourth milestone" and advanced to PhD candidate. In an interview, Tom said, "I want to be able to be celebrated by my digital community in the same way that I like to celebrate them." As a Black graduate student, Tom explained that he was intentional in sharing his milestones, "I knew...that I wanted to share them [milestones] because, particularly for students who are minoritised identities – people of colour, black students, queer people, first-generation students – it's important for other people to see our successes."

Tom also tweeted about presenting research at academic conferences, seen in two exemplar tweets to the higher education community. In the first, he noted how he would serve as a discussant during a paper session on the topic of implicit bias and micro-aggressions in higher education (see Figure 1). In the second, he reported a second paper presentation for ACPA, a popular academic conference in higher education, noting that it took nearly two years to complete and also mentioning (i.e., including with their Twitter handle) three colleagues who helped him to develop this work.

Figure 1 Tom's #ACPA18 tweet referencing research
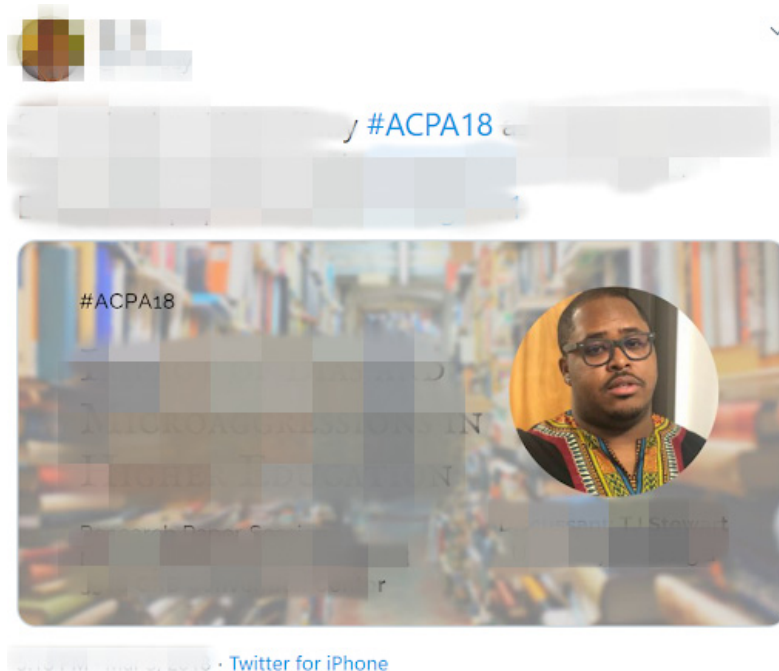
Through disseminating his academic work and live-tweeting conference presentations on Twitter, Tom sought to connect with other doctoral students and find potential collaborators. Tom noted that he considered this explicit connection-making a practice of public scholarship, in that he could communicate what he was doing and provide access around journal paywalls. Stressing the value of having a digital community, Tom said he used hashtags such as #firstgendocs to stay connected to other graduate students, share job-related information and stay connected to resources. He noted that Twitter helps in community building by establishing relationship and connections, as well as providing material opportunities for him and his network, such as job postings, and leadership opportunities. Aside from research interests, Tom also used Twitter for frequent engagement with affinities as diverse as Rihanna, minimalist aesthetics and the popular television show, famous for its livetweeting fans, How to Get Away with Murder. As he explained, "I still share the information that is important to me. I still share the music and things that I listened to."

Brandon: Brandon used a range of information-sharing practices to support the development of academic identity, often related to three broad themes: research (i.e., from more senior scholars, and later, his own work); making connections in the field; and personal information (i.e., such as the birth of his child).

First, Brandon used Twitter to develop his academic identity by spreading ideas that others would find valuable. At the beginning of his graduate career, Brandon shared information related to game-based learning, his research interest, such when he tweeted to his followers to take 5 minutes to play Parable of the Polygons. In this tweet, Brandon suggested that this game, a simple idea, was a fantastic illustration of how game-based learning can build mathematical knowledge. Brandon retweeted research from established scholars in his field as well, such as information that connected his academic interests with real world application – a New York Times article about how feminist scholars are threatened. One practice linking these specific new literacies is awareness of, and repeated use of, the hashtag #gbl (i.e., game-based learning) as an organised learning space.

The second information-sharing practice was using Twitter to make connections. In one tweet, Brandon wrote that a fellow academic should follow a scholar whose comics research might be interesting to you. Brandon used the quote-retweet function that allowed him to mention the scholar while also sharing the scholar's original tweet. In this way, Brandon's recommendation carries both the introduction and the original tweeted post, which in this case was highly stylised comic book art (see Figure 2).

Brandon's twin strategies of sharing academic research and making personal connections seem to intersect during academic conferences. For example, in one tweet during a conference Brandon noted that "our crowdsourced bibliography" had reached over 100 references. Through using two different hashtags (not presented here in order to preserve participant confidentiality), Brandon was able to create a lasting contribution through the mobilisation of academic labour – created, published and disseminated through social learning technologies, including Twitter.

A third information-sharing strategy was the curation and circulation of personal information, such as sharing an image of Brandon's newborn baby, seen with his eyes closed and the comment, "Born today. Mother and baby are doing well." Occasionally, this information blurred personal and professional lines, such as Brandon's news that he passed his comprehensive exams. He noted that he was relieved, and thanked friends and colleagues who were supportive throughout the process.

Figure 2 Brandon recommends a new follower in a quote-tweet
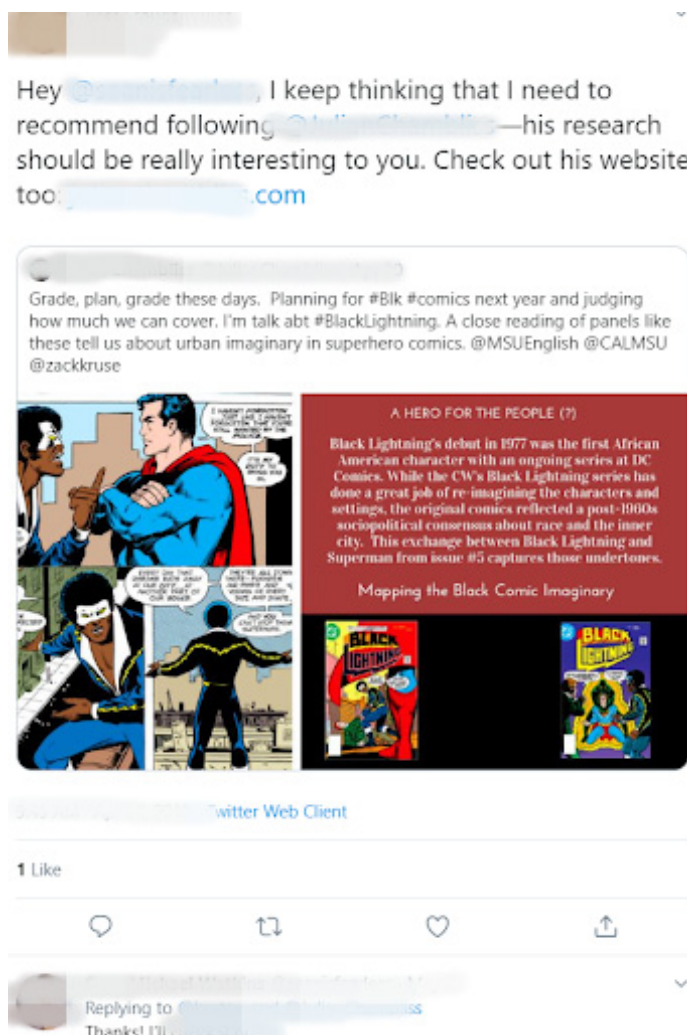
4.2 *Finding 2: Amplifying marginalised voices*

Both Brandon and Tom engaged in a process of amplification of marginalisd voices, especially those that are often hidden or excluded from dominant perspectives or culture. This process of amplifying voices took different forms for both men, but they shared a number of similarities, including exposing hidden biases among powerful institutions, including academia, gamer culture and others. Both participants used a number of new literacies to amplify marginalised voices, including tweeting, retweeting, sharing images, tweet-streaming (i.e., tweeting a series, or stream, of related ideas on a particular topic) and quote-retweeting (e.g., commenting on others' tweets).

Tom: Tom reported leveraging Twitter to amplify both success stories and oppressions of the marginalised groups, explaining, "I think particularly for students who are minoritised identities – people of colour, black students, queer people, first-generation students – it's important for other people to see our successes." Tom mobilised a variety of new literacies to amplify the voice of those frequently underrepresented groups, including retweeting and commenting on widely shared tweets. For example, in a tweet reporting news that a trans woman was shot, Tom used the quote-retweet function to call upon people to stop harming trans folk. Tom then expressed his desire that her attacker is caught and those with information will come forward. In another post, Tom also retweeted a post revealing the police sexual abuse and brutality towards black trans sex workers. These two tweets drew attention to the widespread harassment and violence that trans people face. Tom also retweeted voices of trans folks, for instance retweeting a short video clip where a transgender woman talked about why being visible on Trans Day of Visibility was not enough, and why it was important for supporters to openly acknowledge their appreciation of transgender people.

In addition to amplifying trans people, Tom also adopted a critical lens to amplify the voices of minoritised populations, through using the hashtag #FatBodyPoli (i.e., fat body politics) to share information (i.e., research studies) and narratives (i.e., personal stories) on the challenges that fat students face on campus. Self-identified as someone who navigates fatphobia on the college campus, Tom shared an article that centres the needs of fat students. Tom also challenged higher education to create an inclusive campus culture. In one tweet, for example, Tom shared an image of two chairs, noting that those without armrests are more size inclusive. Tom also circulated additional information on this topic through a column in a university publication. Through critical attention to the issue of #FatBodyPoli, Tom suggested his response to a hidden curriculum that works to exclude fat people from higher education, and broader society.

In his tweets, Tom foregrounded anti-racism, such as during a tweetstream (i.e., series of tweets on a given topic) about the expulsion of a college student who posted racist videos on Instagram. Tom critiqued the tired and lukewarm reporting style, pointing out that such neutral reporting on matters of equity and justice, without critical and power-conscious perspective, was irresponsible and only served to reinforce the master narrative. Tom used the quote-tweet feature of Twitter to offer his opinion on the topic. He critiqued the article, and the university for not fulfilling its educational mission of reigning in threatening or harassing speech.

Brandon: Like Tom, Brandon shared the purpose of amplifying marginalised voices. Brandon said, "I mostly retweet things that I think are interesting. So somewhere along the line I picked up this value to be somebody to rebroadcast, and promote and amplify the voices of others". For him, if something was said so eloquently, there was no need to rephrase it in his own words. Brandon considered retweeting as an endorsement and a way to honour thoughtful communicators.

Brandon's tweets often focused on amplifying anti-racist positions and promoting women. For example, he retweeted about the timeliness of acting against structural oppression: "this is not the time to be quiet against misogyny, rape, racism, or xenophobia." Another example of Brandon's anti-racist activity was a retweet about racism at Indiana University, showing a picture of several white students holding a banner that says "DIVERSITY = WHITE GENOCIDE." The original tweet included the comment that "racism is alive and well at Indiana University," and also includes the

hashtag #NotJustSAE. The hashtag was a response to a racist video from a fraternity at the University of Oklahoma, and was intended to highlight the pervasiveness of institutional racism.

Along the same lines, Brandon believed it was important to amplify women's voices, as he supported a Twitter strategy of retweeting women to avoid becoming overly male-voiced. Linking the social practices on Twitter to those in the broader world, Brandon implied that amplifying women's voices is a valuable scholarly activity. For example, as he retweeted a message that called for more women speakers' representation at Data Science Day, Brandon advocated for women in educational technology.

Brandon's advocacy for increasing women's voice and participation in technology has been rather consistent throughout the four years archived in the data set. For example, a retweet from the influential group Girls Who Code, depicts the decline of women in computer science. The post asks "what happened...to reverse the trend of women in computing?" and links to an article. Three years later, Brandon retweeted a post that noted that "women pioneered computer science and then men took over." Providing a clue that may answer the Girls Who Code question is a statement that "we talk about how it's better for women who play games nowadays but I don't know any who feel comfortable turning on voice" (see Figure 3).

Figure 3   Brandon critiques computer science through a retweet
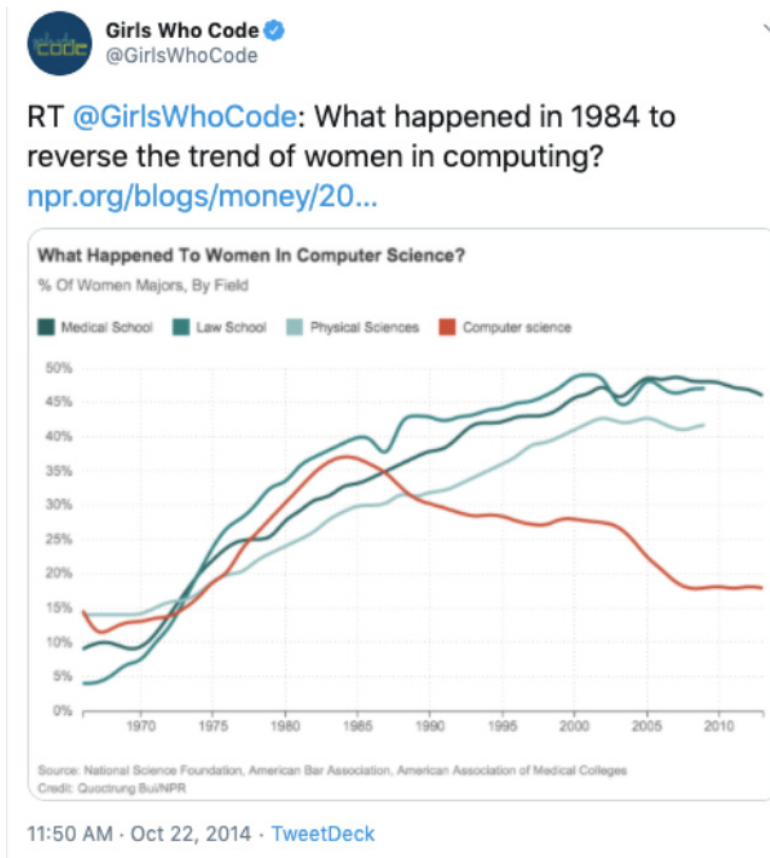
Brandon's tweets about misogyny and sexism within the gaming community suggests why some women might be uncomfortable turning on [their] voice. According to scholars, women are underrepresented in gaming. In one post, Brandon retweeted a prominent scholar who noted how women are featured prominently in a new game, and described the intent to have women play integral, rather than token, parts in the game: "The message is clear that women [are] simply the norm rather than any extraordinary circumstance...Children can relate to these female characters as capable and powerful." Seeing women as powerful, and with loud voices, sends an important message in a field that has seen women threatened and disreputed, evidenced by scandals like GamerGate.

4.3   Finding 3: Attention to technoethics

Technoethics is a term that has been used to draw attention to "legal, ethical and socially-responsible mis/uses of technology in educational contexts" (Krutka et al., 2019). Tom and Brandon reported that one outcome of their Twitter use was gaining knowledge about the importance of technoethics, focused on Twitter-specific notions of privacy and data gathering. For example, conceptions of publicness on Twitter may lead some internet researchers to collect data without participant permission. However, both Brandon and Tom rejected this view in favour of a technoethical position that acknowledges the ethical imperative to obtain consent from participants, particularly those who are marginalised.

Tom: Tom described how his participation on Twitter led him to develop sophisticated new literacies skills that are more rigorous (i.e., more ethical) than those legally allowed (i.e., permissible within Twitter's terms of service). Tom did not arrive at this sensitive technoethical practice overnight. During the interview, Tom stated that he conducted internet-related ethnography where researchers explored a specific hashtag, though these digital methods felt like surveillance. While this practice is legally permissible (i.e., not in violation of Twitter's terms of service), Tom said he felt uncomfortable looking at people's posts without their permission. He explained, "I could scroll all day on Twitter and none of these women would ever know that I was looking at these conversations...without their permission." Tom described how not obtaining consent didn't feel right and thus he stopped this potentially harmful practice. He added, "When you're doing internet-related ethnography, if they're public tweets, you don't have to get their permission because they're public. That didn't feel good to me. So, I abandoned that methodology." Tom noted that his approach to conducting ethical research went beyond the expectation of IRB permission, to include receiving consent from people whose data is publicly available.

For Tom, Twitter is also a valuable space for participant recruitment and enrolment. For one study, Tom tweeted instructions to potential participants in order to preserve confidentiality. He tweeted, "please do not send student information or names" but directed them instead to a unique URL. It may be the case that Tom felt the necessity for an *ethic of responsibility to the researched* [emphasis added], and he took a number of precautions to protect his participants. It seems clear from Tom's practices on Twitter not only demonstrated awareness of Twitter norms and conventions, which would signal a degree of new literacies skills and competences, but that these go beyond what is legally permissible.

Tom advocated the technoethical considerations in educational research, and also in the broader social world. In one tweet, he used the hashtag #bigbodypolitics to refer an incident that happened in the 1990s regarding Martha Wash's song *Gonna Make You*

Sweat. The singer Martha Wash recorded a demo of the vocals, which were used without her consent by the 1990s pop stars C & C Music Factory on their hit single Everybody Dance Now (see Figure 4). Tom noted, "Marsha was rendered invisible" (again), when the band chose a straight-sized person (rather than a big-bodied person) to appear in the music video. This tweet aligned many of Tom's interests through one complex event, including #fat or #bigbodypolitics, supporting vocal musicians (i.e., especially women), amplifying voices of the marginalised especially focused on Black women.

Figure 4   Martha wash made visible
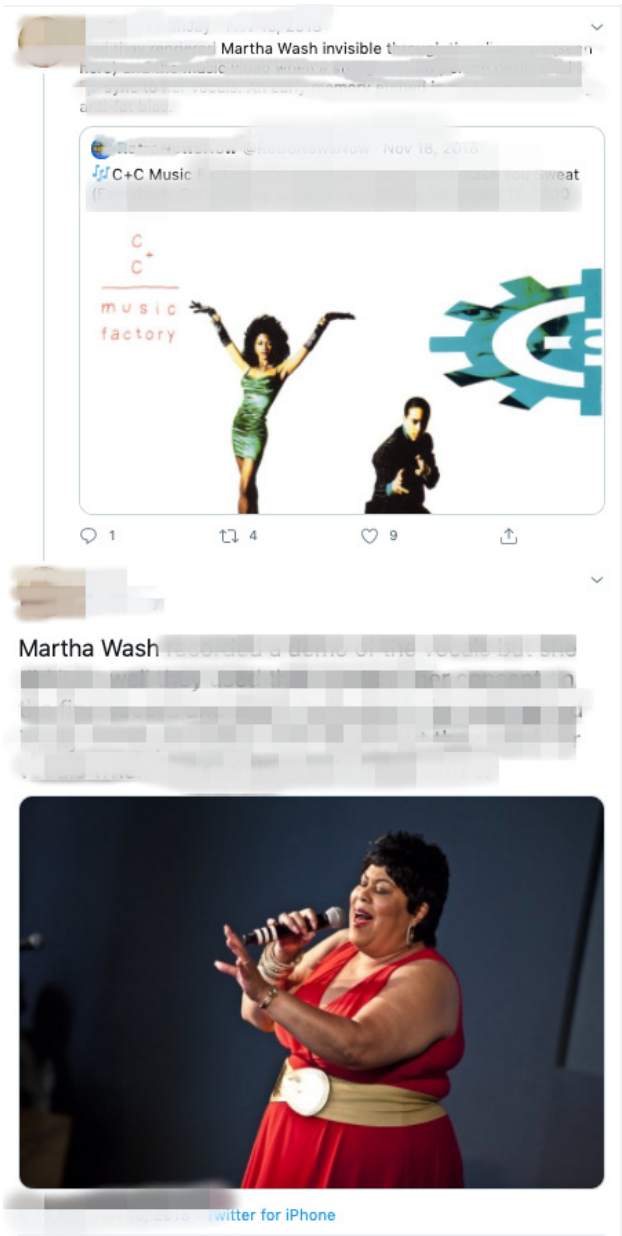
Tom embraced a similar technoethical approach to support celebrities, especially women of colour, explicitly critiquing the violence aimed at these celebrities. He stated that he was saddened when the media leaks nude photos of celebrities, and that he cannot accept those who blame celebrities. In one tweet, he emphasised the importance of consent by asking his followers how they can claim to love or value consent while they are also viewing, searching, and circulating leaked nudes. Along the same lines, Tom implored his followers to stop sharing "stolen or pirated" videos from sex-workers and porn actors – two marginalised (and often targeted) groups. In the final tweet of this thread (i.e., a series of tweets visually and thematically linked, through the Reply feature), Tom noted that he his own views on the topic have changed over time, and he urged his followers to know better so they can do better.

Brandon: For Brandon, using Twitter allowed him a number of learning related outcomes related to the topic of technoethics. In an interview, Brandon stated two things that "impressed" him regarding the use of Twitter as a learning space to develop knowledge about technoethical research methods. First was the ability to gain awareness of technoethics from his professional network, especially through a focus on the need to apply a critical perspective to social media policies and practices. He noted, "Am I just giving a glowing report as I write about social media or am I actually trying to interrogate some of these things and be critical?" By following these scholars and asking these critical questions of himself, Brandon stated that "he will always live in that tension of the potential." He indicated that "a lot of the work in our area has only looked at the potential [of educational technology] and isn't asking the critical question. So, these conversations I'm following on Twitter have really pushed that".

Another benefit of Twitter is discussion of digital research methods. Brandon noted, "If you're gathering publicly available social media data and you're not getting informed consent, you're just gathering data off the Internet." Brandon noted that gaining knowledge on technoethical issues developed through his use of Twitter, "I don't know that I was thinking about those things a couple of years ago. But people I am following on Twitter are having those conversations and forefronting in those conversations. So, that's made a big difference for me." These conversations seemed to spur development of this particular research perspective. Collaborating with more senior scholars, Brandon started to publish papers on critical technoethics.

5   Discussion

This study aimed to investigate how a specific subgroup of emerging educational researchers (i.e., graduate students) used the popular social media space Twitter.com to express and develop identity. Previous research (Greenhow et al., 2017) has found that graduate students use Twitter for a number of purposes, including making connections, and sharing resources, which aligns with the current study. Findings from this study demonstrate a number of salient points about how graduate students develop academic identity through new literacies. First, graduate students in this study used a range of new literacies on Twitter to co-construct knowledge in emergent information-sharing networks, such as #fatbodypolitics, #gbl, and other hashtags (observed, but not reported to protect participant confidentiality). Through new literacies of information-sharing, amplification of marginalised voices, and attention to technoethnics, graduate students are creating new scholarly practices that direct attention to the relationship between

social and academic identity development. Second, graduate students in this study demonstrated an awareness of the need to amplify marginalised voices, perspectives and experiences through Twitter. This draws attention not only to the positionality of marginalised people – literally, on the margins, looking *in* [emphasis added] from *outside* [emphasis added] – in mainstream society, but the doubly-marginalised position of scholars of colour in academia. Third, this study demonstrated that graduate students' new literacies on Twitter suggested academic identities that were composed of dimensions that were traditional (i.e., aligned with their individual research interests) but also aligned with broader social justice perspectives (i.e., amplifying marginalised voices and sophisticated research methodologies (i.e., shaping discourse of ethical research methods).

First, this study contributes to emerging research on social scholarship (Greenhow et al., 2019) that proposes that the sociotechnical affordances and practices of social media are transforming what scholarship is, where it is conducted, and what kind of activities are recognised and validated. The current study suggests the centrality of new literacies (i.e., information-sharing, amplifying marginalised voices and technoethical practices) as important learning practices that complement traditional academic ones. By committing their time and attention, when both are at a premium in graduate school, these emerging scholars suggest there are material benefits from participation in networked learning spaces (i.e., Twitter). Though literacy is presupposed as a prerequisite for scholarship and membership in the professoriate, we argue that new literacies encourage different kinds of identities, which in turn encourage us to see scholarship in new ways. New literacies are not simply new skills or tools to be acquired in order for graduate students to develop online presence. Rather, new literacies, owing to their participatory, co-constructed and dynamic dimensions, have a wholly different ethos (Lankshear and Knobel, 2006) than traditional literacy. For example, a traditional view of literacy as learning carries onto-epistemological connotations, including seeing literacy as mastery over the printed text in well-defined disciplines that confer authority through acquisition of bounded knowledge. On the other hand, new literacies, conceptualised as dynamic, context-dependent and co-constructed, offer opportunities for meaningful identity expression and development. There is a host of exciting new research that centres new literacies as a key tool for participatory learning that aligns personal meaning-making, civic engagement and creative inquiry. For example, Wargo (2019) found that digital tools could support the development of identities as "civic actors" through personal inquiry-based approaches in a research project with elementary age children. An essential thread in these children's inquiry is a focus on equity – that is, the children's personal interests in birdsongs aligned with a broader commitment to sustainability and environmental activism. Working with adolescent learners in a Youth Participatory Action Research (YPAR) model, Mirra and Garcia (2020) demonstrated how the use of sophisticated digital research practices by youth facilitated their development as civic leaders while providing a much-needed voice to local policy discussions. These projects encourage researchers to centre new literacies as embodied activity that amplifies marginalised voices (i.e., young children and adolescents) and facilitates their development as civic actors who are meaningful participants in a complex social world.

For example, this study points to the ways that professional uses of social media intersect with personal uses, resulting in hybrid identities. We wonder if, through this process of blending the personal and professional, other dimensions beyond purely

cognitive or academic, will be recognised for their importance in the development of one's social identity. This, of course, is not new, and is the basis of much sociocultural theory (Holland and Lave, 2009; Vygotsky, 1978). Though the social nature of learning is well-documented within education, especially in some fields of educational technology (i.e., game-based learning is but one obvious example), it often appears that there is little desire to recognise these social dimensions, spaces, or practices as being worthy of inclusion in formal teaching and learning spaces. Recently, however, education has taken more interest in a host of sociocultural theories that highlight the relationship between social processes of identification, interest-driven learning and peer learning networks, made possible through digital media (Ito et al, 2013; Rainie and Wellman, 2012; Sefton-Green, 2019). Similarly, our study is aligned with theories of learning that view learning as occurring across multiple contexts (Lave, 2019) and nested in a web of interconnecting relationships (Sangrà et al., 2019) in which learning is a process of identification (i.e., identity construction by self and others) through the use of digital media. This study found that social media is not only a tool to be develop one's technical competency, but is rather a space for the co-construction of social identities that are always in negotiation with broader social systems (i.e., and often evidence of larger systems of marginalisation, oppression, and injustice). For these two graduate student scholars, it seemed as if their scholarly identity was informed by influences beyond the strictly academic. At the outset of this study, we were curious about what shaped graduate student academic identity, and through analysis and interpretation, we recognised that factors and forces as diverse as family, friends, popular culture, personal desires and predilections found their way into graduate students' Twitter feeds, and thus, their academic identity expression and production.

Second, that both graduate students engaged in processes related to amplifying marginalised voices suggests the need for a social justice focus in mainstream US society, specifically focusing the ways that marginalised people (and their perspectives) are often stigmatised and excluded from mainstream society through symbolic and material violence. It is not surprising that those with intersectional identities face multiple, not singular, threats, though it is reassuring that Twitter can be a space to combat these injustices. Tom's practice exemplifies how Twitter could be used as a space to find solidarity within a community and a tool for awareness raising and advocacy (Linder et al., 2016). In higher education, Black, indigenous, and other people of colour (BIPOC) face systematic discrimination and bias, especially in retention, promotion and tenure, that challenge the egalitarian rhetoric of public universities (Dade et a., 2015). Dade et al. (2015) argued for a strategy of an "activist response to fighting oppression" (p.144) and it stands to reason that scholars may find traction among networked scholar-activists, especially given the intractable pace and scope of social justice efforts within higher education.

Third, this study encourages educational researchers, notably in the learning sciences, to consider more seriously Twitter as a space for the kind of smart learning and teaching that guides this special issue. Here, we are inspired by research that makes valuable, if somewhat different, contributions than our own to the study of #SocialMediaEducation through Twitter (Greenhalgh and Koehler, 2017; Trust et al., 2020). Putting our own case study (i.e., with its use of ethnographic, longitudinal and interpretive methodologies) in conversation with our colleagues focuses attention on studies of symbolic and material conditions that facilitate individual and community development over time; at the same it raises the recognition that our own theoretical and methodological approaches are,

following situated learning theory (Lave, 2019) not dependent on uniform participatory practices (i.e., learning how to become a dutiful group member), but on differences among persons, contexts and activities. These differences contribute to the dynamic, changing nature of practices that are momentarily solidified through the use of a particular hashtag, through knowledge-building interaction with a disciplinary expert, or through a tweetstream that expounds on complex tensions within oppressive social systems (i.e., the way that Martha Wash was rendered invisible, and then made visible through explicit visualisation, circulation and subjectification). Thus, on Twitter, we, like the participants in the study, are not becoming professionalised through participation in academic practice – a vision of learning as a process of identity production defined by stability and solidification – but are participating, we argue, as people who are changing ourselves and our Twitter networks and followers, one tweet at a time.

6 Implications and conclusion

We are motivated and inspired by a call from these emerging scholars who are asking us to be race and critically conscious of how things work in the academy, and in the larger socially stratified world. New literacies on Twitter emerge through skilful practices of hashtagging, quote-tweeting, threaded conversations and more. In this study, graduate students used these affordances of Twitter to create new forms of academic identity through blending social scholarly activities (such as making connections and sharing resources and research) as well as integrating activities traditionally outside the scholarly gates (i.e., Rihanna fandom and birth announcements). Echoing the tension reported between institutional expectations and researchers' practices on the social web (Costa, 2016), this work suggests that not only can Twitter be a valuable space to share information, but that Twitter is, in some ways, more open, representative, and inclusive than the learning practices of the traditional academy. Not all of academia is truly the ivory tower, but at many higher education institutions, the faculty, curricula and onto-epistemological practices remain somewhat conservative and reproduce traditional learning practices. A valuable implication of this work is to recognise the work of emerging scholars (i.e., graduate students), whose networked technoethical practices on Twitter remind educational researchers of the colonising practices enabled by less-than-critical digital research methods. Recently, critical educational technology scholars who study social media (Krutka et al., 2019; Fiesler and Proferes, 2018) have argued persuasively for the study of technoethics as a scholarly priority. These scholars, echoing the voices of earlier critics (Feenberg, 1991; Morozov, 2013; Selwyn, 2010) and aligned with sharp critiques from recent research (Benjamin, 2019; Gilliard, 2019; Noble, 2018), focus attention on the dehumanising policies, practices and processes that harm users and communities, particularly people of colour, through racist search results, inaccurate predictive software and regimes of surveillance that belie the techno-utopian rhetoric of Silicon Valley. Taking a technoethical perspective in our research methods, for us, means examining the ways that particularly assemblages of "literacy and identity studies" (Moje and Luke, 2009) enact positions of power, authority and privilege, and working to educate ourselves and others about unjust research practices. Research, like technology, is never neutral and methods that involve extractive data collection (i.e., text scraping via Twitter's API) have more in common with strip mining mountaintops than some realise. Likewise, methods that expose sensitive topics to uninformed outsiders are not actually

doing no harm but supporting increased technological surveillance and threatening notions of privacy and freedom. Those interested in smart learning and teaching practices owe a debt to recognise the potential harms of our work, and to challenge theoretical and methodological injustice where we see it.

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