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Tweeting Over Time: Twitter/X for Communication, Assessment, and Growth in Middle Level Teacher Education

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Abstract

This article shares how preservice Middle Level teacher candidates used social media, specifically Twitter/X as both a resource and a tool and how that tool became important in assessing student growth and knowledge building which, in turn, informed instructional planning for the teacher education classroom. This is paramount for teacher educators and the future educators they teach, as they are preparing to create a variety of engagements for learning in teacher education programs and in middle level classrooms. Creating an online community is a means in which all preservice teachers can use their voices while at the same time having their voices heard also providing a model for them to use as they move into their own classrooms.

Keywords: *Twitter/X, middle level education, social media, teacher education, literacy, communication, preservice teachers*

We need to both, learn what our biases are, and learn to unlearn them and reflect on how they can affect us and our teaching.
Middle Level Preservice Teacher Candidate

After a very engaging class discussion about why it is important to connect learning to real world application and the importance of teachers listening to students, I looked up to see that time had gotten away from me and the preservice teachers in my *Integrated Curriculum* course. I saw that some students were still talking while others were waiting to partake in the discussion. I paused the conversation and told the students we would end our discussion on Twitter/X, that way, everyone would be heard, and we could leave class on time. The quote that opens this paper, is one of the first tweets in the ensuing discussion, a response to my request for the students to "Tweet Out", meaning that, since class was wrapping up, the students could tweet on their way out the door. The prompt was, "What must we unlearn as teachers?" Students - studying to be middle level teachers - took out their phones and began typing their responses as they packed their bags and headed out the door.

An expanded body of research has highlighted the use of social media in schools and teacher education (Hsieh, 2017; Carpenter et al., 2023). Honoring online spaces in a traditional classroom is critical especially since the onset COVID and its aftermath which left all of us a bit more tech-savvy than we were before. Preservice teacher educators are gradually coming to the realization that important learning happens in both physical and online spaces. As a middle school teacher educator, I intentionally centered Twitter/X in my learning space as a way for teacher candidates to concisely share their thoughts on class topics as they were walking out of the door as a way of both continuing and wrapping up the class discussion. I wanted to take the pressure from the traditional end-of-class exit tickets that were handwritten and consumed considerable time, or the mid-semester essays focused on regurgitating what they had been reading over the last month and a half. I noticed that when students had the opportunity to use their phones to tweet concise messages, they seemed more alert and willing to participate and I came to see their succinct responses as brilliant encapsulations of their thinking. Through Twitter/X, the preservice teachers could reflect in concise statements as opposed to a page-long journal response each week and they could read peers' comments and respond, thus everyone's voice was heard and engaging, informative dialogues were initiated. In the process, the Twitter/X responses granted me a better understanding of what students were taking away from class during difficult conversations, as well as questions they wanted to ask, but were not yet comfortable voicing aloud. I also found that Twitter/X is readily available for students to access in class, thus their responses are immediate. This article outlines how I incorporated this social media platform as a useful tool for informal assessment of middle level candidates and the results of my study looking at the impact of utilizing Twitter/X over a three-year period of time.

The Problem, Research Question, and Significance of the Study

Studies of successful teacher education programs show that they are typically reflective in nature, constantly asking preservice teachers/teacher candidates to reflect on ideas such as classroom experiences with their students, class readings and who they are as beginning teachers. Reflections are critical for preservice teachers, they provide a lens for them to see their growth and examine teaching interactions with their students and to question what they see in schools in relation to what they have learned about in methods courses (Slade et al., 2019). In addition, they provide critical information for teacher educators to understand how well preservice teachers are taking in the material so they can adjust their teaching accordingly. Verbal class discussions are also typical in teacher education classes, yet there are times when some voices are not heard. Social media platforms have become commonplace in many classrooms as ways to discover fresh ideas to engage students and invite new forms of inquiry and collaboration (Greenhow et al., 2016; Barrot, 2021). However, it is widely noted that social media can have both a positive and/or negative impact on individuals depending on how it is used by the individual and by the teachers or teacher educators who work with them. Modeling how to use social media, specifically Twitter/X in the middle school class displays professional teacher identity as preservice teachers prepare to enter the field of middle level education. The use of social media as a professional platform and educational tool as a way to grow and network is increasing (Barrot, 2021).

Research Questions

Given the emerging use of social media in preservice programs, it is interesting that a gap continues to exist in the literature exploring exactly *how* social media is used to support preservice learning, how students respond to it, and how teacher educators can use it to inform

instruction. For several years, I felt that my engagement of preservice teachers in using Twitter/X had significant impact on my abilities to understand how they were reflecting on and internalizing course work as well as impact on their abilities to deal with the material individually and in collaborative tweets among peers. However, I wanted to systematically examine their tweets to fully understand what worked to inform my teaching and to create a community of learners among preservice teachers. Thus, I designed the study reported in this paper to ask three questions:

Within a preservice teacher education program preparing middle level teachers:

1. How does technology integration using Twitter/X inform preservice teachers' professional knowledge?

2. How does the use of Twitter/X create classroom community and relationships among preservice teachers and teacher educators?

3. How does the use of Twitter/X inform my planning and insight as a teacher educator?

Significance of the Study

This study is important to the field of middle level education, because it provides data and findings–from a social media standpoint–in support of the Association for Middle Level Education's "Essential Attributes" of successful teaching (Bishop and Harrison, 2021). AMLE attributes suggest that effective teaching is that which *empowers* (facilitating environments in which students take responsibility for their own learning and contribute positively to the world around them) and *challenges* (cultivating high expectations and advancing learning for every member of the school community.

Theoretical Lens

The theoretical lens guiding this study is grounded in three primary paradigms or educational approaches that ask educators to teach to embrace students' cultural ways of knowing, social interaction as critical to the learning process, and engagement within networks as critical to growth. These schools of thought allowed me to collect and analyze data by focusing on what I might learn from preservice teachers' interactions with me and with each other around a culturally relevant communication strategy - social media. Described in the following paragraphs, the three grounding paradigms for this study are: (a) cultural relevance, responsiveness, and sustenance (Gay, 2010; Ladson-Billings, 2021; Paris & Alim, 2014) ; (b) sociocultural learning theory (Wenger, 1999; Vygotsky, 1978); and (c) connectivism theory (Siemens, 2005).

Cultural Relevance, Responsiveness and Sustenance

In 1995, Gloria Ladson-Billings, citing her study of successful African American teachers, developed an approach she called culturally relevant pedagogy (CRP). She challenged scholars and teacher educators to teach by focusing on student learning, developing cultural competence, and fostering critical consciousness, educating the whole child while acknowledging student strengths to connect to learning experiences and valuing community ways of learning. Ladson-Billings (2021) has pointed out yet another aspect of CRP that has become visible over the last decade - the salience of youth culture and how it impacts students, teachers, curriculum, pedagogy and culture *writ large*. In this study, both her original and more

current descriptions of culturally relevant pedagogy informed and supported my attention to the capability of youth culture, particularly their use of social media and Twitter/X, and the impact of how their ideas expressed through Twitter/X can shape our classrooms into powerful and critical learning spaces. As data will show, using Twitter/X, a form of communication that was relevant to them, the preservice teachers provided evidence of their growing cultural competence and critical consciousness.

Similarly, Geneva Gay (2010) described her orientation around culturally responsive teaching. Cultural diversity is accepted as a positive attribute and valuable resource in teaching and learning (Gay, 2010). Because students and teachers live in culturally diverse worlds, they do not fully understand or appreciate one another's experiential realities. If new teachers do not learn clearly and cogently about cultural diversity resources, they will garner inconsistent understandings about ethnicity and diversity (Gay, 2010). Students answer various types of questions for their tweets and preservice teachers (students) have the opportunity to answer or ask questions that will help them develop a deeper understanding of culturally diverse students and classrooms. Reflecting on cultural knowledge and prior experiences make learning relevant and effective for students (Gay, 2010).

Finally, Paris and Alim (2014) brought forward the concept of culturally sustaining pedagogy (CSP). CSP asks us to pay attention to cultural relevance not only for what it can offer in terms of promoting engagement and deeper learning, a critical consciousness, and cultural relevance, but also how we can teach to sustain cultural ways of knowing as centered not marginalized. Ladson-Billings (2021) brings these three related approaches together in ways that undergird my study of preservice teachers using Twitter/X as she writes that the very design of "culturally relevant/sustaining/revitalizing/reality pedagogies is . . . to cultivate students' voices, entrepreneurial inclinations, and inventive spirits" (Ladson Billings, 2021) p. 353). This cultivation of preservice voices will become clear through the presentation of findings in this paper.

Sociocultural Learning

Vygotsky's sociocultural theory maintains interdependence between individual and social process in learning and development. When learners participate in a range of learning group activities and begin to understand the result of working as a group, they obtain new knowledge of world and culture around them (1978). Although an older theoretical paradigm, Vygotsky's work continues to uphold work of the kind described in this paper. In fact, in 2016, Greenhow and Lewin (2016) wrote about how sociocultural learning can be seen as we co-construct knowledge and share ideas through social media. As individuals share information on social media, they receive comments or feedback (positive or negative). This aligns beautifully with Vygotsky's notion that learning is embedded in social events and interactions and social context. Students learn and shape their learning and development through social interactions and discussions in class. This learner-centered approach allows individuals to recognize what they understand as it relates to culture and learning. Once understanding is gained, the learner can share this new knowledge with peers. As is the case with social media, there is a community of teachers and learners who co-construct and analyze knowledge.

Connectivism Theory

Siemens' (2005) work in connectivism theory helps us understand how we learn from networks or other loose connections between people with similar interests and knowledge in

somewhat unpredictable or random ways. This is a theory for the digital age that denounces the boundaries of behaviorism, cognitivism, and constructivism. Autonomy, connectedness, diversity and openness are the foundations for learning in Connectivism. The teacher's role is that of facilitator, peer and moderator while the student (learner) contributes to the community by learning from it, connecting to it and sharing information with it. Technology has reorganized how we live, communicate and learn and connectivism provides an examination of technology learning trends, evolution of learning, changes in organizations and the origins of knowledge. (Corbett & Spinello, 2020). Connectivism acknowledges learning as a network group effort in which learning is a process of connecting people and information. Some basic principles of connectivism include nurturing and maintaining connections to facilitate continual learning, learning may reside in non-human appliances, the capacity to know more is more critical than what is known currently.

Review of Literature

To understand existing literature and identify gaps that my study might address, I reviewed bodies of research discussed briefly below. Those bodies of work include: (a) learning and teaching via social media, (b) technological content knowledge, and (c) Twitter/X in teacher education.

Learning and Teaching Via Social Media

Khaled (2024) reported that in 2023 65% of college faculty use social media for teaching and 70% of K-12 teachers use social media in their classes and for professional and academic purposes. Teachers use a variety of resources in their classes to enhance student learning and incorporating technology creates engaging, effective and equitable learning experience for students. Technology supports diverse learning styles and fosters flexible learning environments. Promoting critical thinking for preservice teachers through using social media creates reflective practitioners who can monitor the other practitioners who are trying various engagements and adjust for their own classes. As social media continues to make a large presence in our lives and classrooms, educators and teacher educators must understand the multiple roles and relationships that exist for social media in education (Greenhow & Lewin, 2019). Other social media outlets such as Instagram and TikTok are also prominent tools to share professional knowledge and gain information. Although they have different ways of disseminating information (sharing short videos), these platforms present alternative ways in which preservice teachers can benefit from using social media in a professional manner. Social media also promotes communication between teacher and students as well as among students individually and collectively (Faizi, et al., 2013). It is also important to note the challenges and opportunities it presents for students and teachers when learning and teaching. Although there are challenges such as online bullying, technology not working or getting "kicked out" of a social media platform, social media can connect the processes of formal and informal learning through participatory digital cultures (Greenhow & Lewin, 2019).

Technological Content Knowledge

Technological knowledge is a practical understanding of technology and the intersection of content knowledge (Wilson et. al., 2020). It is important for teachers to begin to think differently about how technology can change the nature of learning for students. Teacher educators must understand what technologies are best suited for various content areas (Wilson et. al., 2020) and they must be intentional when incorporating specific social media platforms in

classes. Teacher candidates must understand how to purposefully integrate technology in their content areas for their students to learn and make meaningful connections. Technological Pedagogical Content Knowledge, known as TPACK (Koehler et al. 2013), provides a framework to approach thinking about integrating technology into curriculum. The components of this model include Content knowledge (teachers' knowledge about the subject matter), Pedagogical knowledge (teachers' knowledge and understanding of practices of teaching and learning), Pedagogical Content Knowledge (how teachers interpret the subject matter and the way in which it is presented to students), and Technology Knowledge (how teachers think about and apply technology).

Teacher educators must feel confident when incorporating technology in their teaching (Taimlu & Luik, 2018), and if they do not feel comfortable or confident, technology will play a minimal role in their classes. Teacher educators' pedagogical beliefs can impact if technology is integrated into the class as well as how technology is integrated into their courses. Technical knowledge and technology integration knowledge are interdependent factors and teachers should understand specific technologies best suited for addressing subject matter learning and how the content dictates or perhaps even changes the technology and vice versa (Mishra and Koehler, 2006).

Twitter/X in Teacher Education

A social media tool, Twitter/X (formally Twitter) was established in 2006 and currently reaches over 300 billion users worldwide. Individuals aged 18-24 represent the majority, accounting for 34.5% of users, followed by those aged 25-34 comprising 35.4% of users (Iqbal, 2024). In teacher education classrooms, Twitter/X can be used to promote and share professional work, connect with other educators, while building and cultivating professional learning networks. (Wright, 2010; Hsieh, 2017). While some young adults/students are not familiar with Twitter/X therefore it can be daunting for them to use. Twitter/X provides access to individuals and organizations within the education realm with which students would not normally communicate. Hashtags help to directly engage with education related content that will help preservice teachers to find similar interests and concerns. Incorporating technology, specifically, Twitter/X in teacher education courses promotes a diverse and flexible learning experience for teacher candidates that they can use in their own classrooms. Twitter/X is also a way in which student teachers' reflective thinking can be nurtured and shared as they connect with classmates and the bigger professional community (Wright, 2010; Carpenter et al. 2022).

Twitter/X can help develop professional learning networks and expand professional networks that are specific to content area and skill development (Carpenter et al. 2022). By Tweeting and using specific hashtags, preservice teachers can gain resources and interact with various educators and stakeholders as they understand professional networks on a small scale . Furthermore, being able to look at a thread of responses from peers allows preservice teachers to better bridge theory and practice. Incorporating Twitter/X in education classes allows preservice teachers to describe how they apply and contextualize concepts that they learned in courses (Carpenter & Morrison, 2018; Carpenter et al. 2022). Preservice teachers enact critical thinking by questioning what they see online, critical thinking as they decide how to answer the exit question knowing that it will be posted, and they have only 140 characters in which to respond.

Methodology

The theoretical framework and review of relevant literature outlined in the previous sections provide the foundation for this study - a critical reflection on my use of Twitter/X as a tool/resource for preservice teacher candidates who are juniors and seniors in a Middle Level program. In this section, I describe the methodology used to collect and analyze data over a three-year period.

Context and Participants

This study took place in the context of a Middle Level teacher education program at a flagship university in the southeastern United States over a three-year period. Participants were junior and senior Middle Level preservice teacher candidates. Data were collected during the following courses:

- Integrated Curriculum, this course is taught in the fall to seniors. The course focuses on creating Integrated Curriculum Units in teams of four.

- Middle Level Content Area Reading and Writing, this course is composed of juniors who have been admitted to the Middle Level program. Part one of the course is taught in the fall and the second part is taught in the spring.

- Senior Student Teaching Seminar, taught in the spring, this is the final course for seniors in the Middle Level program. In this class, students discuss internship/student teaching experiences and learn from professionals in the field of middle level education as they prepare for job interviews and student teach full time.

All students (preservice teacher candidates) were required to set up professional Twitter/X accounts during the first day of class. The hashtag used was the course name and number. Data were collected over a three-year period of time and included students' weekly tweets throughout each semester (Fall and Spring). Classes met weekly and at the end of each class, preservice teacher candidates were given a question to answer ("Tweet out") regarding what topic was discussed in class for that day. When responding to the end of class Tweet, they were given the hashtag and my Twitter/X handle to provide in their responses in order for me to see and acknowledge (with a "like") or respond to their replies. Some questions were as follows:

- How will you nurture your students?

- What do you want to learn regarding literacy?

- What is your word for the year?

- What mattered today?

- What questions do you still have? Re: curriculum planning?

- What is teaching for deep understanding?

- How will you match students to texts?

- Why are instructional materials important?

- What will you share from your community to your classroom?

- How are you transitioning professionally?

- How might you be missing the forest for the trees?

- How will you provide better learning opportunities for your students?

- How have you built bridges with students and CT's (Coaching Teachers) and students this semester?

Students were also required to follow five-to-six Twitter/X agencies, organizations or individuals throughout the semester to learn more about teaching, content and education such as Association for Middle Level Education, National Council of Teachers of English, National Council for Social Studies, National Association for Research in Science Teaching, and National Council of Teachers of Mathematics.

At the end of one or all of these of these courses, preservice teacher candidates completed an assignment "What I Learned from Twitter/X", in which they provided a top five (or six) list with the names of individuals, agencies or organizations they were following, what they learned from each, and how they may be able to incorporate what they learned in their classes.

Data Analysis

Data analysis began by downloading tweets that included the hashtags provided in class and my handle @Drtchr. There were over 50 tweets across all the hashtags. I read the Tweets as short reflections from students and noted those that displayed how preservice teacher candidates were beginning to understand teaching and learning.

All tweets across the three courses and three years were coded and organized leading to the construction of themes related to my first two research questions: How does technology integration using Twitter/X inform preservice teachers' professional knowledge? and How does the use of Twitter/X create classroom community and relationships among preservice teachers and teacher educators? The constructed themes were:

- Pedagogy and instructional strategies

- Relationships and building community

- Reflective emerging educators

Similarly, I coded and categorized data as they related to my third research question - How does the use of Twitter/X inform my planning and insight as a teacher educator? This allowed me to create a theme that focused on how the Tweets informed my planning and teaching as a teacher educator.

Findings/Results

After my analysis of the preservice teachers' tweets and the construction of themes through those analyses, it became very clear that Twitter/X had become a dynamic, concise, and effective way for me to gain a range of insights about the students which not only informed my instruction but also my ability to restructure courses, classes and aspects of our program. By requiring the preservice teachers to create a professional Twitter/X account from their first day in the Middle Level program, we were able to communicate succinctly yet effectively.

Through our Twitter/X correspondence, I gained a better understanding of how the preservice teachers in my classes understood middle level learners as they grew into early career educators. I learned that, as juniors, they had already internalized notions about teaching since

they have been lifelong students. However, it was when they began reflecting on their own experiences as students and how they learned from their teachers in conjunction with their preservice readings, other course work, and interactions with middle level students in schools that they began to question those experiences regarding the teachers they want to be. In addition, through Twitter/X, the preservice teachers reflected on why they wanted to teach and why they wanted to teach middle school specifically, and from there, they were able delve into the "how-to" of teaching and student engagement and interaction. Finally, the insights gained from preservice teacher candidate responses allowed me to see their growth as students to rising educators, which allowed me to become more intentional in my teaching.

As described in the Methodology section, after reading and coding the Twitter/X responses, I categorized my learning (from the data) in four areas: Pedagogy and Instructional Strategies, Relationships and Building Community; Reflective Emerging Educators; Informing My Practice. I use those themes as subheadings to communicate findings in this section.

Pedagogy and Instructional Strategies

The preservice teachers' tweets over time were invaluable in helping me understand what they were learning, a form of assessment of their growth and my teaching, but they also allowed the preservice teachers to solidify their learning and reflect on what they were coming to know. Specifically in terms of pedagogy and instructional strategies, I learned about their growth and need for further teaching regarding three major areas (see representative tweets in Table 1):

- Lesson planning

- Their thinking about providing learning opportunities for future students

- Their growth in terms of conceptualizing and potential for actualizing culturally sustaining teaching.

Looking across these three categories, data analysis made clear that using Twitter/X was an effective way for me to learn that the preservice teachers were building understandings about the importance and benefits of: (a) planning lessons that middle level students would see as purposeful through engagement in the study of real-world events, (b) challenging students in ways that allowed them space to share their own ideas/perspectives, (c) connecting lessons with State standards, and (d) recognizing that they can change the format from one lesson to another to sustain students' engagement.

I also learned that the preservice teachers were gaining knowledge about educational terminology such as "student-centered", understanding what it meant in terms of giving students choice and agency. After we studied how students have for centuries been "miseducated" (Woodson, 1933) when learning only partial histories from and about predominantly European/white-authored literature and histories, through their tweets I was able to ascertain the depth of their understanding about what that means and how they can counteract it. Recognizing that they might be only "talking the talk", this led me to deepen our conversations about miseducation and how to rectify it (ways that I altered instruction because of tweets are discussed later in this paper).

Table 1
Pedagogy and Instructional Strategies: Representative Tweets

Lesson Planning **What is important when planning a lesson?**	*When planning a lesson, it's important to relate the lesson's purpose to our students' futures, so they know lessons will help them in the real world, not just in the 4 walls of a classroom. Help students see the value in learning.* *When planning a lesson, it is important to keep it engaging so that students are kept on their toes and don't get distracted. It is also important to make the students discuss so that they can share their own ideas.* *It is important to configure lessons that are both helpful for students to learn and engaging. This can help them stay on task and want to learn.* *It's important to know what the standard is before planning a lesson. This will allow your work to go in the right direction so you are not back tracking.* *You don't always have to structure everything the same way all the time.* *What is important when planning a lesson? Remembering what you want the students to take away from the lesson and staying focused but flexible.*
Teaching in their Future Classrooms **How will you provide better learning opportunities for your students?**	*I will provide better learning opportunities by focusing on a more student-centered classroom and allowing them the agency to let ME know what and how they want to learn.* *I will provide better learning opportunities for all by creating engaging and relevant content. I will clear all misconceptions for students who have been miseducated.* *I will make content relevant to my students in order to provide better learning experiences for all students especially those who have been miseducated. I will do this by relating it to their lives and real world events.* *To provide better learning opportunities for all students, I want to practice culturally relevant pedagogy, where my students can see themselves as able and successful mathematicians and scientists.*

Culturally Sustaining Teaching and Bias **What must we "unlearn" as educators?**	*We must "unlearn" that there is only one way to get an answer/ only one way to do things in order to create socially responsive and just classrooms.* *We must unlearn equality in our classrooms. Just because something is equal doesn't mean that it is fair. Students come with a different set of skills and will come with different sets of struggles.* *I believe we must unlearn the assumption that every student comes into the classroom with the same knowledge and learning styles as others. We must not hold everyone to the same expectations but hold an achievement for all students.* *We need to unlearn the standard preach to teach. Without providing the opportunity to support students individually in their struggles, students can't reach their full potential.* *We must "unlearn" or forget our preconceived notions. We may hold students to different standards based on how they act or dress because of our underlying biases, but we have to have the same expectations for each student in order for EVERYONE to succeed.* *We need to both, learn what our biases are, and learn to unlearn them and reflect on how they can affect us and our teaching.* *We need to both, learn what our biases are, and learn to unlearn them and reflect on how they can affect us and our teaching.* *As teachers we must unlearn the some of the practices we saw our teachers use in the classroom. There is always room for growth and improvement that will allow for a more just classroom environment*

Relationships and Building Community

The second major category constructed through analysis of preservice teachers' tweets was centered around opportunities for students to reflect on and voice their thoughts about building relationships with middle level students and fostering a sense of community in their classrooms. Three sub themes were clear within these data (representations of related tweets can be found in Table 2):

- Building relationships with students

- Building communities of learners in their classrooms

- Building bridges with students

For example, tweets led me to understand that some of the preservice teachers were gaining an appreciation of relationship and community building because they saw it in the nurturing dispositions and actions of their Coaching Teachers (teachers in whose classrooms they were conducting practica or internships). When they made comments such as, "Building a strong sense of community can allow me to tap into the interests of my students and increase engagement," it let me know that it would be important for me to follow up to find out exactly *how* they felt that could be done and if they were putting it into practice in their internship and practica classrooms. Again, tweets alerted me to the possibility that they were merely "talking the talk" and pushed me to look deeper into their actual ability to do that.

I loved that the preservice teachers noted that building community was not all about content but was also about having conversations with middle level students about life, what was concerning them, their joys, and enjoying being together talking informally. I hoped that they were expressing this because it is something I try to do with them as preservice teachers and they had felt the impact of my demonstrations of genuine interest in their lives.

This connected beautifully to tweets that showed me how they were building bridges with teachers (professionally) and with middle level students and finding that often delicate balance between the professional and the personal.

Table 2
Relationships and Building Community: Representative Tweets

Building relationships: **How will you nurture your students?**	*I am nurturing my students by building the lasting relationship with them where they know I value them as learners and individuals. My Coaching Teacher is nurturing students in their classes by using differentiation with the students.* *Building a strong sense of community within my classroom can allow me to tap into the interests of my students and increase engagement especially when building lessons and bringing in different texts*!
Community of Learners: **Why is it important to build class community?**	*Taking time to have a conversation with students that isn't related to the conte*nt.. *we all needed that short break!* *Building a strong sense of classroom community benefits students because they feel comfortable speaking and interacting within the classroom and in turn form a deeper understanding of the content area.* *Building a strong sense of classroom community benefits students as learners because it will help the students to be able to strengthen the elasticity of their minds and better retain*

	information. It also helps students become more comfortable with each other.
Building Bridges as a Growing Professional **What bridges have you built this semester?**	*A bridge I've built with the students is relating their experiences and interests with my own.* *The bridges I have built this semester have been building professional relationships with my students and making sure the relationships stay at the professional level.* *One bridge I have built this semester with a student is in social studies. She is on a 3rd grade reading level and I have dedicated a lot of time to independently helping her with her quick writes, and now she even sends me emails to ask for help with content.*

Reflective Emerging Educators

The third theme constructed from analysis of Twitter/X data encompassed tweets that revealed preservice teachers' reflections as prospective teachers. Tweets in this area fell into two subcategories (see representative tweets in Table 3):

- Their reasons for choosing Middle Level Education
- Their reflections on their preparedness for transitioning from student to Middle Level teacher.

I was gratified to learn through tweets in this category that the preservice teachers were taking to heart my emphasis on how needed they are to "break the stigma that middle school is the worst three years of school." This demonstrated that they were at least building an awareness of how much their positive dispositions mattered and that they did not need to default to negative stereotypes about middle schoolers. When I shared my own middle level teaching experience and the sincere joy I find in middle level students, my hope is that the preservice teachers gained insights that informed comments like the one mentioned above. While not avoiding conversations about difficult moments in the lives of middle schoolers, the tweets helped me see that many of the preservice teachers had the goal of broadening their perspective on middle school students to support their multifaceted growth which is foundational to good teaching.

Tweets focused on the preservice teachers' ultimate transition from student to teacher, were tremendously revealing. Through them, I learned that they were facing the important transition to begin thinking about career opportunities in the field of education and what those might look like. Many of them were beginning to think more seriously about promptness, dress, and most important, developing and maintaining a positive mindset.

Table 3
Reflective Emerging Educators: Representative Tweets

Reasons for Choosing Education and Middle Level **Why teach Middle Level?**	*Because students need teachers who want to break the stigma that middle school is the "worst three years of school." Be the change!* *I chose middle level because I wanted to teach students in the age where they are young enough to want to share their imagination and they are old enough that I can help them learn how to express it.* *I chose education in general, because I wanted to inspire the minds of the younger generation. I wanted to help the troubled students come out of their situation and soar above their struggles and situation, and as always show love.*
Transitioning from Student to Professional Educator **How are you transitioning professionally?**	*I am transitioning professionally by re-learning the content my coaching teachers are teaching so I can effectively assist my students and coaching teachers.* *I am transitioning professionally, by changing my mindset, starting to actually care about the career opportunities presented to me and thinking as a teacher in all aspects.* *I am transitioning professionally by getting acquainted with the school environment as a teacher rather than a student.* *I am transitioning professionally by arriving on time, dressing professionally, and maintaining a positive mindset.* *I am transitioning as a professional by starting to see myself as a teacher both inside and outside the classroom. I am creating a routine to start balancing work and life.* *How I am transitioning professionally: The way I dress, 2. Mentally becoming more professional, 3. Training my bladder (hahahaha), 4. Trying to find more balance in my schedule.*

Informing My Practice

Crossing all three findings - described above- was the overarching finding that the Twitter/X experience informed my practice in multiple ways. For example, when I read what the preservice teachers thought was important to their growth and their teaching - like addressing State standards and keeping learning engaging - I was prompted to add my own learning objectives to PowerPoint slides I used for instruction in their methods courses. This helped me

prioritize standards and integrating them seamlessly ensuring that curriculum remains engaging, comprehensive, and enhancing rather than limiting the learning process. Further, I realized that I must consistently model the inclusion of standards and objectives in my weekly slides which is critical for creating an effective learning experience.

Another example of tweets informing my instruction occurred as they tweeted about the importance of student choice. The after class tweets reminded me that incorporating student choice is important for preservice teachers as they demonstrate creativity while taking ownership of their learning. For example, in one course, for their final examination, the preservice teachers had the choice to write a formal narrative paper, create a PowerPoint or Google slides presentation, or create a video. By having a choice in how they demonstrated their understanding, preservice teachers were empowered to use their voice while highlighting their experiences.

The preservice teachers' tweets again influenced my instruction when they tweeted about the importance of unlearning and relearning content that may be outdated, European and European American dominant, etc. As a result, I reflected on what I needed to unlearn and relearn - terminology for example. I caught myself using the term *minority* instead saying what I meant depending on who we were talking about. I used myself as a model saying how important it was for me to say what I meant: Was I talking about Black people, Indigenous People, Trans people, and so on.

Foundationally, preservice teachers' tweets reminded me that whatever I teach about middle level teaching, I need to model in my own classroom. In another example, I taught them that it was important to allow learning and teaching in the middle level classroom to be reciprocal so that the teacher (or professor) is not the only expert in the class. Their tweets reminded me that I needed to give them the space to transform into critical and creative thinkers by not having so much structure that they felt confined to one way of doing things. One example is providing a grace period for assignment due dates and/or working together to develop them.

When they wrote about the importance of nurturing relationships and build classroom community and bridges, their tweets pushed me to try even harder to be sure I went around to connect and talk with each preservice teacher sometime during each class session. I did that in class but also modeling the importance of being available in quieter, safer one-to-one settings. For example, when a preservice teacher was taken advantage of by being used as a substitute teacher, she was comfortable enough to come to me as a sounding board, empathizing and taking steps to alter the situation. This included drawing on my abilities to know how to move with them - not being in their business but sensing when they needed me to invite them into conversations.

When the preservice teachers tweeted about why they chose Middle Level, it makes me want to work harder for them and the Middle Level students they will teach. I want to make sure they have time to talk about what they are seeing in schools, the realities of student-teacher relationships, when they meet challenges, reminding them of their why.

Finally, when they tweeted about how they will transition from student to professional, I am reminded that I am a proud Teacher Educator (almost like a parent). I see them from their junior to senior years; we recheck the goals we set and recognize that their small steps are giant steps. Their tweets remind me to keep encouraging them to stay in education, that middle level

students need them, as well as to let them know other avenues available to them with their education degrees (counseling, speech pathology, library science, administration, to name a few).

Through all of this, the preservice teachers' tweets remind me to let them know that, through my actions, I am always modeling what I wanted them to be with their students. Being intentional in showing them how I use their feedback to inform my instruction is an important part of this so they will internalize what responsive looks like and see it as a model for their own teaching.

Discussion

Twitter/X can be used as a resource for teacher educators to reflect, assess, and inform teacher educator instruction as social media can act as an extension to formal and informal learning. Twitter/X also has the power to disrupt or empower learners with the opportunity to create a space for learning that extends conversations and questions beyond the classroom, while keeping the space between classes open to start a new conversation or comment on class discussion after having time to reflect. The informal conversations that can take place on Twitter/X after class assists teacher educators when reflecting on the rigor and impact of class activities while planning for the next class. There are always unanswered questions that can be used to begin the following class. The thoughts and wonders that preservice teachers post on Twitter/X after class provides the teacher educator a means to reflect on how they approached the topics for class, what could have made the lesson better or clearer, what worked well and what did not.

The biggest challenge with using Twitter/X in class is the small learning curve for those students who have not used Twitter/X, so they are learning as we go. Alsup (2006), declares, "Positively, the education student's mind is not a blank slate, and there is plenty of prior knowledge on which to build ; the negative flip side is that the student comes in with an entire set of internal narratives that define what, to him or her, a teacher is" (p. 34). Preservice teachers are crafting teacher identities as they are "Tweeting out the Door" because they can provide their final thoughts on class that day.

 Alsup (2006), maintains, "And all of these are not positive images or consistent with what research and theory have demonstrated comprises good pedagogy. Therefore, the teacher educator must challenge these narratives, these cultural scripts, these ideologies and build new ones in their place" (p. 34). Implementing Twitter/X in my courses is a means of challenging ideologies that dictate what good pedagogy is.

Implications: Twitter/X as a Teaching and Assessment Tool

The findings of this study lead to suggestions for teachers that lead them to think about why using Twitter/X is effective for students and how it can impact how they assess preservice teachers, informs practice and is a solid reflective tool that can lead to a collaborative classroom community.

Unlearning the negative perceptions of social media and demonstrating how social media can add to classroom learning is an example of this idea by Bishop and Harrison (2021)."As architects for change, courageous, collaborative leaders make a difference by putting their knowledge and beliefs into action" (p. 48). Knowing and respecting the integrity of your students, do not be afraid of learning from students, it is a beautiful collaboration. Social media does not have to disrupt our classes or how students learn.

Use Twitter/X as a Concise, Informative Method of Teaching

Twitter/X does not have to be an "add on" to classes, the social media platform can be integrated into courses in a way that does not take away from normal planning. The educator simply needs to create a hashtag for students to include in their answers or even simply include their "handle" (name on Twitter/X) so when students answer the question, it will go directly to the teacher. In fact, the "Tweet Out the Door" is one of many ways to incorporate it in classes. Allowing students to formulate questions to wrap up class, gives them autonomy as students who are transitioning to young educators. When students ask the questions, teacher educators have an opportunity to assess what they are thinking and learning for that class.

Twitter/X can also be used during class as a way for students to have informal conversations while teaching occurs. Using Twitter/X during class gives students the opportunity to ask questions that they may forget during a time when the teacher is talking, and the student does not want to interrupt. Similarly, another student can likely answer the question, and the teacher can Tweet a response or use the interaction as a reflection for the next class or as a way of opening a class discussion. Using Twitter/X as an after class reflection gives teachers an opportunity for deep reflection for individual students and their classes. The whole point in using Twitter/X in class was because of the character limit (which was 140-280 but has since increased depending on the account) for students to practice brevity. In any event, it is important to emphasize to students to be concise to get to the point and not ramble.

As educators, we are lifelong learners and should not be afraid to try new things in our classes. As teacher educators, we must always strive to provide our Teacher Candidates a variety of ways to engage students and we must lead by example and learn new things. Twitter/X can be an exciting tool to offer to students because you can learn how to use the platform in various ways to support learning. In short, don't be afraid to learn something new because it could close off spaces of learning for students.

Conclusion

Without our Twitter/X conversations, these and other important insights would have been more laborious and time-consuming for me to ascertain and for the preservice teachers to express (for example, in journals and formal papers). With Twitter/X, every class session, I had an immediate "climate" and "knowledge" check that informed me and my teaching immensely.

A bonus to using Twitter/X during our time together is that it is a format that allows for maintaining ongoing relationships with them. The preservice teachers' tweets kept me connected to them in the years after their graduation. Through their tweets, I can see them taking off as teachers, coaches, and administrators, going back to school for graduate degrees, loving their students. I get to continue holding them up when they face challenges and watch them in the process of making their dreams realities.

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