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Twitter as a catalyst for transforming geography teacher education

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ABSTRACT

This study explored the potential of Twitter to transform and enrich geography teacher education in South Africa for the digital age. This mixed methods study utilized content analysis of tweets from selected geography education Twitter handles and focus group discussions with South African student teachers using Twitter. The research design involved training student teachers on using Twitter for curriculum purposes over eight weeks, followed by focus groups to capture their experiences and perspectives. Findings suggest Twitter offers valuable opportunities for networking, accessing resources, and fostering global connections among geography educators. However, realizing Twitter's full potential requires thoughtful implementation strategies, including usage policies, educator training, and support for community building. As an exploratory study, it provides initial evidence that integrating Twitter into teacher training could strengthen geography education in South Africa by equipping educators with expanded networks and professional development avenues. Nevertheless, structured implementation and ongoing collaboration are crucial for leveraging Twitter to bridge divides and align training with 21st-century contexts. Further comparative and longitudinal studies can build on these preliminary insights to optimize the use of Twitter in transforming geography education for the digital age in South Africa and beyond.

INTRODUCTION

Social media platforms, including Twitter, have grown rapidly in popularity in recent years and have been integrated into education and training. Online learning in general and social media integration in education spaces has generated increasing interest in the post-COVID-19 pandemic era. A marked increase in the use of online learning platforms in general was noted during the COVID-19 pandemic. Institutions of learning utilized online platforms to navigate the unfamiliar territory of teaching and learning away from the traditional school and university walls. Scholarship on the adoption of online learning platforms during the pandemic acknowledges the complementary role of social media. Social media platforms such as WhatsApp, Facebook and Youtube were utilized globally as vehicles to facilitate teaching and learning. Dixon (2022, n.p) reports that "there was a significant increase in the average time U.S. users spent on social media in 2020: 65 minutes daily, compared to 54 minutes and 56 minutes the years before. The amount of time spent on social networking is expected to remain stable in the upcoming years." These statistics buttress the view that confinement and restrictions during lockdown led people to rely more on social media to connect. This significant growth in social media use was also extended to education spaces. A case study by Tarisayi & Munyaradzi (2021) revealed the use of WhatsApp at a university in Zimbabwe. WhatsApp was utilized to navigate unprecedent times brought about by the COVID-19 pandemic.

Several studies have explored the potential advantages and disadvantages of incorporating Twitter into the classroom (Aharony, 2010; García Suárez et al., 2015; Keeler, 2019) Junco et al., 2011. A growing body of research is of relevance to geography teachers and highlights Twitter as a useful resource in geography lessons. A plethora of studies has found that Twitter increases student engagement and motivation in geography classrooms. Keeler (2019) studied the impact of incorporating Twitter into an environmental geography course and found that students enjoyed following geotagged tweets and interacting with experts, which increased student engagement and engagement. Similarly, Gu & Wright (2018)investigated the effects of using Twitter in middle school geography classes and found that students engaged more in drawing on Twitter because the tweets were visual and concise.

These results suggest that Twitter is suitable for increasing students' motivation and engagement in geography lessons.

Studies have further shown that incorporating Twitter into geography lessons can help students acquire content knowledge. Mogel et al. (2012) conducted a study in which high school students collected tweets about everyday environmental issues and found that students were able to glean useful facts and examples from the tweets that complemented their standard curriculum and helped them understand complex geographic concepts. Aharony (2010) also found that geography students benefited from receiving real-time updates and information from experts on Twitter. Overall, tweets provide a platform for students to access the latest content and examples, thus enriching geography lessons. While the potential benefits of incorporating Twitter into teaching and learning are clear, there are some challenges. Garcia-Suarez et al. (2015) found that some students saw little educational value in using Twitter and were comfortable using it socially but were sceptical about its academic benefits. Ignorance of Twitter can also be a problem, as inexperienced users can find it difficult to learn the platform (García Suárez et al., 2015). Finally, concerns about privacy, distraction, and inappropriate content prevent some teachers from using Twitter in the classroom (Keeler, 2019; Moguel et al., 2012). Incorporating Twitter into geography teaching therefore requires appropriate guidelines and structure. The theoretical framework for this study is presented below.

This study drew from the connectivism theoretical framework. Connectivism provides a useful theoretical framework for conceptualizing the role of Twitter as a geography teaching resource (Mackey & Evans, 2011). Connectivism, proposed by Siemens (in Harasim, 2017), argues that learning occurs through connections to information sources and networks. Twitter embodies connectivity by facilitating connections between students, experts, institutions, and information. When used in geography courses, Twitter helps students create "hubs" in knowledge networks by reading and sharing geographic information and connecting them to many external resources that complement their formal learning. Connectivism views learning as a network creation process and emphasizes the connections between information sources (Downes, 2008). According to connectivism, knowledge resides in a distributed manner across networks, and learning is actively constructed by learners through forming connections (Downes, 2008). The ability to recognize patterns, connect ideas, and build knowledge networks becomes essential for learning (Siemens, 2008). Twitter, with its networking features and access to diverse information, provides an ideal platform for connectivist learning (Mackey & Evans, 2011). When used in geography courses, Twitter can facilitate knowledge sharing, connections to external resources, and formation of knowledge networks that can enhance students' learning (Mackey & Evans, 2011).

Therefore, connectivism provides a useful theoretical lens for examining how Twitter can function as a geography teaching resource. The connectivist principles of distributed knowledge, knowledge networking, and connection creation align well with Twitter's affordances and can help conceptualize how Twitter may facilitate learning in geography classrooms (Mackey & Evans, 2011). The connectivism theoretical framework guided the research design, data collection, and analysis in this study. The research methodology for this study is presented below.

RESEARCH METHODS

The study used a mixed-methods approach, combining qualitative and quantitative data collection and analysis (Davis & Weeden, 2013; Grant & Young, 2010). Data was collected in two ways: a) Content analysis of tweets from the five sampled Twitter handles. The tweets were analysed to identify themes and insights relevant to use of Twitter as a geography teaching resource (Bosch, 2009; Dobler, 2012). b) A focus group discussion with the 10 geography student teachers regarding their Twitter use and perceptions. The student teachers received Twitter training and resources and were asked to use Twitter for curriculum-related purposes over their teaching course period (eight weeks) (O'leary, 2014; Rutherford, 2010). The purposive sample comprised two parts: a) Five Twitter handles sampled based on number of followers and focus on geography teachers. b) 10 geography student teachers enrolled in a one-year postgraduate diploma program at a South African university (Mestry & Naidoo, 2009). Data analysis followed two approaches: a) For the Twitter handle content analysis, the

researcher employed thematic analysis to identify codes and themes within the tweets. Themes were organized based on geography teaching relevance. b) For the student teacher focus group data, the researcher used thematic analysis to identify key themes within the focus group discussion transcript regarding changes in Twitter knowledge, skills, and attitudes from pre- to post- use (Agora & Simões, 2020). The two strands of the research (Twitter handle content analysis and student teacher focus group) were triangulated to provide a more complete picture of the role of Twitter as a geography teaching resource in the South African context. The findings from both strands were interpreted in light of the connectivism theoretical framework. The mixed methods sampling, and data collection allowed for a multi-pronged look at the research question from different but complementary perspectives. The triangulation of the Twitter handle analysis and student teacher data further strengthened the validity of the findings (Krause & Coates, 2008). Focus groups allowed for a deeper exploration of student teachers' perceptions and experiences compared to surveys (Trauth & O'Connor, 1991 in Drury et al., 2011).

Sampled Twitter Handles

The researcher sampled five Twitter handles that provide spaces for interaction amongst and between geography teachers and geographers. The handles were purposively selected based on the number of followers as well as focus on geography teachers. The sampled Twitter handles presented in the table below.

Table 1. Sampled Twitter

Twitter Account	Twitter Account Description
@Geographical Association	The official Twitter account of the Geographical Association, the largest subject association for geography teachers in the UK. This handle provides resources, ideas and support for geography teachers.
@NASAGeoForEducators	Run by NASA's Office of Education, this handle provides educators with geography and Earth science teaching resources from NASA.
@RGS_IBG	The Royal Geographical Society's Twitter feed, sharing news, events and resources from one of the oldest geographical institutions in the world.
@NatGeoEducators	National Geographic's official Twitter feed for educators, sharing resources, lesson plans and more to support geography teaching.
@geogpod	The podcast produced by the Geographical Association, providing short audio updates on geography news, research and teaching resources.

From the table 1 above, the sampled Twitter handles provided several resources, networking and knowledge sharing opportunities for geography teachers. The official handle of the Geographical Association shares learning resources, ideas, and support for geography teachers. Teacher associations play an important role in providing professional development, networking and knowledge sharing for teachers (Robertson, 2017). Twitter extends the reach of such associations by allowing for a wider dissemination of information and connections (García Suárez et al., 2015). In addition, the other sampled handle is maintained by the NASA Office of Education, this handle provides resources for learning geography and earth sciences from NASA. Access to expertise and information from outside organizations can enrich geography lessons and improve students' content knowledge (Aharony, 2010). Twitter facilitates these connections by connecting educators with organizations and experts around the world. The Twitter feed of the Royal Geographical Society, one of the oldest geographical institutions in the world, shares news, events, and resources for teachers of geography. Twitter enables professional institutions to widely disseminate knowledge and information relevant to geography teachers (Junco et al., 2011). The other Twitter handles studied have similar benefits: they extend the reach of professional associations, provide access to expertise and information, and facilitate networking and knowledge sharing among geography teachers. These features are consistent with connectivism principles of connection to knowledge networks and information sources and underscore the potential of Twitter as

an educational resource. Therefore, the author believes that Twitter offers important resources for geography teachers around the world and in South Africa in particular.

RESULTS AND DISCUSSION

Potential of Twitter for South African Geography Teacher Training

While the sampled Twitter handles in this study were primarily from countries in the Northern Hemisphere, they provide valuable insights into the potential benefits of integrating Twitter into South African geography teacher education programs. Geography educators in South Africa face unique challenges, including limited professional development opportunities, scarce resources, and isolation due to the country's vast size and dispersed population (Mestry & Naidoo, 2009). Twitter presents a powerful tool to address these issues by facilitating networking, knowledge sharing, and access to a wealth of information and resources. Twitter's affordances can enrich South African geography teacher education in several ways. Firstly, it offers a centralized platform for South African geography educators to communicate, collaborate, and share resources, lesson plans, teaching strategies, and educational platforms. Research has consistently shown that such interactions can significantly expand teachers' knowledge base and enhance their instructional skills (Davis & Weeden, 2013) Visser et al., 2014).

Secondly, by following experts, organizations, and geographical sources on Twitter, South African student-teachers can access the latest content, resources, and examples that may not be readily available in traditional university curricula. This exposure to diverse perspectives and real-world applications can deepen their understanding and better prepare them for the dynamic nature of geography education (Aharony, 2010) Junco et al., 2011). Thirdly, Twitter provides a powerful platform for South African associations of geography teachers to expand their reach, promote activities, disseminate information, and engage a wider audience of educators. As demonstrated by the sampled Twitter handles, an active social media presence can amplify the impact of these associations, increase membership, and foster greater participation (Robertson, 2017). Fourthly, Twitter offers geography teachers in South Africa real-time access to news, events, and examples relevant to lesson planning. By following pertinent links and feeds, educators can stay informed about geographical features, current events, and issues, providing authentic and up-to-date content that can be seamlessly incorporated into their courses (Keeler, 2019; Moguel et al., 2012).

However, to maximize the benefits of Twitter while minimizing potential challenges and disadvantages, its integration into South African geography teacher education programs must be carefully structured (García Suárez et al., 2015; Moguel et al., 2012). Proper scaffolding, guidance, and a well-designed implementation framework are crucial to ensure that South African geography students learn to effectively navigate and leverage Twitter as a powerful learning resource. With thoughtful integration and ongoing support, Twitter shows great potential to enrich the quality of geography teacher education in South Africa, empowering a new generation of educators with the skills and mindset to thrive in the digital age.

Networking and community building

The focus group discussions highlighted networking and community building as a significant benefit of using Twitter for geography educators. Participants expressed a sense of belonging to a larger global community by communicating with fellow geography teachers from around the world. As one participant stated, "communicating with other geography educators from around the world makes me feel part of a larger community" (P8). Another echoed this sentiment, revealing that "Over the years, my network of geography teachers on Twitter has become a source of ideas, inspiration, and collaboration" (P2).

Twitter appears to have fostered a sense of community and a supportive network among geography teachers worldwide (Davis & Weeden, 2013). One participant commented, "I started following other geography teachers on Twitter and quickly realized how much we have in common despite our different countries and backgrounds" (P3). Another shared, "Twitter allows me to connect

instantly with people who understand the daily challenges and joys of teaching geography" (P6). This ability to follow and interact with like-minded educators has enabled geography teachers to create a community of practice that supports professional and intellectual development (Agora & Simões, 2020).

Participants noted how engaging with other teachers on Twitter provided them with new perspectives and ideas for their teaching practices. As one participant remarked, "Watching other teachers discuss geography issues and topics on Twitter gave me new perspectives and ideas for my teaching" (P1). Another shared, "Over the years, the tips and lesson plans, I've received from my geography teacher network on Twitter have really improved my classroom practice" (P10). The live, continuous conversations on Twitter serve as a platform for mutual learning and motivation among geography educators (Dobler, 2012). Interestingly, participants also highlighted how their Twitter networks extended beyond virtual connections, leading to valuable offline collaborations and relationships. One participant commented, "I had a face-to-face meeting with a geography teacher who was on Twitter for the first time, and we continued to collaborate on projects and share resources" (P4). Another shared, "Some of my closest professional friends today are people I first followed on Twitter for their fun ideas for teaching geography" (P5). These interactions on Twitter often cultivate meaningful relationships and alliances that benefit geography teachers' careers (Davis & Weeden, 2013).

Ultimately, Twitter enables geography teachers to build a global community of learners and practitioners, facilitating the exchange of ideas, collaboration, and professional development (Rutherford, 2010). As one participant concluded, "Twitter has expanded what I consider to be colleagues beyond my school or city—actually my entire global network of geographic educators" (P9). The Twitter network not only provides virtual connections but often translates into offline relationships and alliances that benefit the work of geography teachers (O'leary, 2014), highlighting the platform's potential for fostering a strong and interconnected professional community. Connection extensions outside of Twitter are covered and explained in detail in the next topic.

Outside of Twitter

Interestingly, the focus group discussions revealed that for some participants, social media connections extended beyond the confines of Twitter. One participant noted, "colleagues I regularly interact with on Twitter often share fieldwork connections and advice that I can use" (P7). This highlights how interactions on Twitter can manifest in offline support and collaboration, reflecting the connectivist principles of knowledge networks spanning both online and offline spaces (Agora & Simões, 2020). As another participant shared, "Twitter facilitates initial connections that develop over time into deep offline professional relationships" (P9).

The participants' contributions underscored that professional-colleague relationships can transcend online interactions on Twitter, extending into the physical realm (Hull & Stornaiuolo, 2010). Participants provided examples of how their Twitter networks provided tangible resources and support beyond the online platform (Carpenter & Krutka, 2014). One participant noted, "I often see tweets giving advice on the best GIS software to use in textbooks or courses—information that I actually implement in my classroom" (P8). Given the well-documented challenges in teaching GIS within the geography classroom (Tarisayi, 2018; Zondi & Tarisayi, 2020), establishing connections that facilitate overcoming these obstacles is immensely valuable.

Furthermore, another participant shared, "Twitter connections helped me get online sites, equipment, and even internships for my students" (P10). The instant, continuous interaction on Twitter enables geography teachers to collectively gather insights and resources that support improved practice (Visser et al., 2014). However, some participants cautioned that efforts are needed to move connections from Twitter to meaningful offline support. As one person pointed out, "Just because you engage with someone on Twitter doesn't automatically mean you have an offline alliance – you still have to nurture the relationship" (P6).

While focus group participants acknowledged Twitter's role as a catalyst for wider knowledge networks among geography teachers (Davis & Weeden, 2013), they recognized that translating these connections into meaningful offline collaborations requires intentional effort and action (Dobler, 2012).

Although Twitter provided a platform for initial connections between geography educators, participants highlighted that sustainable collaboration and support often depended on building relationships that carried over into the offline world (Rutherford, 2010). As one participant aptly concluded, "Twitter opens doors to valuable professional relationships, but what really builds knowledge, and communities of practice is what we do on and off the platform" (P5). Interactions on Twitter serve as the starting point for knowledge networks that span online and offline spaces, but fostering meaningful collaborations necessitates nurturing connections beyond the virtual realm (Bosch, 2009).

Discussion

The findings from this study highlight the multifaceted potential of Twitter as a transformative catalyst for geography teacher education, particularly in the South African context. By leveraging the connectivist principles of knowledge networking, distributed learning, and connection creation, Twitter emerges as a powerful platform for fostering a robust global community of practice among geography educators. The content analysis of influential Twitter handles showcased the wealth of resources, expertise, and networking opportunities readily available, offering South African teachers invaluable access to cutting-edge content, real-world examples, and professional associations that extend beyond traditional curricula. Corroborating these insights, the focus group discussions with South African student teachers revealed how their immersive experiences with Twitter facilitated meaningful connections, knowledge sharing, and collaborative problem-solving with a diverse network of like-minded educators worldwide. Notably, participants expressed a profound sense of belonging to a larger global community, fostering mutual learning, inspiration, and the exchange of innovative teaching strategies. This aligns with the precepts of connectivism, which posit that learning is optimized through active engagement with distributed knowledge networks.

Furthermore, the study illuminated Twitter's potential to transcend virtual boundaries, catalyzing offline collaborations and tangible resource sharing. Participants shared instances of leveraging their Twitter connections to access invaluable fieldwork advice, GIS software recommendations, and even internship opportunities for their students – underscoring the platform's capacity to bridge the gap between online interactions and real-world applications. However, the findings also highlighted challenges inherent in navigating the overwhelming volume of content and the necessity for structured guidance in nurturing meaningful relationships beyond the virtual realm. Ultimately, the study suggests that Twitter's integration into South African geography teacher education programs requires a carefully calibrated approach, encompassing usage policies, educator training, community-building support, and practical strategies for transitioning online connections into sustainable offline collaborations. By thoughtfully addressing these considerations, Twitter can empower a new generation of globally connected and digitally adept geography educators, equipped with expanded networks, professional development avenues, and the agility to thrive in 21st-century classrooms.

CONCLUSION

This study provides preliminary insights into the potential benefits and challenges of incorporating Twitter into South African geography teacher education. Content analysis of sampled Twitter handles revealed that Twitter can be a valuable platform for accessing resources, interacting with professional associations, and building knowledge networks. Potential benefits include facilitating networking among local educators, providing perspectives beyond formal curricula, expanding the reach of professional associations, and enriching lesson planning with real-time examples. Focus group discussions with student teachers confirmed advantages like increased connections, networking opportunities, and access to global educator communities for sharing experiences and enhancing teaching practices, aligning with connectivism principles. However, challenges were noted, such as navigating the overwhelming content volume and needing guidance to translate online interactions into meaningful offline collaborations – an area requiring more attention to fully realize Twitter's potential for fostering strong professional networks and communities of practice. While limited by a small sample size, this exploratory study suggests that with proper implementation strategies, including usage policies, educator training, community-building support, and practical guidance for transitioning online

connections to offline collaborations, Twitter holds exciting potential to enrich South African geography teacher education by providing expanded networks, professional development avenues, and globally connected mindsets suited for 21st-century classrooms.

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