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Enactive Processes, Critical Ontology, and the Digitization of Education

Kevin A. Henderson

Teachers College, Columbia University

This introduction will explore the relevant literature on enactive processes, critical ontology, and faculty agency in relation to the digitization of education [1]. This section begins with a review of the enactive process, and its roots in Heideggerian philosophical perspective of reflexive self-examination and continues with an analysis of the critical ontological approach and its implications on digitization and pedagogical practice. Finally, this section introduces the submissions for this special issue and their unique contribution to the critical discourse surrounding technology and education.

Enactive Processes

Critical ontology emerges from a perspective towards knowledge construction and meaning-making known as the *enactive approach*. This perspective asserts that individuals construct knowledge and *enact* worlds of meaning and identity through engagement with the surrounding environment (Kincheloe, 2003; van der Schyff, 2016). Characteristic of this perspective is the notion that knowledge construction and meaning-making occurs in tandem with one's surroundings and is a progressive and beneficial process, a process which creates new forms of identity and ways of being human. Put another way, the enactive approach sees the process of 'being human' as unfolding through engagement with a larger whole, this larger whole itself also unfolding.

While similar to constructivist forms of meaning-making, the enactive process is made distinct by its prioritization of the freeform development of human knowledge and meaning-making, and its unwillingness to constraint knowledge construction to fixed developmental stages (van der Schyff, et al. 2016). The enactive approach encourages critical reflection on the various sociocultural and political currents that influence the commonly assumed body of knowledge/knowledge base in a given society (van der Schyff, et al. 2016). This understood, the enactive perspective is an ontological approach resistant towards instrumentalist and "technological-mechanistic" (van der Schyff, et al. 2016, p. 86) perspectives on meaning-making, with a critical eye towards interrogating the sociocultural factors which influence education.

Critical Ontology

Within the context of Western education and teacher training, teaching faculty, particularly within higher education, are rarely encouraged to examine the sociopolitical and cultural flows which influence what is considered acceptable teaching practice (Kincheloe, 2003, 2011). The rationalist and instrumentalist philosophical influences which determine the structure of meaning-making and knowledge construction are widespread and the development of one's "identity and consciousness" (Kincheloe, 2003, p. 47) and self-perception is often minimized (Kincheloe, 2011; Meyer, 2011).

These Cartesian/mechanistic perceptions on the role of the teacher as a type of educational delivery robot (Kincheloe, 2003), create the conditions necessary for introducing 'new' more 'enhanced' or 'efficient means of 'education delivery' via the digitization of education. Sociotechnical imaginaries which construe teachers as mechanistic and frame the pedagogical process in the language of industry (efficiency, productivity, outcomes, quality assurance, and the like) see nothing of replacing large swathes of the teaching population with 'intelligent machines'. Dominant narratives on the digitization of education seek to transform both pedagogic practice and the teaching space into an environment which prioritizes mechanistic perspectives on teaching and seeks to squeeze every ounce of perceived efficiency out of the teaching day. In the classroom space, new technologies allow for real-time analysis of student performance and engagement (Farhan et al., 2017), while enhanced facial recognition software enables educators to be 'alerted' if students' show confusion or distraction (Connor, 2018) opening the pathway for the development of intelligent tutor systems (Jiang, Dykstra, & Whitehill, 2018) that can predict student affect (Whitehill et al., 2014). At the level of the institution, an increasing number of schools (in the West and in Asia) have begun to reshape administrative substructures around digital platforms (i.e. learning management systems, school-wide digital assessment systems, etc.) which have the effect of depersonalizing the educative experience, enable the categorization and analysis of large sets of educational data for seemingly objective decision-making.

By examining critically the currents of influence that promote large-scale educational shifts such as these, faculty are better able to develop critical ontologies, and interrogative means of understanding themselves and the impact self-perception has on enabling or undervaluing non-dominant forms of knowledge construction and meaning-making. Not unlike the turn in physics from the classical mechanical understanding of the universe as a precisely wound machine, to a quantum theory understanding, which emphasizes processes of entanglement, interconnectedness, and the impact of the unseen

on what is seen (Bohm, 1980; 1993), critical ontology highlights the progressive unfolding of understanding, opens insight into the role of the larger social environment in knowledge construction, and reveals the power (agency) of educators to develop adaptive and critical pedagogies to examine privileged ways of understanding and to explore other ways of knowing.

When turned towards education, critical ontology allows teachers to act with agency, critically examining the imaginaries which propel digitization along neo-liberal currents and enabling faculty to think of means through which technology integration [itself not inherently destructive] (Heidegger, 1982) could lead to ends which improve upon the human condition within the interconnected life system. Critical ontology is the type of “ontological education” put forth by Heidegger (1982) which encourages an understanding of technology as an unfolding development, advancing alongside humans as free operating agents, co-producing (Jasanoff, 2004; 2015) a world in which technological advances (or disruptions) are not blindly accepted as the desired shared imaginary for humanity, but as a part of the means through which humanity develops a more prosperous and beneficial future (van der Schyff, et al. 2016).

Critical Ontologies and the Digitization of Education

Applied towards the digitization of education, a critical ontology allows faculty to carefully analyze the dominant currents of imaginary futures that guide and influence technological developments. A critical ontology, and the enactive perspective, influence faculty self-perception, imbuing educators with a strong sense of agency and the ability to create learning environments which integrate technological developments only to the extent as such developments encourage new and beneficial ways of being human within the surrounding environment (van der Schyff, et al. 2016).

At its core, a critical ontological approach encourages teachers to reflect on their presumptions about the surrounding world and the impact that concretized Western philosophical structures and instrumentalist perspectives on technology dominant and diminish other ways of knowing. This is important as the modernist philosophical perspective and its emphasis on empiricism, rationality, and materialism, is quite unlike pre-modern modes of understanding which tended to see human life as interconnected with nature (Kincheloe, 2003). Critical ontology and enactive approaches aid in the creation of pedagogical practices which encourage faculty and likewise student’s, towards viewing meaning-making as a co-productive process with the surrounding environment. With this in mind, Kincheloe (2003) puts forth 23 characteristics of a turn

towards a critical ontology. I have grouped several of these below with relation to those helpful for faculty to consider when critically analyzing digitization in education:

External Forces: Critical Sociotechnical Imaginary Analysis

- to understand the importance of socio-historical consciousness concerning the production of self.
- to recognize dominant power's complicity in self-production vis-à-vis ideologies, discourses, and linguistics.
- to construct a power literacy that alerts individuals to their placement in the web of reality - a web refashioned by the increasing influence of power-wielders in electronic hyperreality (Kincheloe, 2003, p. 48).

Internal Forces: Developing a Reflective Critical Ontology

- to move beyond mechanistic metaphors of selfhood
- to appreciate the autopoietic (self-producing) aspect of the "self" in order to gain a more sophisticated capacity to reshape our lives.
- to see that the self is not pre-formed as it enters the world - that it emerges in its relationships to other selves and other things in the world
- to realize that the nature of the interactions in which the self engages actually changes the structure of the mind.
- to become detectives of difference who search for new ways of being human (Kincheloe, 2003, p. 47-48).

The literature discussed here offers a good first step towards thinking about technological disruption and the currents of sociotechnical imaginaries which influence pedagogical practice. While the authors here do well in pointing to the importance of looking beyond only Western forms of knowing and philosophical understandings, towards non-dominant and contextually appropriate ways of knowledge construction and meaning making, the literature seldom engages with faculty perceptions outside that of the Western framework. It is at this juncture that we offer this special issue.

Special Issue

Curation of this issue was attended with care to ensure that submissions commented not only on the laudatory benefits of technology but provided a balanced and critical perspective towards the usage of technology within the larger educational sector.

Critical, as defined here, is a view of technology as a value-laden tool (Feenberg, 1999, p.9). A critical view of technology allows one to see humanity, as alongside technology, co-producing social norms (Feenberg, 1991 & 1999, Jasanoff, 2015, Williamson, 2017). Put another way, critical approaches towards technology see the digital future as one within our ability to shape in ways beneficial for humanity (Wajcman, 2015). This is different than instrumentalist views on technology which see the application of technology as essentially neutral, and it's usage as the ideal mechanism for social progress (Andrew Feenberg (1999). Critical approaches tend to view technology as an actor able to shape the social environment (Latour, 1992). Critical perspectives on technology are important as they often challenge the dominant technological imaginaries in place (for more on imaginaries, see Hu within). An example of a critical counter imaginary can be seen in the strategy that informed Indonesia's early pioneers of the Internet and their desire to build an internet infrastructure and ultimately an alternate digital imaginary, one that emphasized public participation, learning, and the development of a people-powered internet (Barker, 2015).

Within this issue, **Mary Mendenhall, Makala Skinner, Sophia Collas, and Sarah French** and **Edmund S. Adjapong, Christopher Emdin, and Ian Levy**, writing about contexts in Africa and the United States (respectively), bring special focus to the issue of teacher mentoring and professional development. Both explore the development of educators through the use of technology platforms and offer complementary analysis on the benefits of technology as a virtual augments of human processes, often as described by the educators themselves. **Chia-Ming Hsueh** provides commentary on the integration of technology, particularly social media, into university internationalization plans, and remarks on the pressing need to consider options such as these in Asia. **Zi Hu** concludes this issue with an insightful review of Ben Williamson's landmark text on the digitization and datafication of education, offering a good preview of the text and a pathway for those interested in exploring the influence of sociotechnical imaginaries on the digitization of the education sector.

Kevin A. Henderson is a doctoral student at Teachers College, Columbia University and Editor-in-Chief of Current Issues in Comparative Education. His research explores the development of digital policy within higher education systems in India, Indonesia, and Thailand.

Notes

[1] The term *faculty*, here and throughout, is used to define higher education academic staff (i.e. professorial) and is not used to describe an academic division or unit within a higher education or tertiary institution.

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Expanding Teacher Support through Mobile Mentoring in Kakuma Refugee Camp: Benefits and Challenges

Mary Mendenhall

Teachers College, Columbia University

Makala Skinner

Teachers College, Columbia University

Sophia Collas

Teachers College, Columbia University

Sarah French

Teachers College, Columbia University

Introduction

Governmental and non-governmental institutions alike have rallied around technology as a potential solution for addressing the dearth of quality educational opportunities and adequately trained teachers in many regions around the world (Burns, 2011; Carlson, 2013; Dahya, 2016). This is no less true in humanitarian and refugee contexts where technology is being used in myriad ways to connect teachers and learners with educational content and resources. A recent landscape review (Dahya, 2016) about the use of Information and Communication Technology (ICT) in these contexts stated that technology has the potential to support education for marginalized populations in crisis contexts, and that teacher training and student learning are the primary areas of focus for utilizing technology for education. In many settings, technology is used for the provision of lesson plans and curricula to deliver subject knowledge directly to students, to train or certify teachers, and to connect individuals and build community (Dryden-Peterson, Dahya, and Douhaibi, 2017; Power, 2012; Winthrop and Smith, 2012). Modes of delivery include computers, laptops, tablets, portable media players, e-readers, personal digital assistants, and mobile phones (Burns, 2011; Carlson, 2013; Winthrop and Smith, 2012; Dahya, 2016).

Mobile phones have been singled out as a particularly useful device for communication due to their ubiquity, with the number of people in Africa, for example, with access to mobile phones far outstripping those with access to computers (Burns, 2011; Carlson, 2013; Dryden-Peterson, Dahya, and Douhaibi, 2017; UNESCO, 2012). In addition to the high cell phone penetration in the region, mobile phones offer other advantages as well. They are relatively low-cost and easy to recharge in many contexts, making them more scalable (Carlson, 2013; Power, 2012).

One way in which mobile phones are being utilized is for teachers to use phones to connect with one another around educational practices (Dahya and Dryden-Peterson, 2016; Pouzevara and Khan, 2007; UNESCO, 2012). In some cases, teachers have spontaneously created Facebook and WhatsApp groups to discuss teaching challenges (Dryden-Peterson, Dahya, and Douhaibi, 2017); in other cases, digital connections have been planned into knowledge-sharing spaces as part of educational initiatives (Burns, 2011; Pouzevara and Khan, 2007). Through their phones, teachers have consulted each other, exchanged resources, discussed professional development, brainstormed solutions to challenges they may be facing, and shared experiences (Burns, 2011; Dryden-Peterson, Dahya, and Douhaibi, 2017; Dahya, 2016; Pouzevara and Khan, 2007). Connectivity can also be a conduit to social support for educators who have a peer network through which they can seek support for their roles and responsibilities in challenging circumstances (UNESCO, 2012).

While technology may be a powerful and useful tool, it is not a cure to all that ails education (UNESCO, 2012; Dahya and Dryden-Peterson, 2016) and it is best utilized when paired with human interaction (Carlson, 2013; Dahya, 2016). Models that coupled technology with some form of in-person component and prioritized appropriate technology training for beneficiaries saw better results than those that did not (Carlson, 2013; Dahya, 2016; Winthrop and Smith, 2012). How technology can be used effectively to achieve educational aims and to support teacher professional development may be different across contexts, making it imperative to listen to local stakeholders and seek their guidance in adapting technology and educational content appropriately (Carlson, 2013; Dryden-Peterson, Dahya, and Douhaibi, 2017; Dahya, 2016).

While early evidence suggests technology has the potential to help teachers and learners in resource-scarce contexts, there are limitations as well. Many of the educational initiatives discussed in the literature were in the pilot or early stages of implementation and had not been implemented long-enough to gather evidence on long-term impact and sustainability (UNESCO, 2012; Dahya, 2016). Developing the evidence base may also prove challenging because technology changes so rapidly that what worked well one year may be obsolete the next (Burns, 2011; Carlson, 2013).

In this article, we share findings from a mobile mentoring component of a teacher professional development initiative implemented in Kakuma refugee camp in Kenya and reflect on the benefits, challenges and lessons learned from the perspectives of the key stakeholders involved, namely the global mentors, mentees (refugee and Kenyan teachers), and project management team. The results portray the complicated reality of implementing an ICT intervention in a crisis context and tease out some advantages and disadvantages of leveraging mobile technology to support teachers from other project

activities. Further, the findings reinforce the call for further studies to better understand the ways in which technology can most effectively support learning (for both teachers and students) in these settings.

Kakuma Refugee Camp

Kakuma refugee camp is located in Northwest Kenya near the border with South Sudan. Originally established in 1992, the camp is home to 147,966 refugees representing 20 different countries; the largest populations hail from Somalia and South Sudan, but there are also refugees from Burundi, the Democratic Republic of Congo, Ethiopia, Sudan, and Uganda (UNHCR 2018). More than half of the total population is below the age of 18. At the primary level, 35.7 percent of children are out-of-school (UNHCR 2017). At the secondary level, the out-of-school rate in Kakuma is more severe, with 95 percent of youth out of school (UNHCR 2017).

Refugee teachers constitute the majority of the teaching population in Kakuma, representing 85 percent of the teacher cadre (UNHCR 2017a). Despite the large presence of refugee teachers, there are limited training opportunities in the camp. Even fewer teachers benefit from on-the-job supervision, mentoring, and certified preservice and in-service professional training. Compounding the lack of training are the overwhelming challenges teachers face, including overcrowding, overage learners, multiple languages, limited teaching and learning materials, lack of furniture, and learners' academic and psychosocial needs, to name just a few (Mendenhall, 2017). Higher quality and continuous teacher professional development programs are needed in these contexts.

Teachers for Teachers: Expanding Teacher Support through Mobile Technology

In response to the significant gaps in providing robust support to teachers working in displacement contexts, a small team of faculty and graduate students from Teachers College, Columbia University developed *Teachers for Teachers* to provide competency-based, continuous teacher professional development for educators working in refugee and other crisis settings. The *Teachers for Teachers* model is comprised of three components: in-person training workshops, peer coaching, and mobile mentoring using WhatsApp. The training component utilizes the *Training Pack for Primary School Teachers in Crisis Contexts* and takes place in the form of workshops that cover four modules: Teacher's Role and Well-being; Child Protection, Well-being and Inclusion; Pedagogy; and Curriculum and Planning. Trainings are interactive, practical, and draw on local expertise in the Kakuma context. Peer coaching takes place after participation in the training workshops and consists of small groups of teachers who are connected with a peer coach—another teacher from their training cohort—who facilitates continuous opportunities for learning through Teacher Learning Circles. Peer coaching takes place for several months after the training workshops and establishes a network of peer support to encourage the transfer of newly gained knowledge from the training to teaching practice in the classroom. All

teachers who have participated in the trainings and ongoing peer coaching are additionally supported through mobile mentoring. With support from Safaricom and the Safaricom Foundation in 2016-17, 130 teachers in Kakuma were provided with phones, data and airtime and were connected to a global mentor, who was trained on the *Teachers for Teachers* model [1]. The global mentor, an experienced teacher or seasoned educator, provided regular support over WhatsApp for six months to a group of 4-5 teachers. Mentorship entailed sharing experiences, problem-solving, and offering teaching tips directly connected to the training, which were reinforced by a mobile mentoring curriculum that was developed to complement the training pack. In addition to the small-group WhatsApp chats, teachers also participated in a WhatsApp group with *all of the members* from their training cohort, which served as a platform for teachers to exchange information and ideas with a larger group of approximately 30 teachers. The global mentors had the same opportunity to post questions to other global mentors (and project team members) as they brainstormed possible strategies and solutions for their mentees. While all components of the *Teachers for Teachers* model are necessary for providing continuous support to teachers in crisis contexts, this paper aims to highlight the challenges and benefits of using mobile technology in teacher professional development in crisis contexts.

Methods

This article draws on data collected during the first year of implementation of the *Teachers for Teachers* initiative in 2016-2017 and early 2018. We monitored and exported the WhatsApp chats for the 130 teachers who participated in the first mentoring groups, along with 33 global mentors, and coded and analyzed the chat exchanges based on key themes related to the teacher professional development model. In April 2017, we conducted two focus groups with 19 teachers to learn about their experiences specifically with Mobile Mentoring. Upon completion of the first year, a select number of teachers (n=33) participated in a monitoring and evaluation tool called Most Significant Change (MSC) (Davies and Dart, 2005). In this reflective storytelling activity, teachers were interviewed about changes they saw in themselves or their teaching and were asked to identify the most important of these changes. The purpose of the MSC interviews was to capture teachers' stories of significant change that may have resulted from participating in *Teachers for Teachers*. In early 2018, we conducted additional semi-structured interviews with teachers (n=15) and mentors (n=11) that built on what we learned from earlier data. Through these interviews, we further explored teachers' and mentors' mobile mentoring experiences and examined common responses across participants. The project management team, which includes the authors, also regularly discussed mobile mentoring in an effort to document the benefits and challenges of implementing these activities from our perspective. For this article, we draw on the aforementioned data sources to identify the key benefits and challenges that mentors, mentees, and the

program management team experienced in an effort to provide a critical reflection on the role of mobile technologies in this particular project.

Perceived Benefits of Mobile Mentoring

Connecting people and resources inside and outside of the refugee camp

Teachers reported that mobile mentoring was beneficial for feeling connected to fellow teachers both inside and outside of Kakuma refugee camp, creating an extended network of support. Global mentors were outside of the camp and could offer support as experienced teachers or education professionals in their home countries. For this reason, some teachers reported that their global mentor was someone they could go to with their problems when they were unable to get help from other teachers in their school. Badr (age 24, South Sudan) stated: *“Sometime we [are] stuck on where to answer the question, [my mentor] gives a hint on what to do. And that one has helped us to come up with ideas because sometimes some of the questions looked to be very hard and you are confused. But if someone tells you a small idea on how to tackle that, it becomes easy. Your mind open[s] and you are able to answer it.”* Beyond connecting with a mentor outside of the camp, teachers (mentees) also reported numerous benefits derived from being connected to other teachers within the camp in their mentoring groups. This peer-to-peer connection allowed mentees to share new strategies on classroom management and teaching practices (among other topics), while also building a sense of camaraderie through shared experiences. Rashid (South Sudan), stated: *“[Mobile mentoring] also help[s] us, even the teachers within [the camp]; we were able to communicate with one another in case we have challenges, we use mentorship, we mentor to one another.”* Perhaps even more significantly, teachers reported feeling a sense of pride when they were able to “mentor” their peers and help a colleague overcome a challenge.

Using mobile mentoring as a tool for professional development was also beneficial because mobile phones with airtime and data allowed teachers to ask about, research and problem-solve their own challenges in the classroom. Challenges encountered during the school day could be posted to WhatsApp, and if their group was active, teachers were able to get an immediate response. Teachers reflected on this process, saying that it allowed them to collect multiple ideas from different participants, providing them with a variety of solutions that could be evaluated through trial and error. One teacher explained, *“[I]n mentoring, I was given about six [solutions] from [my global mentor]. She gave me about six ways [to solve the problem]. Those six ways that you can apply them – if the other one is not working...you can apply the other one until you [solve the problem]”* (Jahi, South Sudan). Another teacher, Aminifu (Kenya) echoed this sentiment and highlighted the increased efficiency of getting new ideas from various colleagues – global mentors and fellow mentees: *“[b]eing a teacher, when you are alone, you need to go and struggle reading for more information...but in mentoring, different people answer different questions, and you get a lot of information...you just post a question, you are answered. You take some points, you put it into practice, and all of it saves time.”*

In addition to the smaller mentoring groups, teachers expressed the benefits of engaging in the larger WhatsApp chat that included all of the teachers (approximately 30) from their training cohort. The preference for this larger chat was that at any given time at least a handful of teachers would be online and they could discuss topics or challenges related to their teaching in real time. One teacher, Faheem (South Sudan), commented that *“when we were in the big group we were able to get [a] solution from any question that a person asks in a very short time.”* Faheem goes on to highlight the challenge of delayed responses in the smaller chats (a point further explored below): *“when you are less [in the smaller mentoring chats] it is not easy because maybe some will not turn up on that day or others might be busy. You may not get the answer on the spot.”* There may be other reasons that explain this, which would also lead to different experiences in the mentoring groups, including how many participants are in the same time zone, but also how quick-to-respond mentors are regardless of where they are in the world.

Communicating with messages and media over WhatsApp also benefited global mentors, some of whom reported feeling more engaged with the mentoring experience when it was happening in real time. They found that this sense of “immediacy” helped strengthen the connection they felt with their mentees, and also helped them understand a context that, for many of them, was very different from their everyday experience. As Kelly (USA) explains: *“That group, because it’s constant when it’s active, because they could be texting anytime and often are...[you] feel side by side with them and wonder about [how] a certain situation is going. So [I have] this constant awareness of his life and his teaching.”*

The global mentors’ understanding of Kakuma’s unique context was further strengthened through the use of media. In the WhatsApp mentoring group chats, global mentors and mentees were able to share photos, audio and videos as a way to enhance their discussions. Nearly half of the global mentors reported that the use of media was beneficial in order to better understand the challenges posed to them by their mentees. This was especially true when teachers asked for strategies to help manage overcrowded classrooms (with upwards of 200 students in some instances), with one global mentor (Kelly, USA) noting that once she saw a video of a classroom in Kakuma, she was better able to understand the extent of the challenge.

Sharing, testing and improving teaching strategies

Beyond fostering understanding of the Kakuma context for global mentors, sharing media in WhatsApp also benefited teachers. Global mentors and mentees shared innovative practices through photos or videos, such as a new way to organize a classroom or an outdoor science activity. In total, three teachers reported that such exchanges were helpful because they were provided with something they could more easily replicate, and sometimes they felt more motivated to try a new idea upon seeing it visually. For example,

sending photos of classroom seating arrangements allowed teachers to share best practices with their colleagues without the time and cost of traveling to schools across the camp. Teachers also shared media related to pressing issues in their schools. For example, multiple teachers reported their perspective on corporal punishment changed when a fellow teacher shared a video of a teacher using corporal punishment (not filmed in Kakuma) in their training cohort's WhatsApp chat. One teacher, Lam (South Sudan), explained how watching this video of a teacher caning a student helped him better empathize with his own students:

"...when I saw that [video], it made me curious actually the first day I saw it because to be like that as a teacher, you scare the learners completely. You are killing...their morale of being in school....So I saw that video, and completely I learned how... I was imagining if I was a learner, I could not relate with that teacher anymore."

In addition to sharing media resources, mentors and mentees discussed a range of topics connected to the teaching competencies presented during the training. Analysis of WhatsApp conversations revealed that one of the most significant outcomes was not only teachers' implementation of shared strategies, but the success of these strategies. In fact, nearly half of the teachers stated that they tested potential solutions shared within their WhatsApp conversations and found them to be effective in the classroom. The two categories of discussion that garnered the greatest number of text exchanges across the groups were pedagogy and child protection, well-being and inclusion (Table 1). The top three topics of discussion across all categories were teacher-student relationships, overcrowded classrooms, and teaching strategies (Table 2).

Table 1: Frequency of Themes Discussed Across WhatsApp Chats

Themes	Frequency	Percent
Pedagogy	581	37.27%
Child protection, well-being and inclusion	418	26.81%
Teacher's role & well-being	273	17.51%
Curriculum & planning	181	11.61%
Other	106	6.80%
Total	1,559	100.00%

Source: Teachers for Teachers internal data

Table 2: Most Frequent Sub-Themes Across WhatsApp Chats

Sub-Themes	Frequency
Teacher-student relationship	101
Overcrowded classrooms	95
Teaching strategies	92
Assessment	76
Classroom management	67
Student attendance	61

Source: Teachers for Teachers internal data

With access to a smartphone and data, teachers reported using technology beyond the WhatsApp chats and media exchanges in ways to improve their own teaching practices. Of the 15 teachers interviewed in January 2018, 10 reported using phones to conduct online research on topics such as classroom management or supporting learners with special needs. Teachers also reported using their phones as teaching aids in the classroom, to play audio examples of different animal noises or to show learners a diagram during science class. One head teacher said his phone became the school phone, and teachers at his school used it to contact parents during the day. Teachers also used phones to contact other teachers when they needed help covering a class in the event of an illness or to contact their learners' parents to follow up on individual cases.

Building confidence and motivation through mobile mentoring

Both teachers and mentors reported beneficial outcomes from their participation in mobile mentoring including improved confidence and motivation in their work. Of the 15 teachers interviewed in January 2018, six reported that, because mobile mentoring had provided them with an opportunity to discuss teaching with their peers, they were motivated to do their best to support their learners' needs and continue pursuing the profession. One teacher recounted how he gradually overcame his fear of talking to parents with the support of his mentor.

Similarly, mentors reported that they felt motivated to continue incorporating service to others into their personal and professional lives. Many mentors felt the experience provided them with a heightened understanding of refugee contexts. Some mentors reported experiencing "reverse mentoring" from the teachers they were working with. One mentor, Mark (USA), described how, through his mentees, he learned new ways of approaching classroom management, and that he was deeply inspired by his mentees' passion and perseverance.

Immediate feedback loops for project management team

From the project management perspective, it was beneficial to collect data through WhatsApp. Project managers posed as silent observers in each mentoring group on WhatsApp to

periodically assess how the groups were progressing and to be on hand in the event a serious issue was raised (e.g. concern about a child's well-being). In this role, managers were able to export chat data from WhatsApp on a regular basis for analysis. These continuous feedback loops about the challenges that teachers were facing in schools also cycled into the ongoing project design for future teacher training workshops and peer coaching workshops.

Perceived Challenges

Engaging participants and sustaining mentoring exchanges

While mobile mentoring provides many benefits to teacher professional development, several challenges also emerged throughout program. The two most commonly reported challenges cited by teachers and mentors were lags in responsiveness and uneven engagement of participants in mentoring groups. Another pressing challenge has been unstable connectivity and access to electricity in the camp, which affected teachers' ability to consistently participate in their WhatsApp chats as their phones would lose power.

Lags, or sometimes a complete lack, of responses de-motivated global mentors and teachers from participating in mobile mentoring. Teachers stated that delayed responses from mentors and fellow mentees was a disadvantage because it could take hours or days before a question was addressed. Many teachers and mentors recognized the delay in response time could be attributed to time differences between Kenya and where the global mentor was based; however, this delay or lack of responsiveness was still de-motivating, causing one teacher to stop sending messages altogether because of a total lack of response from their mentor. Further, due to the lag in response time, it was sometimes difficult to create a strong dialogue between all parties.

In an effort to address this challenge of lags in response time, some mentoring groups coordinated a time where all members could be on WhatsApp simultaneously. Of the teachers we interviewed, two expressed their preference for having these "live chats." Even with scheduled meetings, however, the time difference and varying work schedules for mentors and teachers, often meant that these "live chats" took place at inconvenient times for mentors and/or teachers, leading to less effective conversations. In some cases, not all teachers arrived online for the scheduled WhatsApp meeting, and time management of the meetings posed a problem as well. One mentor, Michael (Kenya), said, *"Scheduled meetings rarely began on time or ended as scheduled. Sometimes I had to remind the mentees through SMS or even voice calls. Sometimes work-related commitments hindered our discussions, which either began late or were postponed altogether."*

Lack of responsiveness and low levels of participation affected both mentors and mentees. For the mentees, five teachers mentioned that a delay in response from their fellow teachers prevented their challenges from being solved. Abiola (South Sudan) commented, *"when you ask the question, you find that... not all teachers comment. You pose a question and one*

day later they respond. You find that there is a problem that you want to solve within two days, but if it takes a long time for you to get a faster way to do it, it might be stressing you." Teachers commented that not only did they have to wait a long time for a response, but they also received feedback from fewer people than they hoped.

For the mentors, the biggest challenge they perceived was the difficulty in engaging all teachers to actively participate in discussions. Despite trying different strategies to engage teachers—including sending private WhatsApp messages, sharing photos or doing video introductions—several mentors expressed they had failed getting full and consistent participation from all of their mentees: two mentors commented that mentoring was "sporadic" or "never really took off". Another mentor, Erica (USA), described how, despite seeing photos and videos to understand her mentees' context, she failed to generate a conversation about what was going on in photos of a classroom, and ultimately was unable to gain meaningful insight into teachers' daily experiences and challenges.

While the *Teachers for Teachers* team supported mentors through orientations on the program and Kakuma context as well as sending tips on how to engage teachers using Whatsapp, this support was not always effective and the engagement tips were sometimes futile. Through the interviews with mentors, it became clear that mentors had different ideas for how to make mentoring more effective. One mentor felt that their group might have been better had it been split into smaller groups to change the dynamic and personalities between participants. Another mentor felt unsure of how to engage with her mentees personally, such as how to 'get to know each other' without being too invasive. Global mentor, Michael (Kenya) commented that, "*regarding the teachers, two... readily shared their experiences...one had to be prodded with specific questions in order to respond. Unfortunately, one of the mentees did not participate in any of the chats, both scheduled and impromptu.*" These insights highlight the highly personal nature of mentoring and the many variations it can take to be most effective. Further studies are needed to examine other potential explanations, such as issues related to identity (ethnic, gender) and positionality among mentors and mentees and the ways in which these elements might help or hinder online engagement.

Finally, project team members who served as silent observers in the mentoring groups, observed that not all mentors had the same level of experience or ability to facilitate mentoring groups. Given that being a global mentor was a voluntary position, and despite the support and various orientation sessions provided to mentors, the quality of mentoring relationships inevitably depended on the expertise, amount of time and level of investment mentors were able to give the project.

Barriers to reliable and constant communication

Connectivity presented another challenge to mobile mentoring. Teachers noted that the network was often unreliable, making it difficult to consistently connect and communicate with their mentor. When they were able to access WhatsApp, the 3G network functioned slowly, and the 4G network consumed too much data. One global mentor, Erica (USA) shared that the network speed sometimes prevented her videos from sending, and another mentor, Michael (Kenya), said that he himself was often in a region with an unreliable network. When the network was available, one teacher mentioned in a focus group discussion that some teachers were unable to participate because their phones had died. Since most people in Kakuma do not have electricity in their homes, fee-based charging stations are set up throughout the camp. Presently, teachers must travel to these stations and pay to charge their phone batteries, despite ongoing efforts to improve connectivity around the camp.

Teachers also faced challenges of stolen, lost, or broken phones which disrupted the flow of mentoring while they tried to get back online, either by using a replacement phone and SIM from the program, or by using their personal phone or data to stay connected to mentoring. In these cases, however, some teachers were unable to retrieve the contact information of their WhatsApp group on their personal device and were not able to reconnect. Mentors also cited mentees' loss of access to their phone, or issues with their SIM cards, as common logistical challenges that hampered group exchanges.

Logistical challenges experienced by the Project Management Team

Project implementation for mobile mentoring required significant time, capacity and human resources to execute from the perspective of the project management team. Implementation logistics included procurement of the hardware, technological capacity-building among teachers and mentors, communication between implementing partners and maintenance of WhatsApp group connectivity. Procuring phones, SIM cards and data required coordination between multiple key actors, each governed by their own rules and regulations. Communication of and adherence to regulatory standards delayed the hardware's arrival into Kakuma, leading to delays in initiating mentoring activities and creating longer-than-intended gaps between training, coaching and mentoring. Once the phones and SIM cards arrived in Kakuma, they were distributed to teachers, and each month of the mentoring program, Safaricom & Safaricom Foundation uploaded data to each line. The project management team helped to build capacity among teachers and mentors by holding in-person orientations for teachers, and orientations for mentors over WebEx. The teacher orientation sessions were labor intensive as most teachers needed help downloading WhatsApp with limited access to Wi-Fi, though managers were able to leverage peer support among tech savvy teachers who devised an off-line strategy of sharing WhatsApp applications over Bluetooth.

In a stable context, the procurement of hardware and capacity building at the start of a project may be the most challenging logistical steps; in a crisis context, however, maintaining connectivity between teachers and mentors throughout the duration of the program was arguably more time consuming. Each time a teacher's phone was stolen, lost, or broken the project management team followed a cascade of steps to get the teacher back online and re-connected to the WhatsApp group. These included communicating to the mentor, teacher, Safaricom, and our local partner, requesting that the lost line be canceled and a new line be activated, and coordinating with the teacher and local partner to report any cases of theft to the police and facilitate the delivery of the new phone and SIM card. The multiple steps and actors involved to address each lost phone, in addition to unreliable connectivity within the camp, meant that it took one to two weeks to get a teacher back online. These technical and logistical issues would have a significant impact on global mentors' abilities to engage and sustain participation in mentoring activities, though there may be other reasons related to the perceived quality and added value of the mentoring exchanges to the teachers' daily lives that we have yet to ascertain.

Conclusion

This study reveals that while mobile technology can positively impact a teacher's professional development in meaningful ways, it does not function in isolation. Factors such as infrastructure and the quality of the partnerships are out of the initiative's control and contribute to a number of challenges not directly related to a program's design, yet nevertheless affect its impact and sustainability. This research also shows that the use of mobile technology for teacher professional development in crisis contexts offers intertwined benefits and challenges. For example, while the use of mobile phones was shown to be beneficial because of the immediacy in global mentor and teacher responses, this has also proven to be inconsistent depending on group dynamics or challenges with infrastructure such as a weak network or inconsistent electricity. Other examples include the ability to bridge physical and cultural gaps by sharing photos and videos on WhatsApp, while at the same time media was sometimes used unproductively or not at all. The use of mobile technology in our study further reveals unintended benefits *and* consequences. Teachers' use of phones for contacting parents and functioning as teaching aids was not part of the program design but resulted in improved teaching quality and a stronger sense of school community. Conversely, the reliance on one partner to provide phones, data and software and to play a key role when phones were lost caused significant delays and interrupted teachers' participation in mentoring. For many initiatives such as our own, using technology for humanitarian interventions requires a strategic partner whose focus and expertise is in technology and not necessarily humanitarian interventions, though a combination of both would be ideal. Furthermore, the dependence on one body can prove to be inefficient programmatically and an ultimately unsustainable solution. This may be true, for example, if the program's continuation is contingent on renewed funding or board approval, as is often the case when working with a private

sector partner. This in particular also reveals that while the literature elevates mobile technology for its ubiquity, many of the challenges project managers experienced were logistical and had to do with the technology itself.

While this study has attempted to tease out the challenges and benefits of using mobile technology, our program model is inherently intertwined with in-person training and peer coaching, and thus we are unable to examine the impact of technology on teacher professional development in isolation. In that respect, we first of all echo the importance of using technology in a deliberate combination with in-person interactions, and secondly, we emphasize the need for more extensive evaluations of the use of technology in crisis contexts so that we can continue to better understand the implications and impact for teacher professional development.

***Mary Mendenhall** is an Associate Professor of Practice and the Director of the International and Comparative Education program at Teachers College, Columbia University. She leads grant-funded implementation projects and research studies about the policies and practices of refugee education across camp, urban, and resettlement contexts as well as teacher support, collaboration, and professional development in crisis settings.*

***Makala Skinner** is a 2018 graduate from the master's program in International Educational Development at Teachers College, Columbia University. She served as the Mobile Mentoring Coordinator for Teachers for Teachers. She is currently an international higher education researcher at World Education Services specializing in education in emergencies, student support services, and student mobility trends.*

***Sophia Collas** is a 2017 graduate from the master's program in International Educational Development at Teachers College, Columbia University. From 2016-2017, she was a Research Assistant for Teachers for Teachers. She is currently based in Kigali, Rwanda, where she works as a Global Design Consultant for Educate!, leading the design of teacher trainings, youth leadership and entrepreneurship courses.*

***Sarah French** is a 2018 graduate from the master's program in International Educational Development at Teachers College, Columbia University. While at Teachers College, she was the Project Assistant for Teachers for Teachers. She is currently a Program Officer at World Education in Boston, MA, supporting projects in Myanmar and Laos.*

Notes

[1] During an initial prototype of the mobile mentoring activities that used teachers' own phones (i.e. basic, feature and smart), we found that teachers with smartphones and WhatsApp access were better able to engage in group mentoring and the horizontal exchange of information with peer teachers in the camp, not only relying on their

relationship with the global mentor. With this information we secured generous donations from Safaricom and the Safaricom Foundation.

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Virtual Professional Learning Network: Exploring an Educational Twitter Chat as Professional Development

Edmund S. Adjapong

Seton Hall University

Christopher Emdin

Teachers College, Columbia University

Ian Levy

Manhattan College

“Ayo! A lot of these Twitter chats on education and [#HipHopEd](#) go harder than my school’s Professional Development.” - HipHopEd Educational Twitter Chat Participant

Introduction

Considering the advancement of digital technology over the past decade, and its impact on social media platforms such as Twitter, Facebook, and Instagram, the utility of social media among individuals from all over the world has increased exponentially, and these platforms have become integral to creating and maintaining wide-reaching virtual communities. With an electronic device as small and easily accessible as a cellphone, individuals can share information in the form of text, photos, videos, and live streaming instantaneously with their social networks. Over the past few years, these virtual communities have grown to include professional educational learning networks.

In traditional educational settings such as schools, teachers are required to attend mandated professional development sessions that have a goal of “engaging teachers in practical tasks and providing opportunities to observe, assess and reflect on the new practices” (Darling-Hammond & McLaughlin, 1995). Studies suggest that effective professional development for educators should “concentrate on instruction and student outcomes in teachers’ specific schools; provide opportunities for collegial inquiry, help, and feedback; and connect teachers to external expertise while also respecting teachers’ discretion and creativity” (Newmann, King & Youngs, 2000). While we recognize the necessity and importance of effective professional development for teachers, research suggests that professional development for teachers historically has been woefully inadequate for meeting its intended goals and teachers’ specific professional learning needs (Borko, 2004). Sykes (1996) identified conventional professional development as “the most serious and unsolved problem in policy and practice in American education today” due to the fact that most professional development do not cater to teachers’

individual needs (p. 465). The reality is school districts and the federal government invest millions of dollars each year in support of professional development that is fragmented, that does not take into account how teachers learn, and that does not cater to the individual professional needs of teachers (Ball & Cohen, 1999; Borko, 2004). In response, we suggest an approach to professional development that considers the challenges with the existing approaches while providing a mechanism for connecting teachers around beliefs, ideologies, and philosophies that directly impact their practice.

Over the past two decades, a considerable amount of literature has emerged on the “best practices” in professional development and teacher learning, but little research has been conducted on the effects of professional development on improving teacher, and in turn, student outcomes (Garet et al. 2001; Guskey & Yoon, 2009). Further, when discussing the professional learning of teachers, it is essential to recognize that it is a complex process that involves both cognitive and emotional participation of teachers. As Avalos (2011) demonstrates, professional learning for educators requires the capacity and willingness to examine where they stand in terms of convictions and beliefs and the perusal and enactment of appropriate alternatives for improvement or change. When we discuss the challenges of conventional professional development for educators, we recognize that the culture and experiences of educators strongly influence the attitudes, values, and behaviors that they bring to the profession (Gay, 2002; Putnam, & Borko, 2000). In understanding that teachers come from various cultural backgrounds and experiences, we argue that professional development should also cater to the specific interests, needs, cultural and experiential backgrounds of educators.

As outlined by Borko (2004), conventional professional development is composed of four key elements (see Figure 1) that includes the professional development program, the teachers (who are the learners), the facilitator (who guides teachers as they construct new knowledge and practices), and the context in which professional development occurs. The relationship between these four key elements are essential in understanding the effectiveness of professional development, though most of the literature on professional development focuses solely on the relationship between teachers (as learners) and professional development programs. Little research has been conducted that interrogates the relationship between the context, conventional professional development programs and the effects of alternative forms of professional development on teachers (as learners) (Garet et al. 2001).

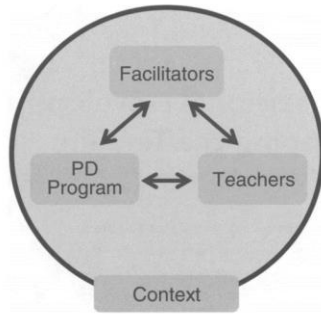


Figure 1: *Elements of a professional development system (Borko, 2004).*

The field of education is ever changing as a result of new policy and new research-based approaches to teaching and learning. These constant shifts in the field often force schools and school districts to constantly update their professional learning goals for teachers (Elmore, 2004). Due to constant shifts in the field and the varying needs of teachers, not every form of professional development is relevant to all teachers. Therefore, there is a need to study and identify alternative approaches to professional development to supplement conventional professional learning that teachers receive, with the goal of meeting their varying needs of teachers and, in turn, the educational needs of their student populations.

In this paper, we explore educators' use of technology to supplement traditional professional development that they may receive in their schools or institutions. Many educators in the 21st century use various forms of technology as part of their daily teaching practices and as part of their personal lives. In this paper, we set to explore the impact of a weekly education-focused Twitter chat on educators' professional learning. We also set to identify a weekly educational Twitter chat as a Virtual Professional Learning Network (VPLN). We identify a VPLN as a uniquely personalized space where participants can engage in dialogue with a network of individuals from around the world via social media platforms such as Twitter (and other social media platforms) to support one another's continuous professional learning. Garrison (2007) describes an online PLN as a synchronous or asynchronous online platform for individuals to collaboratively engage in critical thinking and discussions around specific issues (Trinkle, 2009).

VPLNs consist of global learning networks that enable participants to share diverse, global perspectives on teaching strategies and educational issues. In this article, we identify a Twitter chat that focuses on educational topics as a VPLN because through the use of technology (the medium of Twitter) educators from across the globe are able to self-select, interact and engage, and participate with the virtual professional network to support their professional learning. Considering the shortcomings of traditional

professional development, through educators' participation in VPLNs they are provided opportunities to meet their specific professional learning needs (Krutka, Carpenter & Trust, 2017). We argue that VPLNs provide educators with the opportunity to use social media platforms as a tool to interact with colleagues and experts who share similar interest and concerns while transcending spatial boundaries using an electronic device as simple as a cell phone (Gee, 2004). Further, weekly educational Twitter chats normally occur during the same scheduled time each week allowing educators to plan in advance to participate, given their busy schedules or even plan to participate in multiple VPLN's that cater to their multiple specific needs (Conner, Pope & Galloway, 2009). Through virtual interactions with colleagues and experts, educators can access and share a variety of tools, including skills, habits, resources, ideas, and information that will support their daily practice (Krutka, Carpenter & Trust, 2016).

Despite research that suggests that educators working collaboratively represents best practice; the reality is that teachers in many schools work in isolation because of differing views and beliefs (DuFour, 2004). The literature on technology professional development for teachers demonstrates there is still a lack of understanding of effective practice with respect to the impact of professional learning anchored in technology has on teaching and learning (Lawless & Pellegrino, 2007). VPLNs provide educators who may find themselves working in isolation at their schools an opportunity to network, collaborate and engage with a community of like-minded individuals who can support in enhancing their professional learning. In her book, *Teaching to Transgress* bell hooks (1994) shares that engaging in a professional dialog "is one of the simplest ways we can begin as teachers, scholars, and critical thinkers to cross boundaries that may or may not be erected by race, gender, class, professional standing, and a host of other differences" (p. 130). VPLNs allow educators to cross geographical boundaries by engaging in a global network that includes participants who have varying beliefs, perspectives and experiences as it relates to education. VPLNs provide educators with the opportunity to engage in professional dialogue with participants who have similar interests, but varying cultures and lived experiences due to varying geographic locations, with the goal of "crossing social boundaries" and developing an understanding of social issues and their impact on different groups of people.

Through engaging in a VPLN that brings together participants of varying cultures and lived experiences, teachers are afforded opportunities to develop their cultural competence merely through their professional interactions with one another. With 84 percent of teachers identifying as White and the culturally diverse student population rapidly rising, a vast majority of teachers in the United States teach students who come from a culture other than their own (Feistritz, Griffin & Linnajarvi, 2011). VPLNs can support teachers in the development of their cultural competency and overtime, arm

teachers with the skills needed to successfully engage students who come from a different culture (Seeleman, Suurmond & Stronks, 2009).

In this paper, we argue a specific VPLN that focuses on issues at the intersection of Hip-Hop and education provides a safe and critical space for educators to develop cultural competencies around discussions of Hip-Hop, a culture that was birthed in the Bronx, NY by people of color who have been pushed to the margins of society. We argue that exposure to the beliefs and perspectives of others can lead to the development of cultural competencies.

Conceptual Framework

In this article, we employ a very distinct aspect of the *third space* postcolonial framework with the goal of dismantling and reimagining the established traditional conventions as it relates to professional development in educational spaces (Bhabha, 1994). In many ways, we argue that VPLNs can act as a *third space*, as Bhabha (1994) articulates, and can provide a virtual network via social media platforms for educators to be critical of traditional school systems, structures, and practices including conventional professional development. More specifically, we explore the concept of the *third space* as a framework for making sense of the possible ways in which educators can inform their educational practice and reimagine professional learning that is catered to their individual needs (Bhabha, 1994; Gutiérrez, Baquedano-López, Tejeda, et al., 1999). In this article, we argue that VPLNs, such as educational Twitter chats, can serve as a third space which Bhabha (1994) describes as an “in-between space ... that disrupts the politics of polarity and allows for the possibility of resistance towards nationalistic and ethnocentric ideas and discourse” (p. 2). Bhabha argues that hybrid spaces blur the limitations of existing boundaries and allow for the interrogation of the complexities of culture and identity (Bhabha, 1994). In essence, VPLN can act as a *third space* to deconstruct the traditional structures of schooling, such as conventional professional development, which are known not to be tailored to the specific individual needs of all educators (Sykes, 1996).

We identify the *first space* as a physical space where educators engage in instructional practice within their traditional classrooms and the *second space* as the conventional professional development program that educators receive at their institutions (see Figure 2).

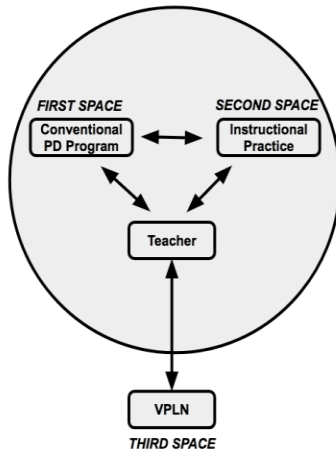


Figure 2. Visual representation of the relationships between first, second and third spaces as it relates to conventional professional development VPLNs.

Within the *first space* of the traditional classroom where educators engage in daily practice with their students, we argue that educators recognize limitations in their practice or seek opportunities to enhance their current instructional practice. This leads educators to the *second space*, conventional professional development. Within the *second space* of conventional professional development, educators may not find their professional learning needs met (Borko, 2004), which may lead educators to the *third space*. We articulate the third space as a VPLN that caters specifically to teachers' professional learning needs and provides opportunities for educators to engage in discussions, share and receive information/resources that support in enhancing teacher practice. Further, engaging in a VPLN as a third space, as Bhabha (1994) articulates, provides opportunities for educators to disrupt the politics of conventional professional development by inviting colleagues and peers to various VPLNs that cater to their specific professional learning needs and support in enhancing educational practice.

Methods

#HipHopEd Educational Twitter Chat as a Virtual Professional Learning Network

In this paper, we highlight and interrogate the impact that a specific VPLN (educational Twitter chat) has on educators who self-identify as participants of the VPLN. The #HipHopEd educational Twitter chat is a seven-year-old VPLN that meets during a scheduled time for one hour a week when participants engage in conversations and share information/resources around curated topics of Hip-Hop and education. Each week the #HipHopEd educational twitter chat is promoted to participants of the VPLN and the greater Twitter community with a visual flyer (see Figure 3) that captures the weeks' topic.

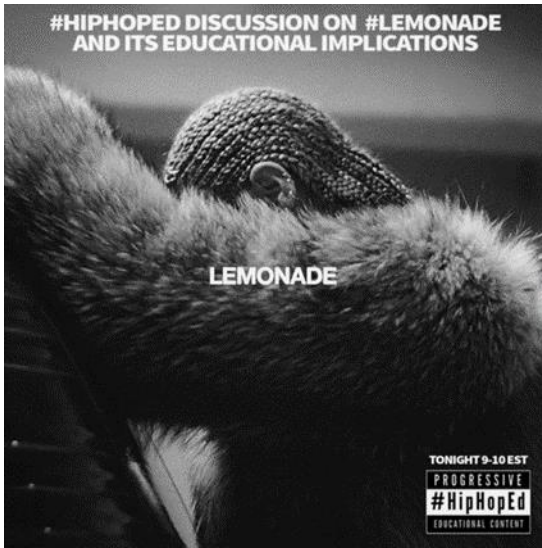


Figure 3. Example of visual flyer used to promote the #HipHopEd VPLN

Most educational twitter chats follow a format where there is an expert who moderates the discussion and poses pre-prepared questions aligned with the topic of discussion for participants to answer. We believe that this structure of a VPLN limits the interactions of the participants to mainly answer posed questions, as opposed to sharing their attitudes, beliefs, experiences, tools/resources/information with the larger network. The #HipHopEd educational Twitter chat does not have a moderator and does not follow a specific structure that forces participants to solely respond to questions. Rather, #HipHopEd educational Twitter chat provides a space where participants engage in conversations, share and receive information/resources around the topic of the chat.

The #HipHopEd educational Twitter chat functions as a virtual cypher [1] because it is structured like a hip-hop cypher where each participant's voice and perspective are equally valued. Because the #HipHopEd educational Twitter chat focuses on issues around Hip-Hop and education the structure of the educational Twitter chat is aligned to Hip-Hop culture and sensibilities. The #HipHopEd educational twitter chat is similar to a gathering of MCs - where the energy generated by one individual is then picked up by another with a goal of keeping the energy going. The #HipHopEd educational Twitter is a VPLN for educators, but welcomes all stakeholders of education includes students, parents, academics, professionals, practitioners and hip-hop artists to participate in the weekly chats. The creators of the #HipHopEd educational Twitter chat intentionally strive to create a space where academic credentials are not necessary to be a part of the learning network. Therefore, a participant's value to the network is based solely on their participation.

Participants

Participants of this study self-identified as active participants of the #HipHopEd educational Twitter chat. Further, the participants in our study represent a diverse group of individuals who are all stakeholders of education including, K-12 teachers, K-12 administrators, parents, graduate students, professors, school counselors, and journalists. It's important to highlight that not all of the 31 participants of this study are professionals in education, but have an interest in education, more specifically the intersection of Hip-Hop and education. Through participating in #HipHopEd educational chat, teachers who historically work within their schools in isolation are provided with opportunities to share professional knowledge via social media platforms to support their professional learning beyond conventional professional development (DuFour, 2004).

Data Collection

A total of 31 participants of the #HipHopEd VPLN completed an anonymous questionnaire, which was the primary data source for this study. The questionnaire was composed of Likert response and short response questions. The questionnaire was shared during a #HipHopEd educational Twitter chat and educators were encouraged to participate in completing the anonymous questionnaire.

Data Analysis

Qualitative coding techniques, including member checking and coding for recurring themes were used to analyze the data generated from this study (Guba & Lincoln 1989; Creswell, 2013). The data from the short response items from the questionnaire were entered into a Word document for word-by-word and initial coding for categories. Then, the data that was selected for to be categorized was entered into Nvivo to organize and then combined into reoccurring themes using nodes. The three main themes that emerged from data analysis are (1) Sense of Belonging within Professional Learning Network; (2) Impact on Educational Practice; and (3) Development of Cultural Competence.

Results and Findings

Table 1. *N and Percentages (in Parentheses) of Participant Responses for Likert Items from Questionnaire.*

Item	Strongly Agree (%)	Agree (%)	No Opinion (%)	Disagree (%)	Strongly Disagree (%)
1) I have created professional relationships with other #HipHopEd chat participants	9 (29)	11 (35.5)	6 (19.4)	5 (16.1)	0 (0)

2) Participating in weekly #HipHopEd chats provides a form of professional development that I do not receive at my school	19 (61.3)	8 (25.8)	3 (9.7)	1 (3.2)	0 (0)
3) Participating in weekly #HipHopEd chats has encouraged me to be a more engaging educator in my classroom/education profession	14 (45.2)	15 (48.8)	1 (3.2)	1 (3.2)	0 (0)
4) The weekly #HipHopEd chat provided a space for me to reflect on ways to become a more engaging educator	16 (51.6)	12 (38.7)	1 (3.2)	2 (6.5)	0 (0)
5) The weekly #HipHopEd chat provided a space for me to engage in discussions about education with like minded educators who have an interest in Hip Hop culture	20 (64.5)	10 (32.3)	1 (3.2)	0 (0)	0 (0)
6) The weekly #HipHopEd chat provides a space for me to discuss challenging topics that impact the lives of urban youth (Hip Hop generation), which I would not otherwise have an opportunity to do so	6 (19.4)	18 (58.1)	4 (12.9)	3 (9.7)	0 (0)

The findings of this study are organized by recurring themes that emerged during the data analysis process. To elaborate on recurring themes, we provide exemplary moments from the participants' open responses to short answer survey items, suggestive of their experiences as participants of the #HipHopEd educational Twitter chat. Participants responded to two open-ended survey items: (1) Explain why you participate in the weekly

HipHopEd Chats, and (2) Would you recommend your peers, colleagues and fellow educators to participate in the weekly #HipHopEd Chats? Please explain why. The process of coding responses for each item lead to the emergence of recurring themes. Three emerging themes are reported consisting of responses from both open-ended and Likert scale items include (1) a sense of belonging within the VPLN; (2) an acknowledged impact on educational practices; and (3) a development of cultural competence.

A Sense of Belonging within Virtual Professional Learning Network

Through engaging in the #HipHopEd educational Twitter chat, consists of hundreds of participants who are all exchanging knowledge, participants were able to develop a sense of community within the larger network. Various statements from participants spoke to their involvement in the chat that highlighted their sense of belonging to an intimate community within the larger VPLN. Hagerty et al. (1992) defines sense of belonging “as the experience of personal involvement in a system or environment so that persons feel themselves to be an integral part of that system or environment” (p. 172). In reference to the #HipHopEd educational chat, one participant suggested, *“the community within #HipHopEd is vast and the knowledge pool is world-class. As the community continues to grow the benefits and knowledge will follow.”* This individual describes a community within the #HipHopEd VPLN and found value in participating in the weekly #HipHopEd educational chats. Further, they suggest that the network continues to grow, subsequently allowing for a consistent increase in “world-class” knowledge that in turn will support their professional learning. Participants of the #HipHopEd VPLN recognize that there are benefits, which include an exchange of resources and knowledge, associated with belonging to a growing network of individuals who share similar interests.

It also appears that the #HipHopEd educational twitter chat functions as a space where participants can cultivate intimate bonds with others, as highlighted by the following quote, *“I believe I hit a pinnacle where I can say I’m a part of the family. Whether I take part in the chat, or I miss it, I’ll still read the tweets over at a later time.”* This statement showcases that participants feel a sense of belonging when engaging in the #HipHopEd educational chat; where they see themselves as an integral part of the VPLN that parallels a connection that one may have with family. Because participants have a sense of belonging to the #HipHopEd educational chat, they are inclined to read the tweets/comments at a later time even if they miss the live chat because they as if it is their obligation as part of the intimate community. Further, the resources, and voices, within the VPLN are valued to the degree that participants do not want to miss out on the knowledge shared. Additionally, 64.5% of participants agree with the statement, *“I have created professional relationships with other #HipHopEd chat participants”* demonstrating a sense of belonging to the VPLN as positive professional relationships can form from weekly participation (table 1).

These statements by #HipHopEd chat participants support the prior claims that VPLNs can provide educators with the opportunity to use social media platforms as a mechanism to collaborate with like-minded colleagues from the comfort of their own home (Gee, 2004). Comments from members of the #HipHopEd educational Twitter chat additionally showcase that not only is the educational chat accessible from anywhere in the world, but resources and tools discussed on the chat are archived and can be accessed at a later date in the event a chat was missed. This adds justification for use of this innovative VPLN as a form of professional development that can fit into participants busy schedules, because it can be accessed on the go, from home, or at a later date (Conner, Pope & Galloway, 2009).

When participants were asked if they would invite others to the #HipHopEd VPLN, one member responded,

“Yes, I would [invite others to the #HipHopEd VPLN] because it is a forum that will allow one to learn and grow as an educator and help break people out of their comfort zone and help them better prepare their students for the world that awaits them!”

Here we find that the VPLN operates as an online space where educators can push their colleagues to innovate their own practices. The value members extract from the space appears to encourage them to expose others to the same transformative educational practice. This explanation supports the use of the VPLN as a *third space* where educators have opportunities to challenge the politics of conventional professional development by inviting colleagues and peers to various VPLNs that support in enhancing their professional learning (Bhabha, 1994).

VPLN's Impact on Instructional Practice

Through engaging in the #HipHopEd educational Twitter chat, participants suggest that their instructional practice was impacted, specifically by the tools, resources, information and skills that were obtained through participating in the weekly chat. As per the data reported from the questionnaire, 94% of participants agree with the statement, “participating in weekly HipHopEd chats has encouraged me to be a more engaging educator in my classroom/education profession” (table 1).

An overwhelming percentage of participants of this study believe that participating in the #HipHopEd educational chat impacted their practice by specifically encouraging them to be more engaging educators, possibly by gaining tools that supported the teaching to the specific needs of their students. For example, one participant suggested, “*I use hip-hop as learning tool and the weekly chats always help me to check myself, check my sources, and innovate from lesson plan to lesson plan.*” In this response, the participant discusses how engaging in the #HipHopEd educational Twitter chat directly impacts their daily instructional

practice. This shows that participants are able to use the information/resources gained from the weekly educational Twitter chat to influence their teaching. When the participant states, *the weekly chats always help me to check myself, check my sources*, this suggests that participants use the VPLN as a mechanism to reflect on improving their daily practice to ensure that they are utilizing Hip-Hop in their educational space effectively and in an authentic fashion.

In an additional response, a participant stated, *"I use it mostly to reflect, whether on current or past teaching opportunities. It's a good archive to tap to see what others are thinking and what they like, what they follow."* Here it is suggested that #HipHopEd educational chat participants reflect on their instructional practice and have opportunities to learn from like-minded educators of a VPLN who can positively influence one another's practice as 90.3% of participants agree that the weekly #HipHopEd chat provided a space for them to reflect on ways to become a more engaging educator (table 1). Responses also indicated that the chat *"provides a fresh perspective, great classroom ideas & peer support,"* and is *"a resource and a way of becoming familiar with some of the ideas around Hip-Hop education."* One of the proposed outcomes of an educational Twitter chat as a VPLN, is that as educators utilize technology to interact with colleagues and experts in their field, they are exposed to a variety of tools, skills, habits, resources, and ideas that ultimately will support in transforming their educational practice (Krutka, Carpenter & Trust, 2016).

A final exemplary response under this theme was that the VPLN *"helped me to talk explicitly about social issues in class in a way that is meaningful to students."* This educator suggests that through participating in the #HipHopEd education chat, they were offered support in how to effectively address social justice issues in the classroom in a way that was meaningful to students. As a result of participation in the #HipHopEd Twitter chat, participants felt more comfortable engaging in direct, and explicit, conversations around social justice concerns. Therefore, beyond the provision of tangible tools to use in classroom spaces, educators also reported gathering competence in addressing social justice concerns from the #HipHopEd Twitter chat.

Development of Cultural Competence

The development of participants' cultural competence was also one of the emergent themes from qualitative data analysis, detailing participants' ability to become more aware of Hip-Hop culture. We argue that with a better understanding of Hip-Hop culture participants, will better understand how to teach and engage young people who identify as a part of the Hip-Hop generation. For example, one participant stated that attending the weekly #HipHopEd educational Twitter chat enabled them to, *"become more literate in a culture that is not one [that they] grew up with."* Statistics show that an overwhelming majority of teachers in the United States identify as White while the student population across the country becoming increasingly culturally diverse. Many scholars argue that it

is the teacher's responsibility to position themselves in a space where they can learn and immerse themselves in the cultures of their students (Adjapong & Emdin, 2015; Adjapong, 2017).

The results of this study show that through participating in the #HipHopEd educational Twitter chat, outsiders of Hip-Hop culture are provided opportunities to begin to develop their cultural competence as it relates to Hip-Hop culture. Similarly, another participant shared, *"the #HipHopEd chat specifically has enabled me to connect with those students who relate to and/or enjoy hip-hop."* A third participant suggested that *"the weekly chats allow me to engage/relate Hip-Hop culture to social and educational areas that I didn't think was possible."* Overall, we notice that through engaging in the weekly #HipHopEd educational Twitter chat led to participants developing their cultural competence around Hip-Hop culture, which could ultimately led to teachers developing better relationships with students and knowledge of a culture that may be different than theirs (Adjapong, 2017). These illuminated pathways to connect with their students in ways that they *"didn't think was possible."*

As previously posited, the HipHopEd Twitter Chat focuses on issues at the intersection of Hip-Hop and education and provides a safe and critical space for educators to develop cultural competencies while engaging in discussions and sharing resources / information that relates to Hip-Hop and education. Salient findings in this emergent theme suggest that through participation in this VPLN, educators felt able to engage youth who identified with cultures other than their own.

Conclusion

We identify the #HipHopEd educational Twitter chat as a VPLN in the form of supplemental professional development that caters to the specific needs of a group of educators and community members. We do not believe that VPLNs replace conventional professional development because conventional professional development is aligned to individual school goals. We argue that VPLNs can supplement and add to the specific professional learning needs of educators. By identifying the #HipHopEd educational Twitter chat as a VPLN, we are highlighting the importance of a global network where participants from around the world can share not only resources / information, but also their cultural perspectives based on their construction of knowledge of the world. Future, teachers who are a part of the VPLN have the opportunity to connect to a more intimate community within the VPLN and develop meaningful professional relationships which will encourage collaboration and further professional learning.

Specifically, through engaging in the #HipHopEd VPLN, participants were able to increase their cultural competence as it relates to Hip-Hop culture, which in turn will have a positive effect on instructional practice, how educators perceive students' culture

allowing for positive and meaningful relationships between students and educators. While we highlight the impact of the #HipHopEd educational Twitter chat as a VPLN, and the importance of VPLNs writ large, we acknowledge that more research must be conducted to elicit the effectiveness of VPLNs on teacher practice and attitudes as it relates to conventional professional development.

Limitations

This study was conducted using a small sample size of the #HipHopEd Virtual Professional Learning Network (VPLN), which represents a microcosm of the community. In future studies, we wish to increase the number of participants and focus on the process of professional learning through the VPLN. We also recognize that Twitter itself may pose a limitation as a virtual space, as participants may not gain enough professional support during the virtual weekly hour-long chats and they are not likely engage with their VPLN peers physically within schools. Similar to professional learning in traditional schools, there often is an incentive for teachers to engage in professional learning. Therefore, teachers must be highly motivated to effectively engage in any VPLN.

Edmund S. Adjapong is Assistant Professor of Educational Studies at Seton Hall University.

Christopher Emdin is Associate Professor of Science Education at Teachers College, Columbia University.

Ian Levy is Assistant Professor, Graduate Counseling, Leadership & Education at Manhattan College.

Notes

[1] Cypher - an informal gathering of rappers, beatboxers, and/or break-dancers in a circle, where each participants' voice is equally valued

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Recruiting International Students with Technology: The Changing and the Unchanged

Chia-Ming Hsueh

National Cheng Kung University

Introduction

Internationalization in higher education has become increasingly relevant over the past two decades, not only in traditional areas like North America and Europe, but also in emerging regions such as Asia and the rest of the world. The expansion of the global higher education mobility is obvious, with over 4.6 million students seeking education outside their home countries and an estimated 13 million cross-border online students in 2015 (OECD, 2017). These statistics suggest the global higher education system needs to pay more attention to international students, especially regarding recruitment. In the past, universities recruited international students by providing face-to-face consults and delivering printed documents and brochures, activities which required much manual effort. In recent times, new technologies have had large impact within the education sector, and the domain of international student recruitment, itself an inherently complex, costly and competitive landscape, has been no exception (Becker et al., 2017). Further, since the emergence of global rankings and increasing competition, the role of the International Office has switched from engaging in academic cooperation and exchanges, to focusing on international student recruitment, services, and advertisements. Thus, a strategic, deliberate, and informed recruitment approach, with technological inputs, is likely to help institutions maximize their opportunities in an efficient manner.

The Changing Appearance

While traditional marketing strategies remain important, social media marketing is emerging as a large influencer on potential students. For example, although campus visits have long helped students to choose their desired universities, many prospective students no longer see this as an essential part of their university search. According to a recent survey of undergraduate international students, 58 percent said they had no plans to visit a campus before applying and 28 percent said they wouldn't visit even after being accepted (Levitz, 2015). Technology, such as virtual reality tours, social media platforms, and a user-friendly, responsive, and multi-language website, play an increasingly important role in the student decision making process. Many young people have been shaped by the ubiquity of social media like Facebook, YouTube, Twitter, Instagram, and WeChat and often choose these as their desired platforms for obtaining school information, allowing recruiting staff to easily reach out to potential students, domestically and internationally.

In addition to increasing user access, technology can aid higher education institutions in re-appropriating money from inefficient projects to better help students. Many institutions are facing similar budget cut challenges and new technologies can help universities increase their recruiting international students while keeping the overall budget down. Virtual education fairs, online orientations, and other technology-aided methods can decrease the costs of personnel and travel while expediting the dissemination of information. Big data and cloud sharing techniques can contribute to the digitization of recruitment documents and files, making the records trackable, manageable and of benefit to recruiting staff. While many International Offices have not yet achieved the ideal blend of technological processes within their everyday methods, with the recruitment of ever more information technology professionals by universities, these processes are likely to change in the near future.

Internationalization and Technology

Universities which find themselves under pressure from global competition and rankings are increasingly finding the need to address internationalization on their campuses. According to a recent report by the American Council of Education, the increase of study abroad opportunities for local students and the recruitment of international students have become central to internationalization activities on campuses (Helms & Brajkovic, 2017). In Asia, the field of recruiting international students will loom large in the near future, as some countries, like Japan, South Korea, and Taiwan, are facing severely declining birthrates and similarly decreasing college student enrollment (Sharma, 2018). These institutions face stronger pressures to attract students and should focus on international student recruitment in their institutional internationalization strategies. On a whole, increased internationalization and virtual communication with past, current, future students is especially important for universities today and the strategic use of technology can be conducive to improvements in these areas.

The development of technology promotes human progress and transforms communication among people. Technological applications also change with each passing day and what is popular today may be outdated or irrelevant tomorrow. The education and service sectors cannot escape from the use of technology within their processes and should adapt to take advantage of its usage. We should also realize that recruiting international students is a multi-dimensional task, with a heavy reliance on human-related expertise, tailored services, and social skills. These skills, which are essential, can be enhanced by the strategic use of technology. Integrating technology into recruiting processes is not a goal in itself, but a means towards increased internationalization, and diverse and authentic means of interaction with potential students.

Chia-Ming Hsueh is Assistant Research Professor, Institutional Research Division, Office of Research and Development at National Cheng Kung University in Taiwan.

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Book Review ^[1]

Big Data in Education: The Digital Future of Learning, Policy and Practice

by Ben Williamson.

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Zi Hu

Teachers College, Columbia University

The Future of Education: A Sociotechnical Imaginary

Tablets in their hands, students in the class are working on projects specifically designed for each of them: John is drawing a rectangle and a cylinder on the screen, deciding which one will hold more water and is thus better as a gift of a vase for his friend; Jane has her earphones plugged in, listening to speeches from Lincoln to Reagan and Obama – Jane’s goal for the new semester is to enhance her public speaking skills. In front of the classroom stands the teacher, Ms. Lee, holding a slightly different tablet: the algorithms embedded in her tablet allow her to see not only the real-time progress made by all students but also the students’ levels of concentration and other emotional responses, captured through the tiny bio-sensor stickers worn on their wrists. Noticing Jeff has a much higher level of boredom, Ms. Lee walks over and asks if he wants to switch from geometry to poetry, an area in which Jeff has previously shown more excitement. Before lunch, Ms. Lee goes in to the faculty room and logs onto an ATM-shaped computer designed to track and design meaningful cognitive development trajectories for students – an artificial tutor termed *Joe* by faculty members. Joe reads that two students are missing their targets today. What to do with these two students? Ms. Lee clicks on the *Recommendations* icon and it reads *add more visually stimulating materials for Sarah and Adam this afternoon in their coding classes*. Ms. Lee nods and decides that she is going to pick from the 15 widely used visual stimulants from Singaporean classrooms.

This above scenario looks like a sci-fi movie clip set in the far future. Nevertheless, Ben Williamson’s recently published text *Big Data in Education: The Digital Future of Learning, Policy and Practice* notes that with the growing datafication and digitalization of education, and the momentum given to such visions of the future of education by powerful private and public sector actors, these sci-fi-like scenarios may not be far from our present time or reality. In fact, some of these visions are already in existence.

Williamson’s (2017) text offers a rich account of the most recent technological developments, particularly big data, algorithms and coding, learning analytics, artificial intelligence (AI), neuroeducation, and digital citizenship, as these relate to education. As

Williamson (2017) clearly shows, these technological trends are evoking new and oftentimes radically different understandings of education. In other words, they are set to “disrupt” or “revolutionize” education (Williamson, 2017, p. 2). As an example, in Chapter 6, Williamson (2017) looks at the growing interaction between psychology, education, big data analysis, and the resultant emergence of affective computation, which uses computer science methods to track psychological and behavioral changes in students, offering pre-emptive strategies to ‘nudge’ behavior. Devices, such as those to measure students’ moods, already exist, e.g., EngageSense, a computer-mounted webcam connected to facial and vision algorithms, designed to measure students’ engagement levels through facial expressions and eye movement. In the case of EngageSense, measurements are sent automatically to teachers in real time so that they can adjust their teaching to improve students’ engagement and minimize negative emotions (Williamson, 2017, p. 134).

These new visions of education, according to Williamson, are guided by powerful sociotechnical imaginaries. Drawing from Jasanoff (2015) and many others (e.g., Huxley, 2007; Mager, 2015), Williamson (2017) defines sociotechnical imaginaries as future visions of society as reflected in technical projects. Often seen as a model for a preferred way of life and formation of society, these imaginaries exert significant power over the setting of aspirations and norms, in effect shaping behavior. As such, these imaginaries have important implications in multiple dimensions of education. Notably, as data is collected in larger volumes and increasingly analyzed and used in education, it [data] becomes one of the most significant education policy instruments. As a corollary, education policy-making has started to manifest features primarily attached to big data, e.g., a preference for quick fixes; shorter policy cycles or fast policies; and increasing porosity between different locales in policy-formulation and implementation.

As education policy-making becomes more data-driven and evidence-based, we are also witnessing a governance turn wherein the authority over policy-making is increasingly dispersed or redistributed from governments to actors with access or ownership of educational data, be it international organizations or private companies. One prime example is the growing influence of the OECD in the field of education with its rapidly expanding *Programme for International Student Assessment (PISA)*, the results of which are now used as performance indicators of countries’ educational systems as well as predictors of national economic competitiveness. Data-based evidence has also become increasingly used as an accountability measure. In particular, Williamson (2017) invokes the notion of ‘intimate accountability’ to reflect the shift in educational accountability schemes from bureaucratic practices enacted in distant governmental offices to more ‘intimate’ calculative practices closer to the action to be measured, e.g. schools now need to provide highly intimate details about students, teachers and school-level factors and these details are also being discussed in intimate spaces, like the home.

Whose imaginary and what consequences?

The belief that big data can help transform and improve education is based upon the premise that data is neutral and scientific and thus reliable and trustworthy evidence [2]. Williamson (2017) refutes this premise and, at the risk of repeating himself, in almost all chapters reiterates that big data is both socially produced and productive. He contends that the collection, analysis and use of big data is by no means neutral or objective but affected by a wide array of factors marked by clear ideologies and values, begging the question: whose educational imaginary is being enacted? Relatedly, Williamson (2017) pushes us to look beyond data and to examine the information infrastructure that underpins the production, circulation and use of educational data, but which remains *hidden* or *invisible* most of the time. Indeed, the infrastructure itself can be saturated with built-in biases. As an example, one might consider how an Anglo-American oriented education measurement metric may privilege individualism over collaboration or collectivism, a trait more valued by Asian education systems such as in Japan and China. It is conceivable that the latter trait [collectivism], among others, could be devalued or overlooked in the metric. Yet, when such measurement is finalized and presented, the many decisions and preferences that guided the formation of the measurement become self-evident and taken-for-granted.

This example helps shed light on what Williamson (2017) means by the *social* production of data. By arguing that data is socially productive, Williamson (2017) highlights the function of data as being normative and performative. Namely, data does not just describe the current state of affairs, it actively constructs the social world by privileging certain interpretative frameworks, setting norms and articulating new concerns and directions for future, via the built-in classifications, preferences and decisions embedded in the data infrastructure (see also Gorur, 2017). It is because of this productive power that Williamson calls us to take more seriously the moral dimension of educational big data. This is imperative as data and technology can exacerbate existing inequalities or create new sets of educational problems.

For instance, Williamson (2017) notes how ClassDojo, a software designed to help teachers collect, store and visualize data about students' behavior in classrooms, can contribute to normalizing the constant surveillance of students in schools while encouraging teachers to reward only observable behavior, particularly behaviors that are aligned with the psychological norms inscribed into the algorithm. Or, as another example, if indeed big-data-supported personalized learning can improve student learning, student groups who have no access to such data or technology may be further marginalized. These troubling issues echo the call by other scholars to engage more critically and productively with increasing standardization and usage of data in education (e.g., Gorur, 2012; Sellar, 2015). As Williamson (2017) states, we need to be cautious, if not downright skeptical, and a little

resistant to the so-called transformative potential of these new technological developments (p. 8).

Given the multidisciplinary nature of educational big data, Williamson's (2017) ability to critically examine these new technological developments in education from an interdisciplinary perspective is yet another strength of the book. Drawing on science and technology studies (STS), for instance, Williamson (2017) shows how imaginaries of education embody a mixture of interests from different groups, e.g., private companies driven by profits through the selling of their educational products, and governments motivated to use big data to enhance governance through tracking and nudging citizen's behavior. Studies of these different actors, and their agendas, encourage us to move from surface analysis of data usage in education, to exploration of earlier data-making stages, which can allow us to peek inside the black box of the rapidly expanding global education industry, and its increasing collection and use of educational data (Komljenovic and Robertson, 2017).

To conclude, there is no denying that new technological developments have significantly reconfigured the social world, education included, and the trend is unstoppable. The study of educational big data has indeed become a worthy subject in its own right (see Busch, 2011; Easterling, 2014) and as Williamson (2017) rightly points out, the field of education needs to closely engage itself in these topics, and new agenda for educational research should be initiated. Further, it is crucial to continue to engage with diverse disciplinary views to better understand the role of technology and big data in education (e.g., Gorur, 2017). Some practical questions related to this new educational research agenda include: How to bring together scholars and researchers from various fields to undertake more collaborative interdisciplinary studies of educational big data? And, given the dispersal of authority over education policy-making from the government to other powerful actors like private companies and international organizations, how to coordinate and regulate actions of these non-state actors? Lastly, as we take more seriously the moral dimension of education big data and technology, what kind of ethical guidelines should be put in place to ensure that educational technological developments are facilitating quality and equitable education for all?

Zi (Grace) Hu is a Ph.D. student in the International and Comparative Education Department at Teachers College, Columbia University. Her research interests include sociology of education, global education policies, educational big data and comparative education. Her current research involves international large-scale assessments and education policy transfer between China and England.

Notes

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[2] See Porter (1995) for a brilliant critical analysis of the power and prestige of quantification methods, i.e., numbers, in the modern world. The pursuit of objectivity in science and public life lends to the trust in numbers and vice versa. Yet the notion of objectivity itself is, according to Porter, weakly defined; it is anything but impersonal and is instead saturated with deliberate human and political decisions.

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