

Educators Meet the Fifth Estate

Educators Meet the Fifth Estate: The Role of Social Media in Teacher Training

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Kaitlin Torphy, Ph.D. is the Lead Researcher and Founder of the Teachers in Social Media Project at Michigan State University. This project considers the intersection of cloud to class, nature of resources within virtual resource pools, and implications for equity as educational spaces grow increasingly connected. Dr. Torphy conceptualizes the emergence of a teacherpreneurial guild in which teachers turn to one another for instructional content and resources. She has expertise in teachers' engagement across virtual platforms, teachers' physical and virtual social networks, and education policy reform. Dr. Torphy was a co-PI and presenter for an American Education Research Association conference convened in October 2018 at Michigan State University on social media and education. She has published work on charter school impacts, curricular reform, teachers' social networks, and presented work regarding teachers' engagement within social media at the national and international level. Her other work examines diffusion of sustainable practices across social networks within The Nature Conservancy. Dr. Torphy earned a Ph.D. in education policy, a specialization in the economics of education from Michigan State University in 2014 and is a Teach for America alumni and former Chicago Public Schools teacher.

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2 sentence description:

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Educators Meet the Fifth Estate: The Role of Social Media in Teacher Training

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Abstract

This paper examines teacher candidates' reflections on engagement with and in social media as it relates to their professional preparation and understandings of teaching within 21st- century classrooms. Extending earlier work, we present the notion of a Fifth Estate within the digital age, redefining network influence (Dutton, 2009). As power and influence are negotiated across executive, judicial, and legislative enterprises, media—the Fourth Estate - and networks of influence amongst individuals within the Fifth Estate, present a new form of educational professionalism. Here, educators, researchers, and the community may engage directly in virtual space. This paper focuses in particular on the ways in which candidates' reflections on the ways in which they seek support from the Fifth Estate are shaped by their visions of teaching and learning, their trust in the teaching professionals who share information in the Fifth Estate, their efficacy to evaluate resources, and their autonomy to select and modify resources.

Executive Summary

The image of a classroom has changed little over time; benches or chairs, tables or desks, materials for work being done, and a teacher. Teachers and teaching define, in large part, the educational experience. There has been significant research on what makes a good teacher. In turn, there has been a good deal of research on how to promote a healthy ethos for educators and students; a good school. Building shared vision and practices, professional learning communities, and coherent academic content emerge as important components to successful schools. Yet, as educational leaders and policymakers seek to improve schooling, the world context of individuals' community, belonging, and work has shifted. In 2016, a majority of internet users reported engagement on social media sites. In education, studies across RAND, NCSM, NSF and WT Grant funded projects find a majority of teachers use social media for professional purposes.

This article builds theory to frame educational influence, change, and professionalism within 21st century teaching. Presenting the notion of a Fifth Estate, authors situate the ecology of teaching and the education profession within a shifting hierarchy of social exchange and influence. The Fifth Estate grounds understandings of influence and power to organizational hierarchies comprised around institutional forces within society including government (beginning with the clergy, monarchy, and nobility—extending to the three branches of government today), the free press, and networks of peer influence.

Within the Fifth Estate, embedded networks of individuals may come together to exert influence on otherwise more distant entities. Complex relationships may extend across social group, institution, ethnic, and religious affiliation providing individuals the ability to connect to

one another and to broader grassroots social movements or ideology. For teachers, this may manifest in connections, across geographic boundaries, around a particular interest or issue, e.g. the Next Generation Science Standards, or as they search for teaching advice or resources across a virtual network of peers.

Research shows social networks formed within virtual space tend to support relationships amongst individuals which, at scale, may influence society. Therefore, individuals may increase their ability to communicate with one another as they simultaneously circumvent the established hierarchy and demand greater equality in knowledge sharing and transparency. Thus, as teachers nest within networks of networks, curation of instructional resources and professional practices combine with state and district influence.

Grassroots and broad reaching, social networks comprising the Fifth Estate today go largely unaddressed by teacher education institutions. The rapidly changing landscape of social networks, the uneven quality of resources available through social networks, and the resulting lack of clarity about generative ways in which teachers might engage social networks all likely contribute to teacher educators' hesitation to focus on pre-service teachers' engagement with social networks.

In a reality in which teachers and students may extend learning and connections across physical and virtual space, teacher training and in-service development may find at times complementary and at others competing forces across class and cloud. Within this space, teachers are both integrating social media—knowingly or unknowingly—within their curriculum and preservice teachers' experiences. Within the framework of the Fifth Estate, this article presents preservice teachers' reflections to understand how they conceptualize social media and their engagement within it, as part of their work as educators.

Sampling 73 preservice teachers enrolled in three different sections of an elementary mathematics methods course at a large Midwestern university, authors engaged participants in an exercise piloting a reflection guide on accessing online mathematics resources within Pinterest. Preservice teachers were asked to identify a quality resource to support students' understanding of numbers and operations using the reflection guide's prompting questions. Their conversations and computer screens were recorded, as they worked in small groups. At the end of the exercise, preservice teachers' discussion was videotaped, as they reflected on their experiences with the activity and thoughts on using virtual resources within their profession. Qualitatively analyzing discussions through an emergent coding process, authors uncovered emergent themes spanning teacher autonomy to curricular commercialism.

Across reflection discussions, authors found candidates' reflections on the ways in which they seek support from the Fifth Estate were shaped by their visions of teaching and learning, their trust in the teaching professionals who share information in the Fifth Estate, their efficacy to evaluate resources, their autonomy to create, select and modify resources, the credibility of resources, and students' potential learning. Taken together, themes reflect preservice teachers' overall visions of teaching and learning, extending from teacher-centered, affective feelings of professionalism regarding autonomy and creativity to student-centered considerations of learning and engagement. Below, are some of those most resonating preservice teacher reflections.

- Resources were often developed and shared by teachers themselves. Blogs allowed preservice teachers to “walk a day in another teacher’s shoes” without the transactional cost of being in the classroom.
- Virtual resources were not considered static entities, rather preservice teachers consistently expressed that online resources could and should be modified for students' particular needs.

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- Engagement within Pinterest was interwoven with the opportunity to build creative instructional tasks for students. Searching through virtual resource pools—with an array of instructional tasks—preservice teachers reported generating creative thinking and brainstorming lesson planning.
- There was a need for balance between student engagement and classroom management as preservice teachers sought out hands-on activities.
- Online curation of professional resources was conceived as an active practice of planning lessons and classroom activities
- Preservice teachers felt there were fewer books than online blogs and virtual sources of professional support and resources commenting, “I’m not seeing ‘wow, look at these books with all these great lesson plans!’ [Teachers] are saying, look at my blog, look at Pinterest, look at this online resource.”

For preservice teachers, examining resources within Pinterest and their sites of origin offered the opportunity to peer into other teachers’ classrooms and learn from their experiences. Perhaps challenging the notion of teaching behind closed doors, social media provides unrivaled access to others’ classroom practices and reflections. Preservice teachers’ conceptions of individual empowerment are seeded in the networks of networks within the Fifth Estate. Individuals—teachers—develop relationships, social networks, and communities that provide a sense of belonging, trust, and access to knowledge and resources. The knowledge and resources teachers may access within social media presents the potential to help students learn, excite and engage learners, as well as extends teachers the opportunity to broaden their professional community and connect with likeminded individuals.

Broadly, it is unclear what the implications may be for teachers acting independently across classrooms and social media. Where 20th-century institutional forces exerted constraining pressure on individuals' autonomy and planning, today teachers—public servants—are redefining the diffusion of instructional resources and knowledge within their field. In a profession often overlooked, authors find a case in point of a new world within the Fifth Estate that provides increased opportunity for entrepreneurship and potential for disruption within hierarchy. And, yet for a new generation of teachers and individuals across field, the act of engaging within social media, fostering social networks, and independently determining credibility of content is both routine and ungoverned. Thus, the Fifth Estate is not a purely educational phenomenon but echoes both a present and forthcoming reality of a sociological engine increasingly centered on individual and relational networks with peripheral institutional influence.

Introduction

The image of a classroom has changed little over time; benches or chairs, tables or desks, materials for work being done, and a teacher. Teachers and teaching define, in large part, the educational experience (Nye, Konstantopoulos, & Hedges, 2004; Cowen, Raudenbusch & Ball, 2003). There has been significant research on what makes a good teacher (Wright, Horn, & Sanders, 1997; Rowan, Chiang, & Miller, 1997; Rivkin, Hanushek, & Kain, 2005; Figlio, Karbownik, & Salvanes, 2016; Dweck, 2007). And, in turn, to promote a healthy ethos for educators and students, a good school (Lawrence-Lightfoot, 2008; Bryk & Schneider, 2002; Penuel, Riel, Krause, & Frank, 2009).). Emergent findings include developing a shared professional vision, a set of professional practices, building professional learning communities, and coherence in academic content (Bryk, Gomez, Grunow, & LaMahieu, 2015). Corresponding education policy has developed around connecting teachers to communities of practice and professional learning communities (Stoll, Bolam, McMahon, Wallace, Thomas, 2006; Lave & Wenger, 1991). Within schools across the nation, educational leaders seek to develop collaboration and trust amongst their staff to improve the stability of their schools and their students' achievement (Bryk & Schneider, 2002; Sykes & Wilson, 2016).

As researchers, policymakers, educational leaders, and teachers seek out improvement strategies to increase students' success for both today and the future, the context of individuals' community, belonging, and work has shifted. By 2016, nearly 70% of a total 3.5 billion internet users reported using social media sites, such as Facebook and Pinterest

(<https://www.statista.com/>). In the educational context, the internet—a virtual rolodex of resources, goods, and networked individuals—allows teachers and students to seek out and retrieve information in real time, with little transactional cost. Yet, as individuals encounter greater amounts of information, identifying what information is worth knowing and how that information might be used becomes increasingly important (Bhaskar, 2016; Fuchs, 2017).

The virtual world consists of search and locate, community networks, entrepreneurs and corporate conglomerates (e.g. Amazon, Google, Verizon), individuals, institutions, and governments. It is a space in which individuals turn to find quick answers, learn from one another and networks of virtual sharing, start new business, expand or diversify existing business, and contribute knowledge. Social media provide venues for individuals to come together and create networks of influence while also lending entrée to targeted advertising tailored to encourage consumerism. Within education, this may present as networks of teachers sharing lessons or experiences within their virtual network while also encountering advertisements for Google classroom, Khan Academy, or online master's degree programs.

The confluence of individual and networked peers, consumer and producer, may be conceptualized as the Fifth Estate (Dutton, 2009) and forms the contextual shift that has occurred around education. How teachers engage in planning and conceptualize their instruction may relate to their interactions with their virtual and physical networks (Liu, Torphy, Hu & Frank, 2017; Hashim & Carpenter, this volume). For those who have yet to enter the teaching

profession, it is unknown how the internet and social media may impact how they build meaning of themselves as teachers and conceptualize instructional planning and teaching practices. This paper builds on the notion of a Fifth Estate to examine education change and teaching within the 21st century. Using an application exercise with preservice teachers' curation of instructional resources, we examine their reflections on the use of social media for professional purposes and instructional planning.

The Fifth Estate in Education

The ecology of teaching and the education profession reflects classroom and school, teacher and student, mentor and colleague, community, and supportive structures to promote professional development and curricular excellence. As individuals become increasingly connected to virtual space, how people view the world and function within it has changed. Where corporate institutions occupied foundations of resources, information, and services, 21st century structures have shifted commercialization and competition from institutions to global corporations, resources from organizational entity to individual and network, and services to “vertically integrated ‘clouds’ of giant information utilities” (Dutton 2009, 11). This paper provides an overall perspective of teachers' engagement in social media, as it situates within a larger ecology of resources on teaching and education professionalism.

To ground understandings of influence and power within the profession, we may consider organizational hierarchies extending back to the medieval aristocracy. There, three estates comprised society—the clergy, the monarchy, and the nobility. The sphere of influence and worth evolved around these three estates as they determined life within medieval times. By the

18th century, the advent of the Gutenberg press and mass print laid entrée into a Fourth estate, coined by Thomas Carlyle, “there were three estates in parliament; but in the Reporters Gallery yonder, there sat a Fourth more important far than they all” (Dutton, 2009, p. 1). Figure 1 and 2 below depict organizational hierarchies.

[insert Figure 1 here]

[insert Figure 2 here]

With the development of the Fourth Estate, the sphere of influence and diffusion of information extended to the general public. For those clergy and aristocracy, the inclusion of the public—directly or indirectly—undermined the traditions and the values of a society that perceived a need for only a small minority to be involved in directing the trajectory of a country and the development of knowledge (Dutton, 2009).

Internet Affordances

Digital Access. Knowledge development in the 21st century finds a more permutative state than that of past times. According to the NFSA, “‘by 1996 internet connections encircled the globe, networking public and private institutions, online communities, and the cyber citizens of the world’ (as cited in McIntyre 2016, 438). Internet users, increasingly relying on search engines to find knowledge, must sort through changing answers as search responds to population trends for clicked on links and individual user preferences (Dutton 2009). Through this iterative process, internet engagement changes both how individuals choose to seek out information as well as how they access resources (Rutledge, Dennen, Bagdy, & Rowlett; Dutton 2009). These basic functions within daily life portend a disruption in hierarchical structures around institution, community, and relationships. In effect, “the digital revolution isn’t just altering specific sectors of the economy it is changing the way we think and live” (Held, McGrew, Goldblatt, & Perraton,

1999, 414). Framing societal change in historical context, we may view globalization as another great shift in human interaction (Servaes, 2015, p. 242).

Social Networks. Individuals' social networks—the relationships individuals hold with one another—frame, in large part, one's life (Fowler & Christakis, 2009). The networks people establish provide community and access to information and resources (Lin, 2002). Social media affords individuals the ability to extend social networks across geographic and institutional boundaries (Liu, Torphy, Hu, & Tang 2017). Generally, professional networks are formed around a commonality or interest (Papacharissi 2013). Through these relationships, influence and relative power may be increased “vis-à-vis other individuals and institutions” (Sormanen & Dutton 2015, 1). Within “networks of networks” (Dutton 2009, 3), complex relationships may extend across social group, institution, ethnic, and religious affiliation providing individuals the ability to connect to one another and to broader grassroots social movements or ideology. Within education, teachers may connect to one another across district and state, coming together around a particular interest or issue, e.g. the Next Generation Science Standards. Social media houses social network connections. Individuals looking for tailored resources or advice from a trusted network may seek out this information within social media rather than broad internet search (Fuchs 2017). Therefore, the social networks within social media may provide a natural heuristic for internet search.

The Fifth Estate

Today, the emergence of the internet has furthered the trajectory emerging from times past, as knowledge diffusion and influence are negotiated across new hierarchical boundaries. With the advent of the Internet and importantly Web 2.0, networks of individuals have come together and exerted influence. These networks spanning across social media and virtual space

may be conceived as the Fifth Estate (Dutton 2009). Like the first four estates, everyone need not engage in the Fifth Estate—though it does require a majority to permeate daily living and decision making—which in turns provides it the cache to be considered a disruption to the a priori structure of interaction and influence. In Figure 3 below, we illustrate the emergence of the Fifth Estate.

[insert Figure 3 here]

The Fifth Estate empowers networks of individuals to more directly influence and challenge traditional conceptions of teacher professionalism and education reform. “The self-selected, Internet enabled individuals who have a primarily social aim in their networking activities often break from existing organizational and institutional networks, which themselves are frequently being transformed in Internet space” (Dutton, 2009, 4). Therefore, we may conceive of the Fifth Estate as a space in which social movements may develop and extend across virtual and physical space (Sormanen & Dutton 2015).

For those individuals and organizations afforded decades as leaders of public interest, the development of an autonomous entity able to directly diffuse knowledge and resources in real time may pose conflict as each estate attempts to secure their value add. “The modern equivalent of the first estate clergy could be seen as the public intellectuals and critics who undermine the value of the internet by depicting it as a space over-occupied by an ill-informed, ill-disciplined ‘cult of the amateur’” (Dutton, 2009, 11). Furthermore, research shows social networks formed within virtual space tend to support relationships amongst individuals which, at scale, may influence society (Sormanen 2015). Therefore, individuals may increase their ability to communicate with one another as they simultaneously circumvent the established hierarchy and demand greater equality in knowledge sharing and transparency (Sormanen 2015).

Individual Autonomy

Little is known about how teachers negotiate the interplay between bureaucracy and individual autonomy within the 21st century. Friedrich August von Hayek wrote (1944) “the more the state plans, the more difficult planning becomes for the individual (as quoted in Low, 1991, p. 170). Yet, as teachers nest within networks of networks, curation of instructional resources and professional practices combine with state and district influence. Perhaps akin to Schumpeterian behavioral theory, agent centered and institutionally centered forces may either compete or complement one another as teachers’ plan and enact their teaching (McIntyre, 2016).

As teachers navigate professional demands and state and district purview amidst a sea of social networks, social media, and virtual resources they engage in entrepreneurial decision making directing the trajectory of their classroom (Torphy, Hu, Liu, & Chen 2017; McIntyre, 2016). Teachers become both producer and consumer (Torphy & Hu, 2019). “Through giving voice and independent sources of information to the users, that is, individuals as producers and users of digital information, social networking site can contribute to leveling societal roles” (Bruns, 2007, 3). At present, a majority of teachers engage within social media for professional purposes (Opfer, Kaufman, & Thompson, 2016; Torphy & Frank, 2019); over time relative influence in educational spheres may shift.

[insert Figure 4 here]

Above, teachers, school leaders, community, and students negotiate influence and exert leverage as they affiliate within social networks in social media and the broader virtual space. Previously outside influential spheres, the public—educators, students, and parents—may now more directly engage in educational issues in real time. Grassroots and broad reaching, social networks comprising the Fifth Estate today go largely unaddressed by teacher education

institutions. We conjecture that the relative silence of teacher educators with respect to social networks is analogous to previous tensions in relation to discussing the use of curriculum materials with pre-service teachers (e.g., Ball & Feiman-Nemser, 1988). In other words, the rapidly changing landscape of social networks, the uneven quality of resources available through social networks, and the resulting lack of clarity about generative ways in which teachers might engage social networks all likely contribute to teacher educators' hesitation to focus on pre-service teachers' engagement with social networks. However, this relative silence, along with the anonymity afforded by social networks and coupled with the prevalence of teachers' engagement suggests a potential for disruption without signal. "What greater power can there be than to operate namelessly?...We seldom even recognize it as an ideology. We appear to accept the proposition that this utopian millenarian faith describes a neutral force; a kind of biological law...[that may] attempt to reshape human life and shift the locus of power (Monbiot, 2016, online). In a reality in which teachers and students may extend learning and connections across physical and virtual space, teacher training and in-service development may find at times complementary and at others competing forces across class and cloud. Within this space, teachers are both integrating social media—knowingly or unknowingly—within their curriculum and preservice teachers' experiences.

Teacher Collaboration and Professional Communities

Teachers' collaboration and opportunities for interaction relate to their professional development (Coburn, 2001; Spillane, 1999) and students' achievement (Daly, Moolenaar, Der-Martirosian, & Liou, 2014). In recent years, professional communities of practice have been implemented to provide teachers the opportunity to discuss their practice and learn from, or problem solve, with one another (Lave & Wenger, 1991; Mitchell & Sackney, 2000; Toole &

Louis, 2002;). However, the focus of these communities can vary widely and the productivity of site-based professional communities can be limited by lack of shared vision, power dynamics, and other related issues. On the peripheries of these communities, teachers often engage informally with colleagues for support and advice. These informal network influences have been shown to relate to teachers' knowledge and practices within the classroom (Baker-Doyle & Yoon, 2010; Frank, Zhao & Borman, 2004;; Frank, Zhao, Penuel, Ellefson, & Porter, 2011; Lave & Wenger, 1991).

Though education literature has found positive impacts of teacher community and collaboration, and many districts and schools have institutionalized suggested policies to promote such engagement, the profession continues to largely consist of teaching days behind closed doors (Lortie, 1975). Perhaps then, as the internet affords increasing access to networks of teachers beyond the school building, teacher collaboration and community may broaden to the virtual space (Torphy, Hu, Liu, & Chen, 2017). There, teachers may engage with one another easily and maintain networks of colleagues across their professional lives—forming persistent, pervasive, social ties which bridge physical and virtual space (Hampton, 2016; Wellman, 2001). These ties may be motivated for various reasons, including to broaden access to ideas, advice and resources, as well as seek out help anonymously—apart from school-based colleagues. The ties teachers maintain influence their conceptualization of instruction as reflected in the resources they choose to seek out and share online (Liu, Torphy, Hu & Tang, 2017). Research has found where teachers access and share educational resources relates to their inherent characteristics (e.g., the grade level taught, district, school, and teaching disposition) (Torphy, Liu, & Hu, 2018). Therefore, influence in 21st-century education extends across physical and virtual boundaries (Jimerson, 2014| Wellman, 2004;), and—this extension and its manifestation as the

Fifth Estate of communication and connection—may reflect greater reorientation to knowledge and professional organizations at large. That is, as individuals become more comfortable and adept at building professional knowledge collectively within virtual networks (Dutton, 2009), how education policy changes schools and how teachers develop practices intertwine with connections with online engagement.

Social Media and Education

Within education, research shows social media is a routine component of educators professional lives (Daly, Liou, del Fresno, Rehm, & Bjorklund, this volume; National Council of Supervisors of Mathematics, 2015). In a Rand study of Common Core Standards Enactment, survey results indicated a majority of elementary and secondary teachers visit sites including Pinterest and Teachers Pay Teachers while seeking out English Language Arts and mathematics materials (Opfer, Kaufman, & Thompson, 2016). In fact, teachers vary their engagement within particular virtual platforms (e.g. Twitter, Facebook, Pinterest) by their purpose for being online (Frank and Torphy, forthcoming). Teachers report using Twitter to stay abreast of ongoing educational issues, whereas in Pinterest teachers generally seek out and share resources. Therefore, in this work we examined preservice teachers' behavior and reflections as they engaged in resource curation within Pinterest.

Pinterest and Education

Pinterest is a leading social media space in which teachers acquire and share educational resources (Zhong et al, 2014). In a sample of elementary teachers, 90% reported using Pinterest at least once monthly for educational purposes (Torphy, Hu, Liu, & Chen, 2017). Within Pinterest, the search process may include teachers incidentally browsing and acquiring educational resources, or deliberately choosing instructional tasks to meet a specific classroom

demand (Will, 2016). Pinterest allows teachers to scrapbook ideas by organizing lessons, models of teaching, and instructional resources into boards that represent a personal library of educational materials. Furthermore, as a social media, teachers may connect with one another, following one another's network pins and posts.

Curating content across an individualized site through boards, teachers may sense-make instructional practices, resource alignment and curricular coherence (Hu, Torphy, Jansen, Opperman, & Lane, 2018). Curation provides teachers the opportunity to present their ideas as a set to their virtual network, some of whom may work closely with them within schools (Liu, Torphy, Hu, & Tang, 2017). Through this process, teachers may engage in both incidental and situative learning, considering that worth saving and sharing (Schugurensky, 2000).

The notion of sharing with a broader network of teacher colleagues resonates with many who engage within social media. For example, Miss Giraffe, a teacher blogger from missgiraffesclass.blogspot.com writes about her motivation to share ideas and connect with other teachers (Miss Giraffe, 2016). The connections she makes through this venue connect to other teachers and provide instructional resources that they may use within their own classroom (Torphy, Liu, Hu, & Chen, 2018). Trust established through virtual networks promotes sharing advice and ideas. Education Week Research Center (2016) reported that teachers trust their peers more than experts in the education field or publishing companies. This finding resonates with broader conceptualizations of the internet and 21st century dynamics. The following section will outline theory that frames observed movements in teacher trust, information seeking, and informal and formal exchange across virtual space. Exploring the role of the Fifth Estate, we examine how networks of individuals may more directly influence and challenge traditional conceptions of teacher professionalism and education reform.

To better understand shifting behavior and ideology within education ala the Fifth Estate, we sought out perceptions and reflections of preservice teachers. As young people and emerging educators, these individuals conceive of education within the current context, rather apart from the constraints associated with pre-internet and Web 2.0 informational seeking. Understanding their reflections on perceived responsibilities and experiences within social media and the Fifth Estate may provide a case for further inquiry as teacher educators and institutions develop curriculum and consider what it means to be a teacher in 21st century classrooms. We asked, how do preservice teachers conceptualize social media and their engagement within it, as part of their work as educators?

Methods

This study includes a sample of 73 preservice teachers enrolled in three different sections of an elementary mathematics methods course at a large Midwestern university. As part of one class session of their elementary mathematics methods course, preservice teachers were asked to engage in an exercise piloting a reflection guide on accessing online mathematics resources within Pinterest (see Appendix A). We asked preservice teachers to organize themselves in small groups of four and share a computer as they sought out an instructional task online. Mathematics methods coursework for the semester focused on numbers and operations, therefore preservice teachers were asked to identify a quality resource to support students' understanding of numbers and operations using the reflection guide's prompting questions. While the reflection guide was specific to the use of Pinterest, preservice teachers also visited other sites, either because they started with sites that supported them in unpacking the content and understanding relevant standards (e.g., corestandards.org) and/or because they clicked on a pin within Pinterest that took them to another virtual space. We recorded their conversations and computer screens as they

engaged the activity. At the end, we videotaped preservice teachers' reflections as they convened as a whole and shared their experiences with the activity and thoughts on using virtual resources within their profession. Preservice teachers provided consent for our analysis of the recorded small group conversations and computer screens, the completed reflection guides, and the whole class reflection discussion. All but one preservice teacher chose to participate in class discussion.

In this paper, we focus on an analysis of the three whole class reflection discussions (one per course section). These discussions, which lasted approximately ten minutes each. After the discussions were transcribed, we engaged in an emergent coding process in which each author independently read the three transcripts and developed a list of potential codes and examples. We then met and condensed our two lists into a single list of codes that we used to independently code the transcripts. Any differences in our coding were resolved through consensus. Our list of codes included: Community, Commercialism, Curricular/Pedagogical Content, Emotion and Affect, Creativity and Flexibility, Opportunities for Professional Learning, Autonomy, and Entry Points. Finally, the coded transcripts were used to develop the themes described below in the Results.

Results

Across the three whole class reflection discussions, we found candidates' reflections on the ways in which they seek support from the Fifth Estate were shaped by their visions of teaching and learning, their trust in the teaching professionals who share information in the Fifth Estate, their efficacy to evaluate resources, and their autonomy to create, select and modify

resources. Figure 5 below presents the emerging themes we found in preservice teachers' responses as they map onto education within the Fifth Estate.

[insert Figure 5 here]

Themes are represented in bold rectangles above. Taken together, they reflect preservice teachers' overall visions of teaching and learning, extending from teacher-centered, affective feelings of professionalism regarding autonomy and creativity to student-centered considerations of learning and engagement. Alongside these visions was the perception that information and resources shared within the Fifth Estate were credible, as they were developed and shared by teachers themselves.

Teacher trust and credibility

As preservice teachers explored virtual resources online they often clicked on images within Pinterest to identify the origin of information. Many pins linked back to teachers' blogs. When asked how and why they chose their resource, preservice teachers cited teacher blogs as reputable sources of information.

We liked it, that [the resource] was from a teacher's blog, because it was probably something that worked in the classroom because if it didn't work, she probably wouldn't be proud of it and probably wouldn't want to share it. We thought it was more credible and that it was something that we would implement into our classroom because it was out there that it was something that she did. It worked (Class Discussion, March 29, 2018). Here, the act of sharing a resource for others in and of itself provides credibility to the resource shared. How often a resource was shared also related to its perceived credibility for preservice teachers. Deriving from another teacher created a sense of relatability to the resource, while, the

social nature of the platform allowed preservice teachers to estimate its popularity with the broader network (Class Discussion, March 29, 2018). The number of repins for a particular resource signaled its relatively higher demand and therefore greater credibility. While some preservice teachers saw practicing teachers' blogs as a stamp of credibility for a particular resource, others considered the more tailored details available within their writing. Blogs allowed preservice teachers to "walk a day in another teacher's shoes" without the transactional cost of being in the classroom. "If there were any hiccups that they had or potential problems, they can bring those up and be like, 'you might run into this'... just because they know how a classroom works" (Class Discussion, March 29, 2018).

Rather than—or in addition to—turning to a colleague in one's school, teacher blogs presented a form of advice and information for lesson planning and enactment. As compared to other sources of information, one preservice teacher shared that teacher blogs, "can give you some of the classroom management ideas" (Class Discussion, March 29, 2018). At the same time, the credibility of instructional resources intertwined with the normative value placed on resources which were free versus for profit. Those resources monetized for profit, by corporations or individuals—and oft the most popular and accessed resources—were considered more legitimate (Class Discussion, March 28, 2018).

Though teacher candidates seemed more vested in monetized resources, some were also reluctant to buy resources online. This may relate to the opportunity to access a plethora of instructional resources for free online with additional searching. It could also relate to teacher candidates' inclination to modify resources to their students' needs. As described by one teacher candidate, "I guess credibility isn't necessarily on my mind because I know that I can just change it into what I think is going to be better" (Class Discussion, March 29, 2018). For those who will

take the extra time and effort to modify an instructional resource, paying for a lesson or task may not seem efficient.

Autonomy to select and modify resources

Preservice teachers' desire to design instructional tasks by adapting ideas found on-line seemed to be supported through their interactions within social media. Many reported building ideas tailored to their students from an online resource.

[We found] a kindergarten and first grade [task]...using addition and subtraction, and I just kind of thought about what I had seen in the classroom I'm in right now...And,...changing, not really changing, but just thinking of different ways that we could build upon what we had found...maybe incorporating different ideas that we had would make it even a broader lesson (Class Discussion, March, 28, 2018).

Overall, resources were not considered static entities, rather preservice teachers consistently expressed that online resources could and should be modified for students' particular needs. One group reasoned, "you can make pretty much any task more quality based if you kind of have the future in mind and the past, and then your group of students" (Class Discussion, March 28, 2018). Beginning with a question in mind, preservice teachers asked what they would do differently with the resource (Class Discussion, April 5, 2018). While some developed more general ideas about modifying a particular task, other groups had concrete ideas that considered both the resource and enactment.

Preservice teachers leveraged knowledge of students' learning as they considered modification to mathematics resources. Group members identified core knowledge within their methods course and applied it to the online resource. In another group, preservice teachers considered the enactment of a particular task for addition. They modified the task to incorporate

rolling and adding together numbers on dice and differentiated instruction to promote numeral recognition having students both count dots and write the corresponding numeral. Resources within social media were treated both as instructional tasks for classroom enactment and idea generators for planning.

The role of creativity

The opportunity to build creative instructional tasks for students was integral to preservice teachers' engagement within Pinterest. Searching through virtual resource pools—with an array of instructional tasks—preservice teachers reported generating creative thinking and brainstorming lesson planning (Class Discussion, March 29, 2018).

When I see a picture that looks like something that I would like...usually the picture gives me an idea of something I want to do, as opposed to me following back the lesson plan that they wrote [online]. So, we saw a picture of something and then we kind of designed a number talk—which is something we do a lot of in this class...So for me, its' more of an idea generator and then I try to make something of my own off of that.

Creativity and modification were extended from adapting a particular task to also integrating supplemental work into instructional units. Preservice teachers considered centers or mini-units with curated resources organized to develop increasing mastery of a particular topic over several lessons (Class Discussion, April 5, 2018). For both supplemental and core instructional tasks, preservice teachers discussed modification and adaptation. While some independently developed content based on image, others sought out more detailed resources from in-service teachers online (Class Discussion, March 29, 2018). Creative license was used to do “what works best for you and your kids” (Class Discussion, April 5, 2018). Preservice

teachers felt confident that with the changes they made instructional tasks could be worthwhile for students.

Efficacy to evaluate online resources in terms of student engagement

When evaluating and selecting resources, teachers considered the content of the instructional resources they acquired within Pinterest. Some considered the kind of task students engaged in, such as through hands-on activities or visual representations, while others discussed the accuracy of content shared. Understanding the mathematics provided a foundation for evaluation of online resources, from an anchor chart to other images depicting mathematics concepts. “The resource might be kind of sketchy, but I know my math well enough to know this is a true thing” (Class Discussion, March 28, 2018). One group discussed how the cognitive demand of a particular task may vary given its enactment.

If you do pull a resource from online and implement it in class you can actually see if it was beneficial at all, [that is] as cognitively demanding as you thought it would be, once you implement it. You can say, oh maybe that didn’t work as well, or next time I’m going to do this, because you can come up with ideas at your computer. But, once you implement it I think that is the big key difference if this will be effective or not (Class Discussion, March 28, 2018).

Effective enactment was considered as preservice teachers planned to incorporate a task into their instruction. Preservice teachers conceive their students achieving mastery of a concept as related to plans for modification of a resource, and the credibility behind a particular resource. Preservice teachers contemplated students’ engagement as imperative to concept mastery. For the group modifying and differentiating content to incorporate students’ hands-on learning with dice, they asked, “How does this allow for students to make sense of the math they are engaging

in?... They are doing more, they are creating their own problems, they're more responsible for what they are learning and what they are doing.” Here, preservice teachers incorporated two representations of mathematics in early childhood instruction, through dots on dice and numerals representing values. They considered the agency of the student as they modified instructional content.

In another group, preservice teachers discussed using homemade number lines to support students' working with addition problems up to 10. They considered how this might impact classroom conditions and student engagement, looking to find the balance between interest and students on-task.

It's hands on, they are finding different ways to decompose and compose numbers, which is great. And, we were talking about it [that it] might be better than Unifix cubes, because [with] Unifix cubes they like to make swords, they like to throw them at each other... but this...is a resource that it's not loud, it's not really going to distract too many children around them, and they can just pull it out and hopefully use it on their own to help them. Preservice teachers attempted to balance the perceived demand for hands-on, engaging materials that would support students' understanding with those that would not be disruptive to the classroom or create the need for redirection. Furthermore, this group went on to discuss how the tool could be adapted to differentiate instruction by students' academic mastery, incorporating skip counting (Class Discussion, April 5, 2018).

Instructional resources that were both engaging, able to modify and differentiate, and straight forward to enact included ideas for number lines, base ten frame practice, and dice (Class Discussion, March 28, 2018). Many were used as a way to supplement worksheets and peak students' interest. This perception was echoed by another group on a different day. “When

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we were looking at things, we saw a lot of doing math and a lot of worksheets...we talked about how we can alter [our resource] into doing math, because that is more helpful than...learning steps” (Class Discussion, April 5, 2018).

Though preservice teachers encountered a large proportion of worksheets within Pinterest, they gravitated toward those more colorful resources that evoked positive affective reactions such as, “oh, this looks helpful or is kind of cute” (Class Discussion, March 28, 2018). Another group embedded content into their analysis of a resource at first glance, making predictions about how they might use the resource in a lesson. Examining a picture of Legos stacked upon one another, group members considered developing a lesson based on fact families in which students could count and stack Legos for one numeral and then count and add Legos in another color to visualize and present a fact family and sum (Class Discussion, March 29, 2018). In all reflections of resources, students’ learning, engagement, and behavior management was balanced—with engagement and learning take precedent over classroom management concerns. Worksheets were supplemented with active problem solving through manipulatives or movement within the classroom. Preservice teachers considered modification and enactment as they decided which resources to implement.

The Fifth Estate and Social Media: Preservice Teachers’ Perceptions

Through social media and online spaces, teachers across the world may seek out and share instructional resources as autonomous professionals. Preservice teachers perceived this opportunity to identify worthwhile resources online to be both helpful and fun. “A lot of the time we just look at the pictures and scroll, like, “oh that’s a good idea!” (Class Discussion, March 28, 2018). Though preservice teachers might often click through to find the source of origin, they also considered how much of their content should be from online sources. “We all have used

Pinterest before for our lesson plans, but we all feel we were told pretty early on, you can use it, but it shouldn't be your whole lesson plan, because it's only worksheets or activities" (Class Discussion, April 5, 2018). As aforementioned, consideration of the content and the purveyor of the content was also taken into account. Preservice teachers reported seeking out additional ideas and lesson plans through image clicking "because you can kind of evaluate [an image] just by looking at it, but when it's a lesson plan, or a full activity or game, you might actually want to read more into it and see what the credibility behind it is" (Class Discussion, March 28, 2018). Providing teachers' autonomy to identify instructional resources, despite unknown resource quality and transaction costs, defines teacherpreneurial behaviors (Torphy, Hu, Liu, & Chen, 2017). Teachers invest in these behaviors for the opportunity to direct the trajectory of their own classroom curriculum (Torphy, Hu, Liu, & Chen, 2017). Though preservice teachers were not independently managing a classroom, they were working with a classroom teacher throughout the year in schools. In fact, many of the interviewed preservice teachers, focused on Pinterest as an entrée to creative adaptation of curriculum. The autonomy afforded through virtual space to seek out and share instructional resources was something taken for granted by preservice teachers. Having yet to enter the profession, they conceived of teaching as an active practice of planning lessons and classroom activities with all available resources—from colleagues to cloud and mentors to teacherpreneur blogs (Torphy, Hu, Liu, & Chen, 2017). When asked what teaching would look like without social media, preservice teachers perceived challenges to creativity, adaptability to students' needs, and quality. "[Without social media] it would be really easy to repeat what you've done in the past if it kind of worked. And you probably would never get better because you'd just repeat what you've done (interview, April 5, 2018). Another preservice teacher echoed the idea of repeating lessons that worked in the past for a particular

teacher or oneself. “You might adjust the lessons that were in the book or that were handed down to you from teachers’ past” (Class Discussion, April 5, 2018). Repeating content from a limited pool of colleagues felt foreign to preservice teachers. They surmised that though information seeking might be more personal, it would also be more limited than the “1000s of teacher ideas” available online (Class Discussion, April 5, 2018). Becoming a teacher within an interconnected world and a Fifth Estate of network influence, preservice teachers found the notion that those most close in physical proximity could best support their needs unlikely.

The demand to adapt instructional resources and content to one’s local context and classroom created a sense of urgency to turn toward social media and the Fifth Estate. In a world of instant search and locate, the transactional costs of books exceed social media and virtual networks of advice. Preservice teachers felt there were fewer books than online blogs and virtual sources of professional support and resources. “I’m not seeing ‘wow, look at these books with all these great lesson plans!’ [Teachers] are saying, look at my blog, look at Pinterest, look at this online resource.”

For preservice teachers, perhaps the prevailing motivation for access to social media and networks of teacherpreneurs, or—the greatest consequence in a world without—was teaching quality. “Fifty years ago, it probably wasn’t that hard to be a boring terrible teacher” one respondent explained. She went on to say,

[Before teachers might say,] I’m not comfortable going outside my limits, and this is what I’m going to do. But now, it’s very easy and more difficult to be a bad teacher...just go on Pinterest and search “school,” you can find a lot of things, and it’s not even that hard because you can just print it out!...Or you can say, “wow, hey this blog is super

great!” let’s share it and somebody else can share something else with you to help you... Without it, I don’t know, I would suffer.

Within the Fifth estate, a norm of sharing ideas, advice, and resources with those known and unknown supports overarching concerns about teaching with this broad social support. Existing as an invisible net, preservice teachers feel confident they can search and share resources with one another that will promote engagement in content and quality.

Discussion

In the introductory remarks for the 2016 Innovation in Global Security Prize, Dr. Nayef Al-Rodhan, a philosopher, neuroscientist, and geostrategist, and Fifth Estate scholar, said, “It turns out, from an experimental standpoint, our most rational decisions are actually intertwined with emotionality” (<https://www.youtube.com/watch?v=4TnqYO6MlgM>). Rationality—the demands to meet students’ needs, connect with likeminded professionals, seek out mentor teachers and excellent resources, be creative, find something interesting—frames preservice teachers’ decisions regarding their engagement within social media. The affective components of this engagement, as teachers acting as autonomous professionals embed within a broader community of educators, align to the nature of teaching and learning. Education is an inherently social experience. Perhaps then, it is the *satisfaction* of seeking out, acquiring, and modifying new resources that makes teachers’ engagement in social media most rational.

For preservice teachers, examining resources within Pinterest and their sites of origin offered the opportunity to peer into other teachers’ classrooms and learn from their experiences. Perhaps challenging the notion of teaching behind closed doors (Lortie, 1975), social media provides unrivaled access to others’ classroom practices and reflections, particularly for

preservice teachers with limited experience in schools and classrooms. Many preservice teachers mentioned the notion of using virtual resources as an idea generator for modification or development of their own instructional tasks. Perhaps building off the old teaching adage, “why recreate the wheel?” preservice teachers saw their engagement within social media as an opportunity to exert their own teaching orientation to the tasks with which students were presented. Interestingly, this stands in contrast with the degree to which teachers modify district provided, published curriculum. However, for preservice teachers, classroom enactment defined success. “You can actually see if it was beneficial...once you implement it. You can say, oh maybe that didn’t work as well, or next time I’m going to do this, because you can come up with ideas at your computer.”

The overarching commonality across the emergent themes—teacher trust, autonomy, creativity, credibility, and a focus on student growth is an individual empowerment that is seeded in the networks of networks within the Fifth Estate. Individuals—teachers—develop relationships, social networks, and communities that provide a sense of belonging, trust, and access to knowledge and resources. The knowledge and resources teachers may access within social media presents the potential to help students learn, excite and engage learners, as well as extends teachers the opportunity to broaden their professional community and connect with likeminded individuals.

Broadly, it is unclear what the implications may be for teachers acting independently across classrooms and social media. Where 20th-century institutional forces exerted constraining pressure on individuals’ autonomy and planning (von Hayek, 1944), today we find teachers—public servants—redefining the diffusion of instructional resources and knowledge within their field. In a profession often overlooked, we find a case in point of a new world within the Fifth

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Estate that provides increased opportunity for entrepreneurship and potential for disruption within hierarchy. And, yet for a new generation of teachers and individuals across field, the act of engaging within social media, fostering social networks, and independently determining credibility of content is both routine and ungoverned. Thus, the Fifth Estate is not a purely educational phenomenon but echoes both a present and forthcoming reality of a sociological engine increasingly centered on individual and relational networks with peripheral institutional influence.

Changes in the landscape of information and social networks may redefine “what we know, whom we know, whom we keep in close touch and what services we obtain (Dutton, 2009, 4; Hampton 2016). Within teaching, professional development, sustained social networks, and greater access to an array of instructional resources may extend one’s ability to maintain touch with a peer preservice teacher or a favorite professor. Thus, as both in-service and preservice teachers work within education, Fifth Estate affordances provide networks of both known and unknown colleagues within social media.

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Figure 1. The three estates in historical Parliament

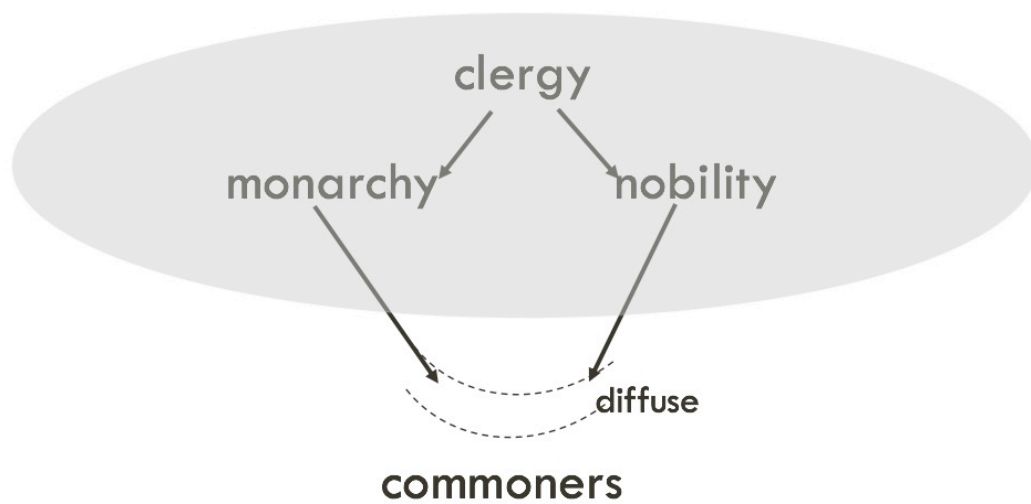


Figure 2. The Fourth Estate in historical Parliament

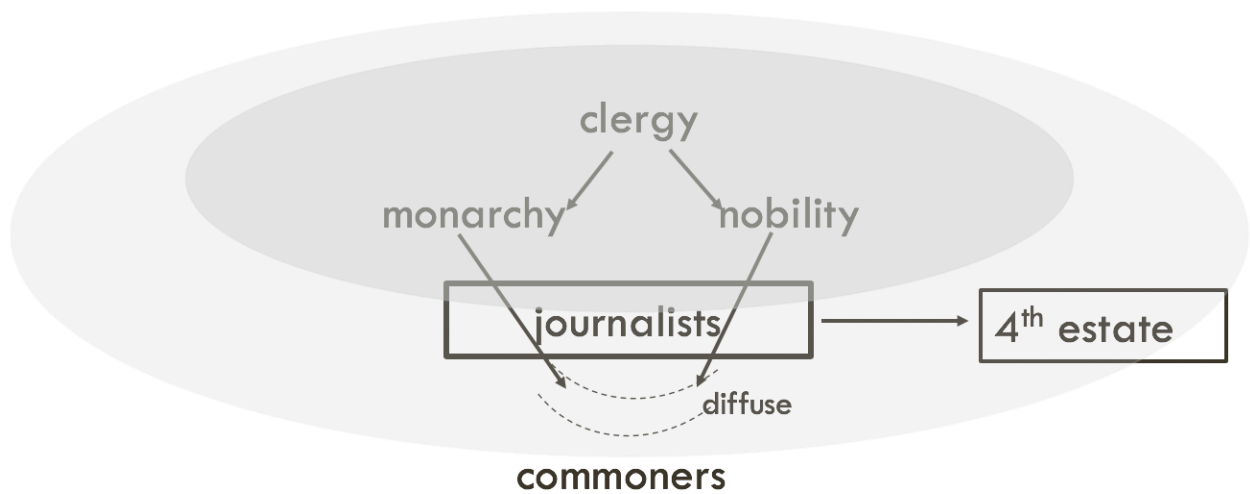


Figure 3. The Fifth Estate within social media

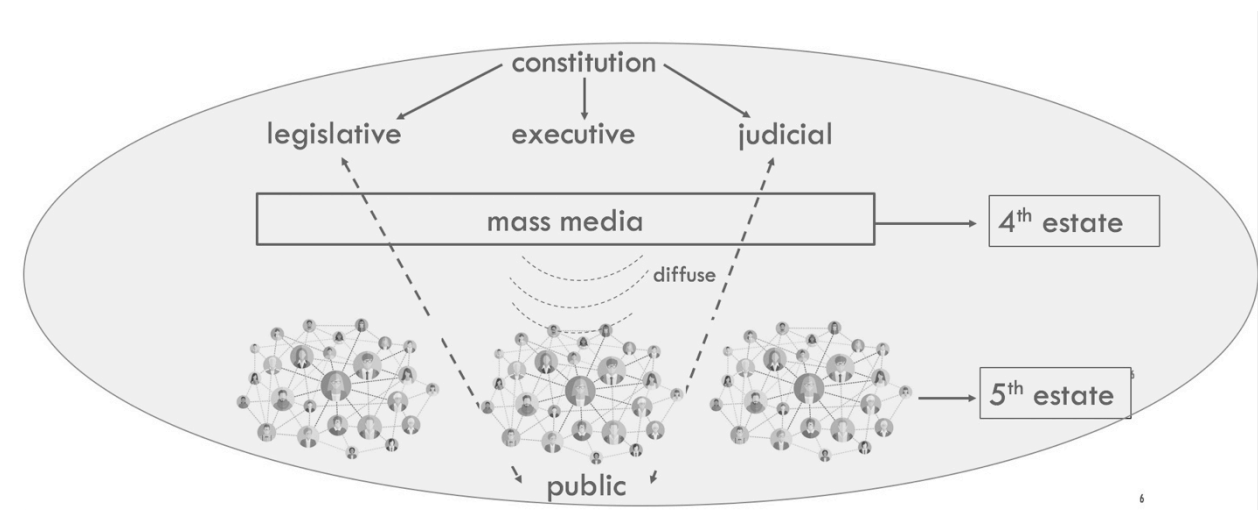


Figure 4. The Fifth Estate within education

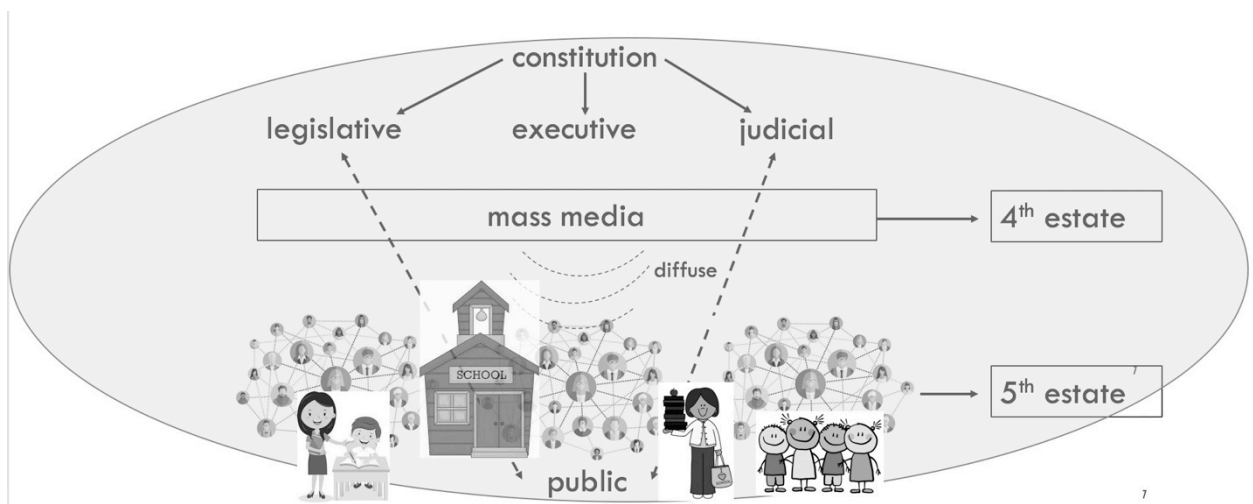


Figure 5. Emergent themes within education in the Fifth Estate

