



## Managing student digital distractions and hyperconnectivity: Communication strategies and challenges for professorial authority

Pauline Hope Cheong, Robert Shuter and Tara Suwinyattichaiporn

Hugh Downs School of Human Communication, Arizona State University, Tempe, AZ, USA

### ABSTRACT

Recent debates on the use of technology in classrooms have highlighted the significance of regulating students' off-task and multitasking behaviors facilitated by digital media. This paper investigates the communication practices that constitute professorial authority to manage college students' digital distractions in classrooms. Findings from interviews with American professors illustrate how they constitute their authority through distinct communication strategies including the enactment of codified rules, strategic redirection, discursive sanctions, and deflection. Furthermore, results highlight the multiple constraints and tensions in instructor communication to manage digital distractions in everyday and routine interventions. Insights generated in this paper contribute to deepening understanding of the (re)construction of contemporary pedagogical authority in times of digital hyperconnectivity, as well as its adaptations and challenges.

### ARTICLE HISTORY

Received 15 July 2015  
Accepted 6 February 2016

### KEYWORDS

Authority; digital distractions; technology; classroom management; communication; multitasking; hyperconnectivity

A University of Oklahoma Professor became an Internet sensation after a student recorded him submerging a laptop in bubbling liquid nitrogen and then smashing it to bits. The reason for his demonstration? To make an emphatic point that laptops are a distraction and to remind students of his course syllabus rule that electronic gadgets are not allowed in class. He reported that his students' attention in class had improved after the incident (Mortkowitz, 2010).

While the introductory narrative is striking and perhaps uncommon, little research has been conducted to document how instructors communicate their authority to fulfill pedagogical goals in the face of potentially mounting digital distractions. Student distractions and in-class diversionary activities like fiddling have historically been of concern to communication educators (e.g., Smith & Hawkes, 1972). The rise in mobile communication use has regenerated debate on diversionary activities, learning, and attention due to students' "hyperconnected lives" (Anderson & Rainie, 2012). Contemporary digital distractions in the classroom include disruptive summons and notifications from mobile phone ringing to instant messaging, and diversions like social media use for off-task

and recreational purposes. This paper explores the communication practices that constitute professorial authority to manage college students' digital distractions and the challenges faced by instructors' in their everyday interventions.

### Rise of digital distractions: practices and perspectives

Dominant conceptions of today's millennial generation highlight their "tethered" multitasking (Mihailidis, 2014) as a cohort of empowered and highly sociable learners armed with "smart phones" and social networking applications. Recent studies have documented the widespread practices of computer based task switching and multitasking by college students with noncourse-related software applications (e.g., Kraushaar & Novak, 2010). This view of millennials has prompted reconceptualization of traditional pedagogical roles to encourage social media integration in formal learning (Junco, 2014).

Multiple commentators have sounded cautionary notes centered on the challenges of capturing students' attention amidst endless information flows from portable media. Rheingold (2012) observed that college students stare at their digital devices in class, harboring "a strong sense of entitlement to the freedom to direct their attention wherever they want" (p. 16). Turkle (2011) noted that youths paradoxically "lose a sense of choosing to communicate" as they watch their lives "scroll by" with message interruptions (p. 163). Past experiments have also reported performance decrements on student note-taking, recall, and test performance (Kuznekoff & Titsworth, 2013), time for task completion (Bowman, Levine, Waite, & Gendron, 2010), and comprehension of lecture material for students' and nearby peers (Sana, Weston, & Cepeda, 2013). Thus off-task and intensified technology use is projected to adversely affect students' attention and herald an educational "dark age" (Jackson, 2008).

What appears to be less explored in the polarizing discourse on the rise of distracted students is the presence and impact of teachers in informing and directing the technologically related activities of young persons. As Selwyn (2009) argued, teachers, despite their common devaluation as "digital immigrants," still play "a valuable authoritative role" (p. 375) in young people's education. They help ensure equitable access to digital resources, manage their students' use of technologies and supply the governance for their effective collaborative and communal learning. Thompson (2013), who investigated whether college freshmen were distracted by classroom technology, concluded that these so-called "digital natives" still need coaching and "scaffolding from teachers" to utilize technology productively (p. 23). Traditional authorities like professors therefore have a continued role in supporting young adults' mobile media use, while shaping the behavior of their distracted students to conform to acceptable pedagogical practices.

A thorough understanding of how professorial authority is enacted and challenged is important as student hyperconnectivity and multitasking puzzles even threaten professors' authority to instruct in real-time university classrooms (e.g., Rheingold, 2012; Rosen, Lim, Carrier, & Cheever, 2011). This study examined how instructors manage digital media use in the face of students' distractive uses of communication technologies. We used in-depth qualitative methods that complement the neuroscientific tests, educational psychology experiments, and survey studies on the impact of technology use on college students' attention and learning. Specifically, we first examine the ways in which instructors communicate their authority to manage students' use of digital media and then highlight the challenges that they face.

## Communicating pedagogical authority: classroom strategies and challenges

Scholars advocating the central role that communication plays in the constitution of authority have proposed that authority is not just institutionally endowed but discursively cocreated and maintained between leaders and followers in situated conversations (e.g., Cheong, Huang, & Poon, 2011; Lincoln, 1994). Shifts in classroom authority occur as instructor–student communication is affected by students’ attentional shifts to alternative communication platforms for information and/or entertainment rather than focusing on their professor (Rheingold, 2012). The propensity for American university students to veer off academic tasks while studying has significant implications for professors’ ability to manage classroom instruction and motivate students to learn through mutual face-to-face interactions.

Professorial influence is diminished when students’ texting in class problematically affects their ability to attend and recall their instructors’ lecture (Rosen et al., 2011). There is greater reluctance in students to ask questions in class after they have become distracted (Annan-Coultras, 2012). Furthermore, ubiquitous informational access is changing how American college students perceive the credibility of traditional information sources like professors (Metzger & Flanagin, 2008), particularly when students approach Internet use for learning with a more cavalier attitude and trust in search engines to provide scholarly answers and explanations (Pan et al., 2007). The rise in rapidly “spreadable media” in contemporary participatory culture, associated with changing power and a crisis of legitimacy faced by established authorities and institutions (Jenkins, Ford, & Green, 2013), prompts instructors to overcome their loss of classroom control by constructing new norms.

Research suggests that instructors can communicatively (re)enact their authority through various discursive interventions when they sense distractions challenging their pedagogical practices (Cheong et al., 2011). These interventions include verbal and nonverbal enforcement of norms and rewards, and strategic practices whereby teachers redirect student attention and encourage them to cocreate information and expertise under conditions that preserves their authority to lead (Cheong et al., 2011; Heritage & Raymond, 2005). To curb distractive uses of technology, professors have been prompted to communicate the rationales behind their encouraging or discouraging policies on communication technologies to empower themselves and their students (Finn & Ledbetter, 2013). Researchers have also recommended that instructional uses of laptops and mobile media be intentional in “increasing student engagement” to allow interactive activities beyond PowerPoint lectures (Skolnik & Puzo, 2008), stimulation-based lessons to promote on-task Internet actions (Bulger, Mayer, Almeroth, & Blau, 2008), and sequential, rather than simultaneous, online and offline tasks during class (Kuznekoff, Munz, & Titsworth, 2015). Thus, prior research indicates that active and accommodative strategies including engagement with digital media may enable professors to construct new classroom practices and rebuild their authority. Therefore, we examine the following research question.

RQ1: In what ways and to what extent do professors manage the digital distractions they encounter as they communicate their authority in their classrooms?

As professorial authority relations are dynamic and coconstituted by teacher–student communication, instructors may face various instructional challenges as they enact

strategies in class to shape student learning and technology use. Wei and Wang (2010) pointed out that college students' mobile texting in class might be habitual and recurring in spite of teacher immediacy behaviors like verbal and nonverbal interventions to reduce the perceived physical and psychological distance between them. As newer apps and "push notifications" to students' devices appeal for their instant response, it is an uphill struggle to enforce communication rules.

Moreover, as much as some professors feel empowered by newer digital media, many may also feel they have less control over their classroom instruction. It is potentially challenging for instructors to detect students' clandestine technology use, particularly in large classes where students believe they can text without their instructors being aware (Tindell & Bohlander, 2012).

In particular, professors' ambivalent reactions to digital media management might be rooted in the same complex practices they enact to maintain their authority, leading to tensions in digital media use and evaluation (Cheong, Martin, & Macfadyen, 2012). While professors strive to incorporate technology to reconstruct rapport and engagement, they have to balance the potential benefits of computer assisted note-taking and online interactions which promote increased efficiency and enriched collaborative learning experiences, with students' distracting behaviors and decreased focus (Kay & Lauricella, 2011). Thus, we pose the second research question.

RQ2: What are the instructional challenges faced by professors as they appropriate strategies to manage digital distractions?

## Methods

### Participants

Participants in this study were 65 full-time faculty members drawn from a larger multi-method study on 1,280 students and 185 professors from North America, Europe, and Asia. Interviews were conducted with instructors in two American universities (a public research university in the Southwest, and a private university in the Midwest). Instructors interviewed were from 11 disciplines, with 55% of them in senior/full professor positions. Thirty-seven instructors interviewed were female, 28 were male. On average, they have taught 17 years in college ( $SD = 10.2$ ) and reported teaching class sizes that ranged from 15 to 500 students. They averaged eight hours online daily ( $SD = 6.4$ ) and ranked themselves a mean of 6.8 on the question, "On a scale of one to ten, with ten being the highest score, how technologically savvy do you consider yourself to be?" ( $SD = 1.9$ ). While more than three-quarters of instructors maintained a social media profile, less than a third of them have students on their networks.

### Data collection

The project was funded with support from the Business Academy Aarhus University of Applied Sciences and the College of Liberal Arts & Sciences, Arizona State University (2013–2015). Interviewees were selected from a nonprobability sample of researchers' contacts and were recruited via personal and email invitations after Institutional Review Board approvals were secured. The interviews were conducted between September 2013

and March 2014. Interviews took place at instructors' offices and lasted 20–45 minutes. Interviewees were offered a coffee card (US\$10) honorarium. The semistructured interviews covered three sections: (a) instructors' perceptions of classroom digital distractions and implications of technology for their work and student learning (e.g., "Have you encountered any issues within the classroom concerning inappropriate or distracting Internet and technology use among students?" and "How do you manage these problems and issues?"), (b) assessment of their classroom management and challenges to their authority (e.g., "To what extent do you think your classroom management strategies are successful or not successful?" and "Do you think instructors tend to be aware or unaware of how students are actually using their laptops and smart phones for nonclass purposes?"), and (c) their digital media use (e.g., "What do you typically do online?").

As we seek to understand the communicative practices constituting professorial authority, the use of self-reporting narratives serve to enhance our insights in instructors' personal experiences and perceptions, located within specific contexts and times. In addition to the multiple studies that have established the ability of qualitative research to generate rich data and reveal complex experiences and values, Waycott, Bennett, Kennedy, Dalgarno, and Gray (2010) have documented the strong potential of qualitative approaches as a means of comprehending faculty and student perceptions of communication technologies in the collegiate context.

### **Data analysis**

We transcribed all interviews in full (400 pages) and used NVivo 10 research software to facilitate a thematic analysis of the interviews, using constant comparative methods with a grounded theory approach (Lindlof & Taylor, 2002). To investigate the ways in which instructors communicate their authority to manage digital distractions (RQ1), we first performed open coding (Strauss & Corbin, 1998) on 20 randomly selected transcripts. We used separate NVivo user accounts and created nodes, which are a collection of references on the topic of professors' discursive management of digital distractions in class. We created nodes on NVivo through identifying and taking notes via the feature "memo link" to facilitate analytical thinking on our data sources (Hutchison, Johnston, & Breckon, 2010). After initial data categorization, we used a constant comparative method by returning to the data set in research meetings as a team to gain insight into the usefulness of the developed codes and refine them into mutually exclusive categories (Charmez, 2006). Subsequently, two researchers in the team coded the data. To check interrater reliability, we ran the "coding comparison" query on NVivo and found an averaged Cohen's Kappa score of .90, indicating excellent interrater reliability (Cohen, 1960). We discussed any disagreement, leading to consensus between the researchers. To capture recurring themes (Strauss & Corbin, 1998), we organized nodes into higher order themes using a tree node structure, organized hierarchically in categories and subcategories on NVivo (Hutchison et al., 2010) to identify the frequency of each theme.

Similarly, to examine the challenges faced by instructors as they manage digital distractions (RQ2), we used a grounded theory approach with a constant comparative method. We started with detailed microanalyses and repeated reading of passages relevant to instructional challenges to create nodes on NVivo. Based on discussions of our individual analyses during joint data analysis sessions, we then looked for regularity with which these

challenges recurred in the data. We developed and clarified the nodes of instructors' challenges until saturation occurred when new observations failed to add significantly to existing categories. After member checking with three respondents who reviewed draft results and validated our findings, we reviewed final categories to assure the quality and verification of the interpretations presented (Lindlof & Taylor, 2002).

## Results

### *Communication strategies in managing digital distractions*

Research question one asked how instructors communicate their authority to manage students' digital distractions in the classroom. We discuss below the strategies enacted, in order of their popularity among our interviewees. These strategies are categorized under four key themes: (a) codified rules, (b) strategic redirection, (c) discursive sanctions, and (d) deflection.

#### *Codified rules*

The most popular strategy enacted, mentioned by 49 of our interviewees, was the communication of rules to control digital distractions as codified in course syllabi and protocols. This preemptive measure—to “make it [rules] explicit” from course commencement and “make students sign” an agreement attached to the syllabus—included in many cases, a ban on mediated communication including “no cellphones,” “no laptops,” and “no texting.” More than half of the interviewees mentioned that they had a policy to manage students' technology use although official regulations varied in terms of details and execution.

A moratorium was imposed by 10 instructors on digital devices, with a basic “put your cellphone away” policy. Two professors from a Journalism school said they enforced their institution's regulation that disallowed any electronics in lecture classes, aside from laboratory courses requiring students to create web content. In a few instances, professors elaborated on their technology policy by spelling out the terms and conditions of technology use, as in the following example from a Communication professor's syllabus:

You are encouraged to bring your laptop to class to take notes. Laptops are to be used only for purposes directly related to the class content and information. You may not view or respond to emails during class. You may not conduct unrelated searches during class. If you're discovered to be using your laptop for purposes other than listed here, you will be asked to immediately leave the class and will not receive credit for the session or any activities conducted during that session. NO TEXTING. Cellphones should be turned to vibrate while in class and on silent or off when students are presenting. No phone calls should be accepted, only in case of an emergency. If you need to be contacted, campus safety can locate you in this class and will come for you.

A few instructors also said that their policy restricted cellphone and computer use to specific areas in class, for example in the front or back rows. Syllabus clause warnings also included penalties on classroom misbehaviors where professors reserved the right to dock “participatory points” for students' digital distractions.

But for a handful of instructors, their policies were less precisely worded and open to instructors' definition of what constituted “inappropriate” technology use. For example,



one instructor said, “my policy is that as long as they don’t bother other people.” Another instructor mentioned that he had an attendance policy that affected cellphone use, “I have a policy that says you don’t leave class unless it’s an emergency. And that seems to keep people from getting up and leaving the class to answer their phone.” Several instructors also commented that their policies were flexibly communicated to accommodate urgent needs.

### *Strategic redirection*

The second most popular classroom management practice included related acts of strategic redirection to help channel students’ attention to their digital distractions back to instructors’ teachings in class. This strategy included instructors’ cultivation of appropriate classroom norms via various teacher immediacy practices, and the integration of technology use in a timely and purposeful manner in class. For example, strategic redirection involved instructors’ prompts, such as “listen up” and “I want you to be engaged,” to build conducive classroom norms for learning. Students using digital devices are reminded to pay attention to course material to achieve learning milestones, as one Psychology professor said,

I try to say off the bat ... if you have a computer I expect you to look at class material, and engage in what we are doing ... I leave things out of the PowerPoint [presentation], so that only the students who are here and absolutely pay attention get all the information.

In many occasions, the call to refocus included instructors’ intentional posing of questions to maintain student interest and create propinquity. One Journalism professor turned his questioning practice around and said::

I ask them to ask me a question ... the entire class asked to stop and hear what is this person now going to ask and so it is a reset button. But the message is clear. Stop fiddling around with your laptop or whatever it is you are doing and start paying attention to me.

To steer students away from digital disruptions, professors also initiated dedicated discussions to what constitutes appropriate Internet use. The collective well-being and progress of the class are periodically stressed, as one Communication professor elaborated:

The first day of class I encourage them to bring their laptops, bring their information “seekers” to class but for classroom use only and I give them a specific example of how having technology in the room can benefit the entire group and that’s the purpose of having technology with us. It’s a tool to help the group understand things better.

Several instructors reported that they cultivated appropriate attentional practices by modeling the right technology use behaviors for their students, as illustrated by this quote below:

When I teach my executive MBA course, the first thing I tell them to do when I get into classes is switch off their computers. And it’s a big show, I take off my cellphone and turn it off, the whole idea is if you are engaging face-to-face communication then let’s use the richness of the environment.

Besides verbal instruction, instructors used facial gestures by giving students “a look” or “nod” to redirect their attention. Eight professors mentioned how they would walk

around their classroom to keep a check on potentially distracting activities and “lecture close to” offending students. One Communication instructor recounted this incident:

I generally walk around when I lecture rather than just stand at the front. And so that enables me to see what they are doing so, I snuck up behind the one girl who was playing Solitaire and I just pointed to her screen and said, “I think you should move that one there.” She was mortified. So she didn’t do that anymore.

Furthermore, strategic redirection of attention back to instructors is achieved through technology integration involving the timely use of mediated resources to boost classroom participation, such as wireless clickers to elicit students’ responses to instructor-posed questions during the lecture. In several cases, instructors structured laptop use to coincide with certain pedagogical operations. According to an Information Systems professor:

If we need to use the laptops for a particular software demonstration, I’ll try to organize that at the beginning when they come and get settled and make sure they know what they’re going to do on their computer is going to be important for what they have to do for their assignment or for their exam.

Related to this, about 20% of interviewees mentioned that they would ask their students to engage in impromptu online information searches so as to channel their attention to deepening understanding of class content. These extemporaneous practices allowed professors to realign their authority with prepared course materials, relying on follow-up interactions between the new found texts and class readings to sustain student interest as one interviewee explained:

When I notice that somebody is clearly engrossed in their computer or their cellphone and not paying attention to the lecture, I’ll usually ask them to browse something that’s related to the class for me so that I can include it to the lecture.

Besides on-the-spot information seeking, several professors also reported to purposefully fuze their lesson plans with newer media use like Skype, Facebook, Twitter, and digital software applications. One professor who teaches Gender Studies gave the following example:

We were talking about apps that are for little girls to play, dress up and one of the games is, they have these apps where little girls can be mommy’s little helper and sort the laundry. So I had them pull out their phones or their laptops and encourage them to download that app so that they can see how it works.

Slightly more than 10% of respondents shared that their use of digital tools included guided group projects, “giving them a task using technology but making it that they still have to interact with each other.” In this way, by managing different online and offline class activities to redirect students’ attention to them, professors enact and reinforce their authority to lead.

### *Discursive sanctions*

The third major classroom management strategy was the enforcement of communicative sanctions, which included public humiliation, personal reprimands, and disabling wireless access. About 15% of instructors said they engaged in “naming and shaming” or personal name calling to expose the transgressive act and humiliate the perpetrators. Four



respondents mentioned that they would joke about the distracting circumstance in order to shame offending students publicly, as in the case of one professor who said, “Occasionally, I walk around to the back of the room and look at their screens and I make claims like they’re watching pornography, shame on them, so I tease them.” Other shaming behaviors included how one professor who taught graphic design in a mediated classroom would “project on the projector what is on [students’] computer.” Another Journalism professor shared, “[offending] students had to bring treats for the entire class the next class period ... the class basically would look at the student and say ‘How could you do this and now you are going to feed us.’” Yet another form of public humiliation involved asking students to leave the classroom and notifying campus authorities.

Related to the enactment of discursive sanctions, a few instructors enforced disciplinary action by privately reprimanding students face to face or via emails. One professor recounted, “I had a student taking picture of me while I was lecturing ... said he was too lazy to write it down, so he just took a picture of the PowerPoint slide, I told him, ‘You can’t do that anymore.’” Finally, the use of sanctions included the removal of students’ wireless capabilities. Three instructors said they would threaten to or physically remove digital devices and connections by confiscating students’ phones. One Psychology professor said he tried to use an illegal cellphone jamming device which he bought from China in the classroom but it did not work.

### **Deflection**

In contrast with the above overt strategies, a fourth way of managing digital distractions was to deflect and ignore it. This strategy included professors’ shifting their focus away from managing deviant behavior to making their students accountable for their diversionary practices and consequences. In some cases, instructors chose to ignore the issue and dismissed students’ distractive behaviors as irrelevant or unimportant.

A fifth of the respondents said that they would stress that it is not their responsibility but their students’ “personal choice” to manage their media use. Common expressions from instructors that reflected deflection of the issue from their professorial work included, “I don’t think that’s my job,” “I feel like it’s their loss if they don’t want to be present then that’s their problem,” and “if you want to be on your phone, that’s your choice, you are an adult.” Two professors emphasized that they did not want to “babysit” young adults, and one of them said, “I think it comes down to individual students’ commitment to learning and those who are there to invest in doing better ... it’s not high school any more, it’s not my job to be a police person in the classroom.”

But a few instructors defined their authority in terms of their indifference to the issue by retaining for themselves the right to ignore classroom distractions. Several comments that illustrated this practice were, “if you want to sit in the back of the class and buy shoes, fantastic by all means, you know you can spend your tuition dollars however you want,” and “I let them do it [digital distractions] if that is what they want to do in class.” Hence, some instructors cope by minimizing their responsibility for students’ digital distractions.

### **Challenges faced by instructors in the management of digital distractions**

The second research question asked about the instructional challenges faced by professors in their classroom management of digital distractions. Our findings point to several

constraints and tensions that make up instructional challenges that confront faculty members. Constraints were conditions that limited professors' enactment of their classroom authority to curb distracting behaviors while tensions referred to opposing pressures inherent in enforcing classroom management practices. Constraints identified included their (a) classroom proxemics, (b) inability to detect digital distractions, and (c) limited class time for disciplinary interventions. Tensions in classroom management involved (d) instructors' need to "limit-engage" technology, and (e) the uncertainty of the "success-failure" of their strategies.

### *Constraints in the management of digital distractions*

One key constraint in classroom management of digital distractions was classroom proxemics or the spatial configuration of their classes. Professors said that large lecture theater settings negatively affected their ability to guide and redirect their students' attention. This is in part because they experienced increased pressure to cultivate instructor–student rapport and stimulate students' interest in a large class. Instructors said they "cannot compete with a good YouTube video" on students' laptops and draw students in "within a certain radius in the auditorium." On the other hand, instructors said that smaller class sizes in seminar room facilities helped improve their line of sight to monitor students' attention and redirect off-task technology-related behaviors. They highlighted how classroom design facilitated their management of digital distractions, for example, one professor of Theater Studies said:

There's a class I taught ... seminar tables were all the way around the room. There was an area in the center where I can move around and teach. And I find that if a student is not connecting, you can tell. You can get proximity to them and bring them back, when they are on technology or not.

Thus, in lecture halls where classroom architecture limited professors' abilities to interact and provide feedback to students, some instructors said they had to rely on teaching assistants to regulate their students' behaviors, if they had any support staff.

A second constraint faced by some instructors was the difficulty in detecting students' technology use and misuse, particularly how tricky it was to check on their students or be aware of what is "behind their screens." Students' covert engagement with their digital tools made it challenging for some to identify and manage digital distractions. One respondent said, "I'm looking at the screen or I'm writing things on the board then I don't realize that people in the class are not paying attention, they are scrolling around. It's frustrating." Another interviewee said, "I think students are fairly good at concealing it. I've been in classes that I've been attending as a student. You can look around and see students holding their cell phones under the table or behind the backpack."

Professors said that they experienced difficulties in assessing if students are being affected by digital distractions as they interact with their laptops and phones. One professor who teaches Robotics discovery and digital storytelling commented on the instructional challenges in managing distractions since she cannot accurately judge if students are learning "by having their technology going ... by tweeting their notes, by writing things into Facebook or blog." A few interviewees said that their relative lack of awareness of the nature

and occurrence of digital distractions was related to their teaching style, which in turn limited their ability to understand and spot students' off-task behaviors, for example:

That's hard to monitor ... I've never mastered that art of being able to walk up and down the aisle and lecture passionately about what I'm talking about and check on students, but I know they are not always where they are supposed to be.

A third constraint instructors identified was limited classroom time for disciplinary interventions as an obstacle to manage students' digital distractions. Some instructors said they could be "spending a lot of their time that they need for classroom instruction" on supervising their students' digital interactions but they needed to meet their class goals in limited classroom meeting times. Professors explained that the enforcement of disciplinary strategies like public callouts occupies valuable class time and interrupts their teaching, as exemplified by this quote:

The issue is how much do I want to disrupt the normal process of the class to deal with the technologically related behaviors of the few students who keep pulling out their cell phones or who use their laptops for things other than paying attention to the class. And I'm not willing to devote a lot of time to it because I think that issue then becomes far more important and takes up far more time and energy than the teaching and the content the other students might be getting.

For the classroom instructor, time is a limited and critical resource. Thus professors' comments on class time being lost to managing digital distractions underscore the instructional challenges that they face in accomplishing pedagogical objectives and enacting their classroom authority.

### ***Tensions in the management of digital distractions***

In addition to the above constraints, professors discussed two tensions that they struggled to balance and resolve as they enacted their classroom management practices. One major tension reported was the pressure to "limit-engage" multimedia. Several instructors said they would like to ban technology due to their disruptive potential, but they also recognized the importance for students to obtain intermittent online access for some classroom activities and note-taking. This conflict was particularly evident in instructors' deliberations over policies as they weighed the costs and benefits of digital access and use in class. For instance:

I have a hard time evaluating this because I think there are some real advantages for students having this connection in the classroom and being able to call things up online, to search things, to post comments or to tweet while class is going on. I don't think that's necessarily a problem. But what comes with that is the constant temptation to do things that are unrelated to the class because I can't see what they are doing on their screens. So I think there's mixed evidence there about its value.

Another professor noted:

Students can't seem to sit down and not have that cellphone or iPhone or whatever on their desk next to them. And the desire to scroll and text during classes is pretty strong. And I, as a rule, don't allow those. I allow computers for note taking ... But it's a problem, because they are not paying attention to their classes, they are just distracting me and others. So I wrestle with that because I can see that sometimes having the new technology can be useful but I'm not crazy about it.

Underlying this tension are perceptions of students' "sense of entitlement," and "rising expectations" for digital media use, which complicate professors' classroom interventions as one interviewee commented:

I think the technology is a blessing and a curse. It's an absolute necessity. Because the students today are always wired, connected, so it's what their expectations are. ... technology has created for me and others a lot more work ... expectations about what to do in the classroom, types of assignments and things like that are growing.

Another professor said:

[T]he idea of the consumer model in education is much stronger now because of the price of higher education ... there are always vocal students who will say 'I'm paying 20, 40,000 a year ... if I want to have my laptop out and look at Facebook that's my decision.' In my mind, I'm thinking, how was this even up for debate? My class, my rules.

Given the pressures to both limit and engage technology, several professors said that they have vacillated in their practices and shared "U-turns" or reversals made in their management philosophy and practices over time. For example, one professor of Earth and Science Exploration said using wireless clickers to control students' attention in her introductory geology class was effective in garnering students' interest but she ceased using them as they seemed less effective in the long run. Instructors also mentioned shifts in their classroom management strategies that highlight instructional challenges they face in limiting and engaging technology. For example, one professor said,

I've thought about just to have a flat out ban, especially laptop use. But I also understand that actually a lot of people do get a lot out of being able to type their notes and look up information about what you are speaking. So I don't necessarily want to do that. Also, I probably have some concern that I would be looked at as a Luddite ... It's the world we live in, our attentions are divided ... perhaps there's an argument to make that the classroom shouldn't be any different.

Another professor said:

In my large lecture, I had a policy that prohibited [computers]. They had to take notes on paper. I don't think I would do that anymore ... it's just too common now that students expect to be able to use their computer so I don't think that it's reasonable for me to continue with the policy.

Finally, another instructional challenge that instructors faced was the tension linked to the evaluation of the "success-failure" of their classroom management practices. Some instructors shared their reservations about the active management of their classrooms' digital distractions as they were often unsure of their accomplishments. Even as some interviewees have attempted to address their students' distractions proactively, they reported limited confidence in determining the success of their strategies as one professor said, "I can't see what's on their computers so I don't know. I leave it to them. I have my policies but I don't have an effective way to enforcing them unless other students complain about it." Another instructor reported:

In the big class, I just say no laptop, no phone ... For the smaller one, I tell them they can use the laptop. But even in the small class around the table with me right there, they'll be on email, tweeting ... I wish there's a way to lock [access] so that there's something I can do but they can't ... so [I] am not happy with that solution but I don't know what else to do.

Moreover, several instructors shared their frustrations in their classroom management, due to what appeared to be mounting difficulties in tackling digital distractions in technology equipped classrooms. Professors raised the point that it was impractical, if not impossible, to enforce their strategies consistently to curb students' distractions. According to some, it was "futile" or "impractical" to block or restrict students' digital activities due to the broader culture of hyperconnectivity that impel multitasking practices. As a result, several professors expressed more fatalistic views about their students' compulsive online behaviors that rendered digital distractions a practically intractable challenge in spite of their best efforts to tackle them: One interviewee said, "They are addicted to their screens no matter what you do ... even when I'm showing a movie, they got their screens going on and texting and whatever." Another professor noted,

Students appear to have a compulsion ... their social network is so glued to technology that they have to use technology, Facebook or texting in class. It's just I have never succeeded in eliminating distractions of that nature from my class.

## Discussion

In recent years, educators have noticed how student attention is diverted to buzzing phones and other wireless computing devices. Moving beyond popular discourse and anecdotal data, this paper presented systematic research to bring fresh empirical insights on instructors' communicative practices and challenges as they address young adults' shifting attention in class. As Preiss and Wheelless (2014) pointed out, scholars need "to consider the context facing the next generation of students and faculty" including learning environments characterized by digital media use and multitasking (p. 319). Accordingly, this study makes an important contribution to research that addresses the growing interest in pedagogical contexts of the digital age.

Results from examining the first research question clearly indicate that instructors use a variety of strategies to manage digital distractions and communicate their authority in 21st-century learning environments. The myriad approaches elucidated here strongly suggest that instructors are challenged by the demands of digital media and are in search of pedagogical approaches that not only manage learners' uses of media but also preserve and yet reconfigure their authority in the classroom. For instance, the common use of codified rules in course syllabi to prohibit or control students' technology use illustrates how strict communicative practices are enacted to maintain instructors' right to curtail mediated behaviors perceived to be disruptive to classroom order. These classroom technology policies highlight the potential impact instructors have on cultivating a classroom climate to promote learning, particularly to preserve their capacity to lecture or lead discussions without the interference of digital disruptions. Similarly, many instructors mentioned specific communication strategies like prompts, instructor-posed questions and reminders of appropriate technology use, to redirect their students' attention back to them and their course goals. These findings related to instructors' "strategic redirection" adds to existing literature, which highlight how teachers' immediacy is central to classroom management and to facilitate student learning (e.g., Burroughs, 2007).

Likewise, findings illustrate how instructors seek to reconstitute their authority by incorporating digital media, for example, through impromptu online searches and

adoption of digital applications. These strategies may bolster the instructors' "tech cred" which can help garner the implicit support and participation of students so necessary to successfully manage distractions and optimize learning. Integrating digital technologies in lesson plans also increases opportunities for collaborative information sharing, to attain learning goals that are consistent with growing research on the importance of the digital participatory culture (Jenkins, 2009).

Furthermore, findings that shed light on multiple instructional challenges suggest that instructors need to be aware of how students' use of digital media is affected by contextual factors. Our findings on classroom proxemics, for example, extend prior research on the adverse effects of large classes on teaching as teachers report less opportunities to interact with and provide feedback to students (Cuseo, 2007) who believe they can engage in text messaging in larger lecture hall settings (Tindell & Bohlander, 2012). In addition, findings that point to tensions classroom management that are oftentimes challenging for instructors to reconcile, may be adversely affected by spillover behaviors, in this case, from students' unbridled technology use at home and outside class. Specifically, the life stage of young adulthood "could be seen as a form of culture" that affect college students' habits and attitudes toward mobile phone use (Axelsson, 2010). Traits like individualism and narcissism have been connected to intense and uninhibited digital media use among young adults (Malikhao & Servaes, 2011). Thus students' media routines may disrupt and complicate the classroom management of professors.

In sum, findings of this paper point to several recommendations that could shape instructional practices in class. One key conceptual and empirical insight from our research is that pedagogical authority is not merely a fixed institutional appointment but can be conceived as a communicative practice that is discursively and dynamically constituted between instructors and students. That is, professors can work to (re)construct their authority in light of digital distractions in order to refocus students' attention and sustain their capacity for leading class meetings. Specifically, findings here highlight how instructors can use a repertoire of different messages in different verbal, nonverbal and mediated forms. Beyond banning the use of all technologies in class, instructors can enact different strategies to redirect and localize students' attention. For instance, professors can heighten classroom engagement by periodically posing or seeking questions from students, reinforcing eye contact or circulating themselves in class for closer physical proximity to curtail students' digital distractions. Moreover, to discourage off-task behaviors, professors can nurture appropriate classroom norms overtime, for example, by role modeling technology use via public demonstrations, initiating discussions on Internet propriety to underscore the disadvantages of multitasking as well as discourtesies of digital distractions to ones' peers, or as one of our respondents puts it, enacting "an honor code" which builds trust and mutual respect to cultivate civic classroom etiquettes.

At the same time, as part of creating a supportive climate for classroom participation, instructors can encourage students' use of technology, but under conditions where digital connections are purposefully timed to maintain students' focus on instructors' teachings, for instance during a specific time period where clear rules have been issued on the use of a particular software or application. Professors can also incentivize forms of collaborative engagement to facilitate students' cocreation of expertise using digital technologies in class, alongside guidelines to minimize digital distractions. In this regard, results here complement the latest recommendations by Kuznekoff et al. (2015) that instructors



plan for a technology break during class time for students to compose messages on their digital devices to ensure that mobile phone use does not interfere with students' listening and note-taking.

However, despite instructors' best efforts to manage students' use of digital media, there are macro sociocultural factors that can confound and complicate classroom management strategies. In particular, the influence of the contemporary culture of hyperconnectivity on students' narcissistic and self-centered technology-related diversions, points to how the performance of professorial authority is profound and situated amidst ideological, institutional, and individual agendas and power (Pace & Hemmings, 2007). Hence, instructors who actively endeavor to manage students' digital distractions but invariably encounter challenges need not be discouraged. They can be reassured that other professors, as our research has shown, also face comparable constraints and tensions in their work that are oftentimes difficult to reconcile. Above all, instructors can be reminded that "the war on laptops" and in-class use of other electronic devices (Mortkowitz, 2010) are symptomatic of a larger battle over attention and informational control, reflective of the ongoing contestation of pedagogical norms and values as digital mediums coevolve with users' engagement and learning.

### ***Limitations and future research recommendations***

This study has several limitations that should be addressed in future research. In light of our nonrandom sampling, results are skewed toward the views of senior professor respondents. To extend the scope of this study, we are engaged in ongoing analyses on more diverse samples in global projects in order to understand sociocultural influences on instructors' communication practices related to technology use and disruptions. Specifically, a study found that perceived teacher power (influence and use of power bases) mediated the relationship between perceived teacher wireless technology policies in class and perceived teacher credibility (Finn & Ledbetter, 2013). This finding raises the possibility that professors working in cultures with a high power distance or greater perceived teacher–student inequity will implement more stringent regulations to block digital distractions. Comparative analyses in other international locales would illuminate cross-cultural dynamics in teaching strategies and challenges.

Finally, as interview data are self-reports, the advantage is that instructors' voice and views are represented here, to complement the small but growing corpus of experimental and survey studies on digital distractions. Future in-class observational analyses could help refine understanding of the contingent nature of professors' management techniques and their constraints. It is worth noting here that besides rule imposition, some professors mentioned that their strategies were performed reflexively on a case-by-case basis, as there was no "uniform approach for resolving the [distracting] concerns." A few shared that they used a "multitiered" approach, moving from making general announcements to private messages, then enacting stiffer penalties on recalcitrant offenders. Thus, in-class observations could illuminate the factors related to instructors' breadth of classroom management practices in finer detail.

In conclusion, in the throes of increasing digital media use and the miniaturization of electronic and wearable devices, future research related to digital immersion and distractions will enrich our understanding of pedagogical practices and innovations. As digital connectivity intensifies, questions on how professors work to enhance student learning will possibly be amplified in classroom discussions and in media debates. In this regard,



evidence-based communication research on classroom management will considerably illuminate how professors reconstruct their authority and influence in the present and imminent media manifold.

## Acknowledgments

Pauline Hope Cheong is at the Hugh Downs School of Human Communication, Arizona State University. This research was supported by the Business Academy Aarhus University of Applied Sciences, the College of Liberal Arts & Sciences, Arizona State University and the Diederich College of Communication, Marquette University. We are grateful to the following students for their research assistance: Dara Fife, Yashu Chen, Juncheng Yan, Bhoomika Bhagchandani, and Rui Shang. We are also thankful to the editor and anonymous reviewers for their helpful recommendations for the paper.

## References

- Anderson, J. Q., & Rainie, L. (2012). *Millennials will suffer and benefit due to their hyperconnected lives*. Washington, DC: Pew Research Center.
- Annan-Coultas, D. L. (2012). Laptops as instructional tools: Student perceptions. *TechTrends*, 56(5), 34–41.
- Axelsson, A. S. (2010). Perpetual and personal: Swedish young adults and their use of mobile phones. *New Media & Society*, 12, 35–54.
- Bowman, L. L., Levine, L. E., Waite, B. M., & Gendron, M. (2010). Can students really multitask? An experimental study of messaging while reading. *Computers and Education*, 54, 927–931.
- Bulger, M. E., Mayer, R. E., Almeroth, K. C., & Blau, S. D. (2008). Measuring learner engagement in computer-equipped college classrooms. *Journal of Educational Multimedia and Hypermedia*, 17, 129–143.
- Burroughs, N. F. (2007). A reinvestigation of the relationship of teacher nonverbal immediacy and student compliance-resistance with learning. *Communication Education*, 56, 453–475.
- Charmez, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. London, UK: Sage.
- Cheong, P. H., Huang, S. H., & Poon, J. P. H. (2011). Religious communication and epistemic authority of leaders in wired faith organizations. *Journal of Communication*, 61, 938–958.
- Cheong, P. H., Martin, J. N., & Macfadyen, L. (2012). Mediated intercultural communication matters: Understanding new media, dialectics and social change. In P. H. Cheong, J. N. Martin, & L. Macfadyen (Eds.), *New media and intercultural communication: Identity, community and politics* (pp. 1–20). New York, NY: Peter Lang.
- Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement*, 20, 37–46.
- Cuseo, J. (2007). The empirical case against large class size: Adverse effects on the teaching and learning of first-year students. *Journal of Faculty Development*, 21, 5–21.
- Finn, A. N., & Ledbetter, A. M. (2013). Teacher power mediates the effects of technology policies on teacher credibility. *Communication Education*, 62, 26–47.
- Heritage, J., & Raymond, G. (2005). The terms of agreement: Indexing epistemic authority and subordination in talk-in-interaction. *Social Psychology Quarterly*, 68, 15–38.
- Hutchison, A. J., Johnston, L. H., & Breckon, J. D. (2010). Using QSR-NVivo to facilitate the development of a grounded theory project: an account of a worked example. *International Journal of Social Research Methodology*, 13, 283–302.
- Jackson, M. (2008). *Distracted: The erosion of attention and the coming Dark Age*. Amherst, NY: Prometheus Books.
- Jenkins, H. (2009). *Confronting the challenges of participatory culture. Media Education for the 21st century*. Cambridge, MA: MIT Press.

- Jenkins, H., Ford, S., & Green, J. (2013). *Spreadable media: Creating value and meaning in a networked culture*. New York, NY: NYU Press.
- Junco, R. (2014). *Engaging students through social media: Evidence-based practices for use in student affairs*. San Francisco, CA: Jossey-Bass.
- Kay, R. H., & Lauricella, S. (2011). Exploring the benefits and challenges of using laptop computers in higher education classrooms: A formative analysis. *Canadian Journal of Learning and Technology*, 37(1), 1–18.
- Kraushaar, J. M., & Novak, D. C. (2010). Examining the effects of student multitasking with laptops during the lecture. *Journal of Information Systems Education*, 21, 241–251.
- Kuznekoff, J. H., Munz, S., & Titsworth, S. (2015). Mobile phones in the classroom: Examining the effects of texting, twitter, and message content on student learning. *Communication Education*, 64, 344–365.
- Kuznekoff, J. H., & Titsworth, S. (2013). The impact of mobile phone usage on student learning. *Communication Education*, 62(3), 233–252.
- Lincoln, B. (1994). *Authority: Construction and corrosion*. Chicago, IL: University of Chicago Press.
- Lindlof, T., & Taylor, B. (2002). *Qualitative communication research methods*. Thousand Oaks, CA: Sage.
- Malikhao, P., & Servaes, J. (2011). The media use of American youngsters in the age of narcissism: Surviving in a 24/7 media shock and awe—distracted by everything. *Telematics and Informatics*, 28, 66–76.
- Metzger, M. J., & Flanagin, A. J. (Eds.). (2008). *Digital media, youth, and credibility*. Cambridge, MA: MIT Press.
- Mihailidis, P. (2014). A tethered generation: Exploring the role of mobile phones in the daily life of young persons. *Mobile Media and Communication*, 2, 58–72.
- Mortkowitz, L. (2010, April 25). More colleges, professors shutting down laptops and other digital distractions. The Washington Post, Retrieved from <http://www.washingtonpost.com/wp-dyn/content/article/2010/04/24/AR2010042402830.html>.
- Pace, J. L., & Hemmings, A. (2007). Understanding authority in classrooms: A review of theory, ideology, and research. *Review of Education Research*, 77, 4–27.
- Pan, B., Hembrooke, H., Joachims, T., Lorigo, L., Gay, G., & Granka, L. (2007). In Google we trust: Users' decisions on rank, position, and relevance. *Journal of Computer-Mediated Communication*, 12, 801–823.
- Preiss, R. W., & Wheelless, L. R. (2014). Perspectives on instructional communication's historical path to the future. *Communication Education*, 63, 308–328.
- Rheingold, H. (2012). *Net smart: How to thrive online*. Cambridge, MA: MIT Press.
- Rosen, L. D., Lim, A. F., Carrier, L. M., & Cheever, N. A. (2011). An empirical examination of the educational impact of text message-induced task switching in the classroom: Educational implications and strategies to enhance learning. *Psicologia Educativa*, 17, 163–177.
- Sana, F., Weston, T., & Cepeda, N. J. (2013). Laptop multitasking hinders classroom learning for both users and nearby peers. *Computers and Education*, 62, 24–31.
- Selwyn, N. (2009). The digital native—myth and reality. *Aslib Proceedings: New Information Perspectives*, 61, 364–379.
- Skolnik, R., & Puzo, M. (2008). Utilization of laptop computers in the school of business classrooms. *Academy of Educational Leadership Journal*, 12(2), 1–10.
- Smith, R. R., & Hawkes, R. W. (1972). The fiddle factor: Social binding functions of distractions. *Journal of Communication*, 22, 26–38.
- Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (2nd ed.). Thousand Oaks, CA: Sage.
- Thompson, P. (2013). The digital natives as learners: Technology use patterns and approaches to learning. *Computers & Education*, 65, 12–33.
- Tindell, D. R., & Bohlander, R. W. (2012). The use and abuse of cell phones and text messaging in the classroom: A survey of college students. *College Teaching*, 60, 1–9.
- Turkle, S. (2011). *Alone together: Why we expect more from technology and less from each other*. New York, NY: Basic Books.

- Waycott, J., Bennett, S., Kennedy, G., Dalgarno, B., & Gray, K. (2010). Digital divides? Student and staff perceptions of information and communication technologies. *Computers & Education*, 54, 1202–1211.
- Wei, F. F., & Wang, Y. K. (2010). Students' silent messages: can teacher verbal and nonverbal immediacy moderate student use of text messaging in class? *Communication Education*, 59, 475–496.