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Chat It Up: Backchanneling to Promote Reflective Practice Among In-Service Teachers

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Abstract

In a graduate education course geared toward developing reflective teaching practice in in-service teachers, backchannels, in the form of chat rooms, were employed in small groups to facilitate peer feedback during viewings of video recorded instruction. This study examined the nature and quality of peer feedback exchanged in the digital medium and gauged graduate students' impressions of the technology, with potential for carryover into their professional practices in P-12 instruction. Results revealed that the backchannel was perceived as an easy-to-use tool that promoted rich, real-time, high-quality feedback and a space to collaborate and exchange ideas, while improving engagement. Backchannel comments had mostly positive or neutral tone, and took the form of observations, compliments, and helpful coaching prompts. Comments were overwhelmingly focused on instructional strategies, teacher behavior, and the learning environment. Participants saw value in utilizing backchannels in P-12 settings, but some expressed hesitation in using such tools with young students.

Key words: backchannel, chat, peer feedback, engagement, teacher education, reflective practice

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Introduction and Framework

Largely unfettered access to the internet, the proliferation of technology, and mobile devices have transformed the educational landscape. Computer labs, 1:1 computing initiatives, the deployment of tablets and mobile phones, and even Bring Your Own Device (BYOD) policies have changed the expectations surrounding teaching and learning significantly. As schools increasingly look to technology to deliver and improve instruction, teachers are tasked with meaningfully and appropriately harnessing digital tools to enhance their practice. This must be done with intentionality to avoid creating the problem of the “\$1,000 pencil,” where fancy gadgets fail to meaningfully transform pedagogy (November, 2013). Experts in educational technology rightly caution against technology to support centuries-old educational practices, as recognition is growing of the “insufficiency of throwing digital tools into classrooms without further support and expecting valid changes in teaching and, more importantly, improved student outcomes” (International Society for Technology in Education [ISTE], 2016, p. 2). The professional organization International Society for Technology in Education calls educators to harness “technology’s potential to amplify human capacity for collaboration, creativity and communication” through transformed teaching and learning, and the empowerment of connected learners in a connected world (International Society for Technology in Education [ISTE], 2017, para. 2).

Researchers also document the potential for interconnectedness and opportunities for student learning through technology (Mueller, 2009; Yardi, 2008). These opportunities are not

without challenges, however, as schools adapt to a culture of supporting innovation and professional risk-taking among teachers on the front lines of the change (November, 2013). Exciting innovations, strategies, and tools are emerging to connect students and enhance learning. This study focuses on interconnectedness and learning through the concept of backchanneling, a means of promoting real-time conversation through online chat platforms simultaneous to a shared learning event. The application of the backchannel in this study is one strategy to harness an emerging digital tool to support student capacity-building around collaboration, creativity, and communication (ISTE, 2017).

Evolution of Backchannel Concept

Prior to the internet chat room context, the definition of a backchannel was conversational devices used by listeners to signal engagement (Yngve as cited in White, 1989). Yngve established the context for two conversational channels, described by White (1989) as the acknowledged speaker's communication, or the "main" channel, and the listener's verbal and nonverbal responses as the "back channel." In linguistic studies of conversational and cultural interaction, backchannels serve as a "response code" for listeners to signal verbal and nonverbal engagement (White, 1989).

Modern definitions establish a backchannel as a technology-enhanced online, synchronous conversation, "limited in time to the duration of a live event" (Atkinson, 2010, p. 17). While a primary speaker or event serves as a front channel, a concurrent digital discussion expands the conversation as the back channel, regardless of whether or not the speaker acknowledges it. The backchannel listeners do not "claim the floor" from the speaker (White, 1989, p. 59). Digital backchannels are defined as "collaboration tools by people sharing physical spaces in real time" (McCarthy & Boyd, 2005, p. 1641), and they have gained traction in a

variety of contexts in recent years, including academic conferences and educational settings (Fiester & Green, 2016; Ross, Terras, Warwick, & Welsh, 2011). Backchannels can be hosted on a variety of web-based or social media and microblogging platforms, including Twitter, Facebook, and Edmodo, which require user accounts. Other services, such as TodaysMeet and Chatzy, do not require account-creation and can be utilized by instructors with ease.

A Challenge in Practice

The university context for this study is one with strong value placed on small classes with personalized interactions. As a requirement of a “Reflective Teaching Practice” course, in-service teachers enrolled in a graduate program in Curriculum and Instruction at a liberal arts university videotaped themselves delivering instruction in their respective P-12 teaching settings. In advance of videotaping their instruction, the participants self-selected an area of focus that interested or challenged them regarding their own practice and created a research-based rubric to address the area of interest. Participants brought their recorded instruction to class and met in small peer groups, formed by similarities in grade levels taught, to use the rubric and view their own and peer recorded instruction with the purpose of studying instructional practice and providing peer feedback.

Prior to this study, students in the course watched classmates’ instructional videos and provided feedback through traditional oral and paper methods. Oral feedback tended to awkwardly occur simultaneous to the playing of video footage, or with pauses that interrupted the video’s flow, and/or after a full 10 to 15-minute segment, which seemed to allow for global observations, but limited specific feedback. These factors made the small group viewing time-consuming and disjointed. Students occasionally wrote notes on the paper rubric throughout the

video viewing, but the written feedback provided was brief and one-way, not allowing for deep exchange of ideas or group analysis.

A Need for Enhanced Peer Feedback Methods and Study Purpose

The instructors recognized the peer video review as a vital component of student development as reflective teachers, and saw an opportunity to introduce technology as a means to potentially improve the feedback process. In an effort to increase deeper collegial discussion about instructional practice, the researchers decided to employ a backchannel in each video viewing group. Simultaneous to viewing, participants engaged each other in a backchannel or chat room, giving and receiving real-time feedback related to the videos of instruction. The researchers incorporated the backchannels to supplement traditional feedback methods and address the challenges observed in the traditional feedback format by providing a mechanism for real-time discussion.

The purpose of the study was to examine the nature and quality of peer feedback exchanged in the digital medium and to gauge graduate student perceptions of the technology for use in their own pedagogical applications in P-12 classrooms. The research questions were:

1. How did the backchannel impact the viewing experience?
2. How did the backchannel impact the nature and quality of peer feedback – compared to the traditional method of discussion throughout, and/or discussion and written rubric feedback solely at the end of the shared instructional videos?
3. What were the perceptions of students regarding the possible implementation of backchannels in their P-12 instructional contexts?

Literature Review

Backchannels can engage students by using technology that is already an integral part of their lives (Cronin, 2011), providing opportunities for equal voice among peers that allow for “substantive conversations, eliciting more thoughtful feedback, and inspiring higher-order thinking skills” (Jarrett & Devine, 2010, p. 44). A backchannel “can be constructive when it enhances and extends helpful information and relationships” (Atkinson, 2010, p.17).

Backchanneling can facilitate many well-documented aspects of effective learning including differentiation and active engagement (Aagard, Bowen, & Olessova, 2010; Camiel, Goldman-Levine, Kostka-Rokosz, & McCloskey, 2014; Donovan, Bransford, & Pellegrino, 1999; Pohl, Gehlen-Baum, & Bry, 2012; Poleon & Krishnan, 2013; Yardi, 2008), increased questioning (Bussieres, Metras, & Leclerc, 2012; Camiel, et al., 2014; Pohl, Gehlen-Baum, & Bry, 2012); firsthand construction of knowledge (Bruner, 1966; Li & Greenhow, 2015), and contextual social interactions (Brown, Collins, & Duguid, 1989). In addition to congruence with sound pedagogy, benefits may also include low risk of participation for students, building a community of learners, providing students with an additional network of support, answering procedural questions without interrupting the delivery of instruction, obtaining feedback from a large numbers of students in less time, developing metacognition and reflection, modeling how to listen and engage with others, learning aspects of media literacy and digital citizenship, determining what and how students are thinking, formative assessment, and the ability to tailor instruction to student interests and feedback (Baron, Bestbier, Case, & Collier-Reed, 2016; Bussieres, Metras, & Leclerc, 2012; Camiel, et al., 2014; Cronin, 2011; Poleon & Krishnan, 2013; Mueller, 2009; Ugoretz, 2005; Yardi, 2008).

In higher education settings, researchers have documented positive responses from student-participants in backchannels, citing ease of use, and a positive influence on participation,

including increased frequency of student remarks and questions (Cronin, 2011; Pohl, Gehlen-Baum, & Bry, 2012). Negative concerns center around digital citizenship and etiquette (Toledo, 2010), however Pohl, Gehlen-Baum, and Bry (2012) reported “only a small fraction” of messages were off-topic, suggesting students’ ability to rise to the challenge of responsible use of the tool for educational purposes. Fox and Varadarajan (2011) advocate for a balanced approach to the use of a backchannel, leveraging its benefits appropriately while being mindful of potential drawbacks.

From a critical perspective, the intensification of technology use in our daily lives has potential for a negative impact. Turkle (2006) speaks of the altered state of being when we are tethered to devices. Carr references Greenfield’s work on the diminished capacity for “deep processing” that underpins “mindful knowledge acquisition, inductive analysis, critical thinking, imagination, and reflection” (Greenfield, as cited in Carr, 2011). Backchannels may create challenge regarding attention to multiple lines of communication - what some participants term “continuous partial attention” or “continuous inattention” (McCarthy & Boyd, 2005). Researchers have cited the risk of participant distraction from lecture due to an increase in cognitive load from attending to multiple tasks (Pohl, Gehlen-Baum, & Bry, 2012), denying each task the full “mind share” it might otherwise use (Turkle, 2006).

Rather than fearing the unknown or shying away from the potential of backchannels, Mueller (2009) encourages educators to personally embrace the related technologies to allow for fluent application in the classroom, and Cronin (2011) encourages instructors to leverage likely-occurring online chats for instructional benefit. In that spirit, the researchers set out to investigate the impact of the use of a backchannel in the higher education environment, with

expectation that the experience with the practice may carry over to participants' P-12 teaching environments.

Methodology

Research Design and Data Sources

In this study, the researchers sought to examine the nature and quality of peer feedback exchanged in a backchannel and to gauge graduate student perceptions of the technology for use in their own pedagogical applications in P-12 classrooms.

The researchers defined a backchannel as an online, synchronous conversation that complements a "front channel" presentation or event in an instructional setting - in this case, the videotaped instruction.

The study employed a mixed methods investigational approach that included two major sources of data: backchannel transcripts and a participant survey. The backchannel transcripts of graduate students' conversations were qualitatively analyzed to examine the nature and quality of feedback given and received as they viewed videotaped instruction of themselves and their peers. Additionally, frequencies and percentages of codes were calculated. To gauge students' experience and perceptions related to the backchannel, an optional online survey was administered after each peer video share activity. Using a Likert scale to rate agreement and open-ended prompts, the survey explored participant familiarity with backchanneling and perceptions regarding the use of backchannel in graduate and P-12 instruction.

These two data sources, transcripts and surveys, allowed the researchers to investigate the nature of interactions among students, the quality of feedback exchanged, and the perceived value of the backchannel in higher education and P-12 settings.

Participants and Study Approval

The study was reviewed and approved annually by the University's Institutional Review Board. While all students were required to participate in the video sharing experience as part of the course, the use of backchannel as a feedback mechanism and the survey were optional. All students opted to use the backchannel and the survey had a 65% response rate.

The Reflective Teaching Practice course was taught three times, by the same instructors each semester, with identical syllabus requirements, including the peer video share activity. Three cohorts with a total of 34 students participated in this study, representing 32 in-service P-12 teachers actively teaching in public school divisions and independent/private schools from across the same metropolitan area, one high school program director, and one college program director. Although one of the 34 participants was not serving in a P-12 setting, for simplicity, the researchers will use the language of "P-12 teacher" throughout this study. The three cohort groups (2013, 2014, 2015) consisted of 11, 16, and 7 teachers, respectively. Of the 34, 56% were elementary teachers (PreK-5), 41% were secondary educators (grades 6-12) and one participant (3%) worked at the college level. Through self-reporting, 40% of the participants had taught two years or fewer, 28% had between three and five years of teaching experience, 12% had taught six to ten years, and 20% had taught between 11 and 20 years. No participant had taught more than 20 years. Most participants (approximately 85%) were female. All participants worked in the same general metropolitan area.

Backchannel and Data Gathering Procedures

Participants were divided into small groups, comprised of three to five participants each, based on the age level of students taught (early elementary, upper elementary, and secondary/post-secondary). Participants pre-recorded and shared a 10-15 minute video segment of their own instruction and provided their small group peers with a self-created, research-based

rubric, targeting their desired areas of pedagogical focus. The peer video review activity and simultaneous backchannel chats occurred at two different intervals: once at the beginning and once at the end of the semester, facilitating peer feedback for growth on their self-selected instructional practices. Surveys were administered after each peer video review/backchannel session.

Laptops were provided to each student for participation in the backchannel, and students provided their own electronic devices to share recorded instructional video segments. Chat rooms were created via TodaysMeet.com, a free resource, to host the backchannel conversations. Complex URLs were created to name the chat rooms to reduce the likelihood of outsiders joining the conversation, and participants were only given access to their small group's URL. Participants were encouraged to utilize pseudonyms and the researchers/instructors moved among the groups during their small group sessions and participated, minimally, in the backchannel discussion. Additionally, to preserve confidentiality, the chat rooms were set to close within hours of the class video share sessions, so no record would remain searchable. The researchers downloaded the group transcripts for analysis purposes and shared each group's transcript with the respective participants, providing them with a written record of the feedback exchanges and conversations.

Small group discussions occurred briefly after each peer video review/backchannel activity and again in greater depth after the full set of student videos were viewed. After the video share, backchannel activity, oral discussion, and review of chat room transcripts, participants were asked to complete a brief, anonymous online survey via Survey Monkey that explored their perceptions of the backchannel, their experiences with the in-class video share,

their perceptions of peer feedback quality, their comfort with the backchannel as a tool, and their willingness to consider the use of backchannels with P-12 students in their professional settings.

Data Analysis

Backchannel transcripts were analyzed qualitatively for thematic patterns using a grounded theory approach with open coding, axial coding, and selective coding (Strauss & Corbin, 1990). As the researchers conducted the investigation with the second (of three) cohort of students, coding schemata were slightly changed to better describe observed phenomena. Despite evolving coding schema from cohort 1 to cohort 2, making the combination of some codes a challenge, the survey remained identical across administrations, allowing for quantitative data aggregation across cohorts.

All six survey administrations were analyzed using frequencies, percentages, and measures of central tendency, and results were aggregated across cohorts. Responses to open-ended questions were qualitatively analyzed for themes.

Results

Participants

Three cohorts of students participated, with two backchannel sessions taking place in each cohort semester and a survey administered after each backchannel experience. To clarify timelines and participation, Table 1 summarizes the key events of the study, as well as the number of participants and backchannel interactions, as measured by individual student comments.

Insert Table 1. *Study Administration Summary* HERE

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Exposure	2013 Cohort 1 (n=11)		2014 Cohort 2 (n=16)		2015 Cohort 3 (n=7)	
	1	2	1	2	1	2
Backchannel participation n	11 (100%)	11 (100%)	16 (100%)	16 (100%)	7 (100%)	7 (100%)
Approximate number of comments in transcript	180	190	600	400	330	330
Average number of comments per participant	16.4	17.3	37.5	25.0	47.1	47.1
Survey participation n	8 (72%)	5 (45%)	8 (50%)	12 (75%)	6 (86%)	5 (71%)

Transcript Analysis

In total, approximately 2,030 comments were coded according to their nature, tone, and content. Data for the three student cohorts are summarized in Table 2.

Insert Table 2. *Transcript Coding Summary* HERE

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Comment characteristics	Cohort 1 (n=370)	Cohort 2 (n=1000)	Cohort 3 (n=660)	Mean across cohorts (n = 677)
Nature of comment				
Observation	32%	21%	32%	28%
Compliment	29%	18%	22%	23%
Coaching	17%	28%	18%	21%
Answer	6%	13%	12%	10%
Question	8%	6%	7%	7%
Rapport building	5%	9%	8%	7%

Accept suggestion	2%	4%	1%	2%
Seek coaching ^a	n/a	<1%	<1%	<1%
Refuse coaching	<1%	<1%	<1%	<1%
Tone of comment				
Positive	56%	53%	51%	53%
Neutral	15%	29%	30%	25%
Helpful	16%	9%	7%	11%
Negative	10%	5%	1%	5%
Humorous ^a	n/a	3%	9%	6%
Sarcastic	3%	<1%	<1%	1%
Empathetic ^a	n/a	<1%	1%	<1%
Content of comment				
Instructional strategies	47%	37%	45%	43%
Teacher behavior	n/a	21%	23%	22%
Learning environment	26%	20%	16%	21%
Student behavior	18%	20%	15%	18%
Engagement ^b	10%	n/a	n/a	10%

Note. ^aEmerged over time, causing us to reevaluate schema, starting in second administration, kept in the third. ^bUsed in first administration, but later separated out into the remaining categories, allowing for more focus on teacher vs. student behavior. Thus, the total of overall averages in the content category exceed 100%.

Nature, tone, and content. In reviewing the transcript content, the researchers found that comments could be described by three characteristics: their nature, tone, and content. Table 3 provides a sample of participant comments with their corresponding codes. Upon analyzing the transcripts across the six exposures in three cohorts, the vast majority of comments were observational, complimentary, or coaching in nature (over 70% total). Participants were thoughtful and purposeful in their commentary, and gave specific praise and feedback to their peers. In addition to these major categories, the nature of the remaining 30% of comments were

coded as questioning, answering questions, seeking coaching, acceptance of suggestions, refusal of suggestions, and rapport-building.

The majority of the comments (64%) were positive or helpful in tone, while 25% were neutral. Few comments were negative and in such cases, comments were not negative about the videotaped teacher, but rather about a situation, such as a specific student behavior.

In analyzing the content of comments, coding schema changed from cohort 1 to cohort 2, dissolving the concept of “engagement” into instructional strategies, teacher behavior, learning environment, and student behavior, in hopes of better characterizing the focus of participant comments. The content of comments primarily focused on instructional strategies (43%), teacher behavior (22%), and learning environment (21%), which are all components within a teacher’s control. On average, 18% of comments focused on student behavior.

Small numbers of comments were about ancillary topics, not centered on the videotaped instruction. That said, even these comments may have contributed to the experience, as comments may have served to build rapport, contributing to the cohesion of the group. As such, a negligible number of comments were truly off-task. Because of this study’s focus on the nature of instructional feedback, comments that explained recording logistics were eliminated from the transcript analysis process.

Insert Table 3. *Sample Backchannel Transcript Comments and Codes* HERE

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Sample participant comment ^a	Coding categories		
	Nature	Tone	Content
Teacher provided clear directions	Observation	Positive	Teacher behavior
love the check in dictionary to see if prediction is right	Compliment	Positive	Instructional strategies
if you could display the definition that might be helpful	Coaching	Helpful	Instructional strategies
you show terrific planning and control	Coaching	Positive	Teacher behavior

students remained attention throughout the entire story, that was good	Observation	Positive	Student behavior
If you stay longer than 10 secs your playing tug of war with the kid...Drop the rope	Coaching	Negative	Teacher behavior
i feel like i ask the same question over and over. why why why	Reflection	Negative	Instructional strategies
they are writing down notes to help them explain what the term is	Answer	Neutral	Instructional strategies
I can understand getting away from the candy	Accept suggestion	Neutral	Learning environment
they speak so softly but they are so confident in their answers...love it	Observation	Positive	Student behavior
you love that rocking chair :)	Rapport building	Positive	Teacher behavior

Note. ^aResearchers preserved formatting of sample comments

Survey Results

Past experience. Backchanneling presented as a relatively new concept to the participants; prior to this exposure, 66.6% had never used backchannel or synchronous chat as a student, and 81% had not used a backchannel in instruction as a teacher.

Overall perception. Despite this newness, participant perceptions of the backchannel were positive, as indicated by mean values at or exceeding 4.2 (on a scale of 1-6, with higher values indicating higher levels of agreement to a positive statement) on all quantitative Likert scale survey questions across both exposures and across all three cohorts. Participants overwhelmingly noted that the backchannel was easy to use; after the first exposure, 100% of survey respondents agreed with the ease of use statement, of which 95.2% strongly agreed. When asked if the backchannel was an effective tool to gather real-time feedback, 95.2% of survey respondents indicated agreement, of which 60% strongly agreed.

Feedback quality. A majority of survey respondents (90%) agreed that pairing the backchannel with face-to-face conversations afterwards was better than just oral feedback alone.

Additionally, most participants (85.7%) perceived the quality of the feedback they received digitally in the backchannel was richer and of higher-quality than what they anticipated would have been received through traditional means (through oral comments and/or in written form on a rubric). Qualitatively, participants noted strengths and challenges:

- It was different in the sense that we were talking about the videos as we were typing, and it brought different perspectives in real time. I also think that the comments typed were shorter and less detailed than a more traditional mechanism and the verbal comments had to complement it.
- Real time made it able to capture the moment something happened so you could focus on that aspect too.
- I just really liked that I could ask questions right then and there and being able to get feedback that was effective and candid.
- Because we did backchanneling, we had less time to talk about it. But it did help us remember some parts we might have forgotten to comment on.
- I used the backchannel as a conversation starter for oral feedback.
- I think more traditional feedback would have been more specific - only because I was typing small snippets, so that I could get back to watching the video.

Impact on reflection. As a tool in aiding the development of reflective practice, perceptions were positive, with mean values ranging from 4.4 to 5.3 on a 6 point scale, with higher values indicating higher levels of agreement to a positive statement. Perceptions of the potential instructional value of a backchannel remained fairly consistent across exposures, with solidly positive mean values ranging from 4.6 to 5.5.

Benefits of use. Qualitatively, participants noted the efficiencies gained by utilizing the backchannel. They also expressed their attraction to the level of engagement and involvement the backchannel process offered, particularly for overcoming shyness. Participants noted that the backchannel provided an avenue for honest, stream-of-consciousness processing of ideas. When asked about their perceptions of the backchanneling process as a means of gathering feedback and involving all students in a real-time discussion, responses included:

- I really like being able to communicate while watching information.
- A great strategy to use especially when many voices need to be heard at once.
- I think it is a good way to express our thoughts. It's fast, efficient, and successful. I like that we can reply back as well.
- I think that it is a very meaningful strategy for students to provide feedback in a more comfortable way.
- It helps students that are shy participate and lets a teacher see what students know.

Participants also saw value in having a transcript as a written record for later reflection and analysis.

Challenges of use. A few participants noted in the survey that they had difficulty maintaining two tasks: watching the video and conversing in the backchannel, leading to a divided focus. This difficulty was not universal, but it is worth noting.

Perceptions of theoretical P-12 application. Approximately 95% of participants saw potential value in the idea of using backchannels with students. Only 85% noted they personally would consider using a backchannel in their own P-12 classrooms to encourage student participation. Survey respondents in favor of P-12 use stated:

- Especially in my math class where students are shy about asking questions or admitting they don't know or understand something.
- With upper students definitely, they will be able to give their opinions during discussions.
- I am absolutely sold on using backchanneling as a means of gathering feedback... excited to use it in the near future!
- I think it is a nice way to get feedback real time and have students focused on what is happening in the now.

One survey respondent hesitant to use backchannels in P-12 contexts stated:

- I don't think lower elementary students have the skills needed to effectively use a backchannel.

Discussion

The purpose of the study was to examine the nature and quality of peer feedback exchanged in a backchannel and to gauge participant impressions of the technology, with potential for carryover into their professional practices in P-12 instruction.

Researchers found the nature of peer feedback comments to be overwhelmingly complimentary, observational, or coaching in nature, and relatedly, the tone of the comments was positive, helpful, or neutral. Given the study was situated within the context of a course on teaching and learning, the researchers were encouraged by the strong content focus of the comments (86%) on instructional strategies, teacher behaviors, and the learning environment. All three content elements are areas within which a teacher has strong influence, compared to external factors such as student behaviors and classroom resources. This affirms the participants' focus on examining their own practice and that of their peers during the reflective exercise.

Some comments provided evidence of rapport building between students, which demonstrates the potential for a backchannel to build classroom community. There was minimal evidence of negativity, which could have been a potential problem in moving from face-to-face interactions to a digital medium. There was no evidence of cyberbullying. Only a negligible number of comments were “off-task,” which suggests that students were appropriately engaged and focused, despite the introduction of the backchannel format.

The concept of a backchannel in instructional applications was largely new to study participants, but most expressed positive feelings and noted benefits of use. This study demonstrates backchannels can offer efficient, immediate, real-time feedback from multiple participants simultaneously, and provide a written record for later reflection. Backchannels offer an opportunity for all in a group to engage with more frequency. In the 2014 cohort alone, two 90-minute backchannel sessions allowed 16 students with 16 videos in 4 groups to view over 4 hours of video footage and generate over 1000 comments, with an average of 62.5 comments per person. Anecdotally, the researchers noted the increase in the volume of feedback in the multiple backchannel transcript pages compared to their prior experiences with paper/pencil rubrics, which never ran more than one page in length. A few participants expressed a challenge in utilizing the backchannel, specifically maintaining the dual focus of viewing video footage and following along with the flow of the chat in the backchannel.

Participants reported that they appreciated the real-time feedback, which also generated a transcript, lending itself to later review for further reflection. In addition to the potential for firsthand review of the transcript by participants, the transcript also allowed the graduate course instructors a deeper opportunity to analyze the students’ targeted teaching practices, to examine

students' understanding of their own and accepted best practice, and to review the depth of peer feedback offered.

As an additional benefit, backchannels have the potential to amplify voices that might not otherwise be heard. Participants noted that they believed shy group members, both child and adult, would more readily participate through the backchannel format. Compared to traditional oral and paper feedback models, the engagement fostered by the backchannel increased student-to-student and student-to-content (analysis of instructional practice) interactions. In this study the instructors intentionally participated in the backchannel discussions at a minimal level; if instructors were to fully engage, there is potential for an increase in student-to-instructor interactions as well. The backchannel discussions yielded insights that could not have otherwise been made known to the instructors.

The video sharing backchannel experience facilitated peer-peer interactions and a rich opportunity to hone reflective practice skills. Particularly powerful was the benefit of having all students see the feedback given to their peers. This third-party benefit existed as the groups discussed instructional practices and all participants on the backchannel thread were exposed to coaching, questioning, observations, and other forms of peer feedback. All group members learned from group feedback (oral and electronic/backchannel), rather than feedback that was isolated between two participants on a paper rubric. The transcripts provide evidence of "light bulb moments" for not only the teacher whose video was being viewed, but also for the other teacher participants who noted when they gained a new idea from the suggestions made by other peer reviewers in the backchannel space. It also created a forum for students to consume feedback from others on a common content (one teacher's videotaped instruction), which

elevated the quality of the feedback through seeing examples of what others noticed and how they phrased and communicated constructive coaching and commentary.

Interestingly, the use of the @ symbol emerged organically in the 2014 cohort as a means for participants to directly engage each other, mimicking dialogue and facilitating collegial exchanges instead of just stand-alone one-line comments. In the future, perhaps researchers would make an explicit directive to have students utilize the @ symbol to better track conversations.

While Todaysmeet.com offers a free and easy to use tool, those hoping to employ backchannels and study the nature/quality of the transcript will want to explore emerging tools that have the ability to archive video and chat for enhanced analysis. Also, there would be benefit from a tool that would house video and chat in the same window to minimize the challenge of split attention.

Findings confirm that most students enjoyed the backchannel experience and saw merit in appropriate applications, however the less positive responses related to the utilization of a backchannel in P-12 contexts are noteworthy. Challenges related to P-12 use were expressed as a function of age in the survey responses, but more in-depth explanations of the challenges of student age emerged in class conversations. These discussed subtopics included maintaining attention to the task for those who struggle with focus, students' maturity and age, trust with internet access, and emerging language and typing skills. The researchers hypothesize some of this hesitation is also due to the lack of availability of resources in some classrooms, local policies and procedures (internet filtering and blocking), and the fact that a majority of participants worked in elementary contexts (hence questionable typing skills and maturity of students).

The researchers note that most findings of this study closely mirror and affirm the findings from previous studies, including: ease of use of a backchannel (Pohl, Gehlen-Baum, & Bry, 2012); increased and improved engagement and participation (Aagard, Bowen, & Olessova, 2010; Cronin, 2011; Donovan, Bransford, & Pellegrino, 1999; Pohl, Gehlen-Baum, & Bry, 2012; Poleon & Krishnan, 2013; Yardi, 2008); decreased risk and increased comfort in participation (Pohl, Gehlen-Baum, & Bry, 2012; Yardi, 2008); firsthand construction of knowledge (Bruner, 1966; Li & Greenhow, 2015); creating deeper insights that might not otherwise have been known (Cronin, 2011); providing opportunity for student “voice” and a sense of ownership (Jarrett & Devine, 2010; Yardi, 2008); and social community and relationship-building among classmates (Atkinson, 2010; Yardi, 2008). A few students concurred with the challenge of splitting attention among multiple tasks (Turkle, 2006; Greenfield, as cited in Carr, 2011), yet perceived benefits seemed to outweigh the challenges for most participants.

Study Limitations

The researchers were primarily focused on helping students achieve the objectives of the course related to developing reflective practice skills. While all attempts were made to maximize the strength of this study so as to contribute to knowledge in the field, this study possesses several limitations that should be acknowledged. First, given small class sizes and the desire to preserve anonymity, we did not attempt to capture the identity of participants to know if the same students responded in both survey administrations, thus missing the ability to track changes in perceptions over time. Second, the format of the course, with face-to-face classes only, minimizes geographic variation, as all participants worked in the same general vicinity. Third, in analyzing the backchannel transcripts, in absence of the videos, it was difficult at times to follow the flow of conversations, as well as interpret meaning and tone through the

backchannel conversations. Video context would have been beneficial for transcript analysis. Finally, to streamline analysis, small adjustments were made to the coding schema and definitions of each category (ex. coach/question/compliment and teacher behavior/learning environment/instructional strategy) between 2013 and the subsequent cohorts (see footnotes of Table 2). Related to making sense of the transcript, there were times when the tone and intention of a comment had to be inferred, but that can be the case of written text, regardless of digital or print media. The review of coding by multiple researchers lent itself to discussion, and ultimately consensus.

Recommendations for practitioners

There are significant opportunities for future use of backchannels in educational contexts because of the real-time, accessible nature of the tool. We recommend utilizing backchannels in appropriate educational contexts to simultaneously achieve the goals of engaging students, creating classroom community, developing metacognition and reflective practices, and encouraging peer feedback. As students gain comfort and familiarity with advanced digital communication tools, we recommend embracing backchannels in pre-service preparation and in-service teacher training. Because the digital technology landscape changes quickly, those planning to employ backchannels and study related transcripts may want to explore emerging tools that have the ability to archive both video and online discussion simultaneously.

Recommendations for Future Study

Future study should continue to explore the implementation of backchannels in P-12, undergraduate, graduate, adult education, professional development, and continuing education environments – and the contexts in which backchannels can be most effective. Since the backchannel transcript analysis revealed a significant amount of peer coaching comments, we

recommend studying the use of backchannels as a tool to facilitate meaningful peer coaching video reviews. Given the positive, helpful tone of the exchanges between teacher participants in the backchannel, we recommend additional studies of the nature and quality of peer feedback in other larger-scale educational fora, such as education blogs, virtual teacher communities, social media groups related to education, and trending hashtag discussions on Twitter.

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