EXPLORING THE USE OF TABLETS FOR STUDENT TEACHING SUPERVISION

By

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ABSTRACT

While research on the use of tablets in the field of education is emerging, existing research on the use of this tool for the purposes of student teaching supervision is very limited. This study aimed to explore the application of iPad tablets for student teacher supervision in a teacher preparation program at a large state university in the Northeastern United States, with the purpose of improving practice in the supervision and effectiveness of implementation of the digital tool. Employing a case study methodology to analyze data from five participating professors who supervise pre-service teachers' teaching practice in actual school settings, this study revealed several strengths of this tool in terms of facilitating communication, collaboration, and organization for supervisors and for encouraging effective reflective practice among student teachers. It also revealed limitations in implementation, including access to necessary infrastructure on-site at K-12 schools and the structure of the implementation program. These findings can inform similar technology integration in other teacher preparation programs.

Keywords : Student Teacher Supervision, Tablets, Reflective Practice.

INTRODUCTION

Since the invention of the first mobile tablet device, there has been an increased push to integrate this tool into K-12 instruction. There are many reports from news media, blogs, practitioner journals and research journals alike exploring their use of tablets for student learning and as a teaching tool aimed at increasing student engagement and achievement (Linskens, 2013; Manuguerra & Petocz, 2011; Roscorla, 2012; Yerrick & Johnson, 2009; Yerrick, 2014).

However, the focus of this study was not on the use of tablets for student learning, rather, only interested in studying the use of this tool in the preparation of pre-service teachers. This research focus was two-fold: 1) exploring how the tablet could be used to engage pre-service teachers in reflective practice, and 2) exploring how the supervision process could be enhanced using the device as a communication tool.

Despite the promising research regarding tablet effectiveness for classroom use, only a small, but growing, body of research explores the use of this tool for the preparation of pre-service teachers, particularly in regards to supervision of student teaching. As the researchers seek to explore and develop the best means of facilitating pre-service teacher development during their culminating experience, it is essential to explore new tools available for meeting this goal. Given the potential strengths of the tablets for classroom use, it is of interest to explore whether these benefits translate to a supervision context. The foundation of this study is built upon three distinct areas of research: best practices for student teaching supervision, facilitating teacher reflective practice, and the use of technological tools for reflection and supervision.

1. Review of Literature

1.1 The Goal of Reflection

The central orientation for teacher professional growth is

framed by the two types of reflective thinking as defined by Schön (1983): reflection-in-action and reflection-on-action. He suggested that, reflection is used by practitioners when they encounter situations that are unique, and when individuals may not be able to apply known theories or techniques previously acquired through formal education. Reflection-in-action is bounded by the "action-present", the zone of time in which action can still make a difference to the situation (Schön, 1983, p. 62). In contrast, reflection-on-action occurs after teachers have been confronted with an unexpected result and think back on what they had done in order to determine what improvements could be made in the future (Schön, 1983).

Not all reflective practices, however, engage in this level of attention. Thompson and Pascal (2012) have argued that, reflective practice has become,

...an influential concept in various forms of professional education, for example, in nursing and social work. However, there has been a common tendency for it to be oversimplified in practice, and, furthermore, dominant understandings of reflective practice can themselves be criticized for lacking theoretical sophistication in some respects - particularly in relation to the social and political dimensions of learning and professional practice (Thompson & Pascal, 2012, p. 311).

It is essential to maintain rigorous critical reflection on and in practice, rather than an oversimplified, uncritical, passive description of common events. The key, of course, is found in the critical choice of what artifacts and events teachers are asked to reflect upon. One obvious influence that must be taken into consideration is the specific events pre-service teachers are asked to reflect upon. Researchers argue that, the reflection process is less engaging if it is vicarious, rather than personal, and less likely to result in changing practice unless deliberate perturbations in traditional belief systems are employed (Abell & Bryan, 1997). As such, pre-service teachers need to be asked to reflect upon recognizable dilemmas, rather than exemplary lessons, as well as upon their own efforts in which they have invested much time planning and that reflect their own teaching ideologies (Bryan & Abell, 1999). Only then can they take seriously the weight of teacher decisions and real dilemmas of practice. Asking them to engage in a guided exposition of other people's issues (e.g., video case studies) or passively watching and pontificating on the judgments of others cannot yield the same outcomes. Defining the terms of critical reflection has, therefore, been recognized as a main issue for teacher education (Grimmett & Erickson, 1988). Howes (2002) has argued that, understanding the subtleties of personal experiences and interpretations that pre-service teachers bring can help develop a "critical consciousness" (p. 20) for the visions teachers and teacher educators strive for amidst the tumultuous sea of reform.

When confronted with such issues in pre-service teacher preparation, the researchers believe that, teacher education programs are charged with the responsibility of preparing in-service and pre-service teachers to actively engage students with opportunities to discuss, participate in innovative lessons, and collaborate. Unfortunately, research has shown that, simply modeling best practices or challenging prospective teachers' beliefs is insufficient for making dramatic change (Abell, Bryan, & Anderson, 1998; Abell & Bryan, 1997; Yerrick, 2002).

1.2 Videos, Tablets, and Teacher Reflection

Video is a powerful tool for teacher reflection. Video enables teachers to more effectively 'see' their practice. There have been some recent research efforts focused upon the development of teacher reflection practices, specifically through the use of tablets. The use of tablets as a tool for reflection follow years of research exploring the use of video as a means to capture and analyze teachers' content knowledge and pedagogy. Beaudin (2012) posited that, using tablets to enhance pre-service teachers' reflection was similar to other tools like computers with video editing software (Calandra, Brantley-Dias, & Dias, 2006), but that tablets may hold an advantage in that they allow for near-immediate reflection on events and related educational practices encountered in practicum settings.

The use of video as a tool to support preservice teacher learning has a long tradition that includes asking teachers to view cases of best practice (Abell & Bryan, 1997; Lampert & Ball, 1998) and reflect on video of their own teaching (Yerrick, Ross, & Molebash, 2005; Yerrick,

Thompson, McLaughlin, & MacDonald, 2011; Calandra, Brantley-Dias, & Dias, 2006). An underlying assumption of these approaches is that preservice teachers have the cultural toolkit necessary to learn from observations of video (Yerrick, Radosta, & Greene, 2016). Reflection through video could be an improvement over other processes engaging teachers in reflective practices in venues like post-teaching interviews, journals, or other contexts.

Part of the reason for the concentration on tools that provide access to video cases is related to the superiority for providing opportunities for expression that supplement written reflection (Ball, 1990; Bryan & Abell, 1997). Another reason digital video is favored is, that it provides immediate accessibility to data directly following a lesson to promote more authentic peer discourse that is less susceptible to selective memory (Hill, Rowan, & Ball, 2005; Roth, 2009). Finally, the video provides users with immediate feedback on their lessons, which is likely to raise important inconsistencies between their professed beliefs and actual practices.

The kind of immediate reflection promoted through video can empower teachers in ways that bring more authenticity to exploring dilemmas in teaching, since the discourse surrounding their reflection pertains directly to their own beliefs and actions. For example, when a teacher claims to value hands-on activities for assisting students in constructing knowledge, but provides no evidence in the digital video that students were able to use hands-on manipulatives, teachers are challenged to reconcile this disparity.

With innovations like microcameras found in most mobile devices today and digital video editing softwares, specifically designed for fast and friendly use by computer novices, digital video editing is far more accessible and powerful than in recent years. Over the past decade, researchers and teacher educators have provided excellent critiques surrounding the parameters for media collection, tools for editing, and best practices for collecting data in the context of public school contexts (de Mesquita, Dean, & Young, 2010). There is, however, very little precedence in education for exploring the use of digital video to reflect upon live teaching events collected in real time. Digital video has emerged as the tool of choice for capturing and disseminating best practices, particularly in web-based and distance education contexts. Although, there is support for the approach of using video case studies to promote reflection, as well as support for the practice of having pre-service teachers explore children's thinking and facilitate lessons in public school contexts, there are limited reports regarding research conducted with pre-service teachers reflecting on their own teaching through digital video editing. Video editing provides users with immediate feedback on their lessons, which is likely to raise important inconsistencies between their professed beliefs and actual practices. The researchers assume that, this kind of immediate video editing will empower student teachers in ways that bring more authenticity to exploring dilemmas in teaching since the discourse surrounding their editing pertains directly to their own beliefs and actions.

2. Objectives and Need for this Study

The aim of this study was to explore pre-service teachers' learning from this piloted cycle of tablet enabled student teacher supervision. The purpose was to identify ways in which the tablet could be used to engage pre-service teachers in reflective practice as well as how the supervision process could be enhanced using the device as a communication tool. As described above, there is little existing literature exploring the use of this tool for facilitating student teacher supervision. The following research questions guided the study:

1) In what ways, if any, do tablets impact student teaching supervision?
2) What, if any, specific components, functions, or applications available for the tablet are useful in the process of supervision and for facilitating reflective practice in pre-service teachers?
3) In what ways, if any, do research-based best practices in student teaching supervision and the tablet as a tool for supervision intersect?

3. Methodology

This study involved the qualitative analysis of the impact of Apple iPad integration on student teaching supervision. The

reason for this choice in tablets was to coordinate with the majority of k-12 adoptions in the local school districts, where the student teachers were placed. Second generation iPads were provided to university supervisors for the purpose of facilitating supervision of all elementary, middle, and secondary level student teachers at a large state university in the Northeastern United States. Supervisors indicated varying levels of technological proficiency prior to receiving their mobile tablets.

Participants in this study included five university student teaching supervisors and several of their students. The group of supervisors met several times prior to and during implementation to discuss strategies and best practices for supervision in general and specifically regarding the use of the new tool. Each of these meetings was recorded and transcribed. Supervisors completed self-reflections following their supervision experiences and participated in semi-structured interviews. These interviews took place at several different points throughout the study and were also recorded and transcribed. At the conclusion of the first year, the supervisors completed a follow up survey, readdressing the points from the semi-structured interviews.

3.1 Instruments for Data Collection

Ten question, semi-structured interviews, prepared by the researchers, were conducted with each participating supervisor during the project implementation. Questions were developed by the researcher to illuminate how the devices were being used, how student teachers were responding, what specific aspects of the device were effective, roadblocks encountered in device application, and any suggestions for program or implementation improvement as shown in Appendix. Non-participant supervisors were asked to review the interview questions to ensure questions were appropriate to the given goals. Interview questions were adapted to create a 14 question online survey provided to participating supervisors through Google Forms.

3.2 Quantitative Analysis

Data were analyzed using a case study methodology utilizing Hyper Research Qualitative Analysis Software, with the mobile tablet integration project described being the case in question. Data was formatted and entered into the software tool, coded, and then analyzed for emergent themes by triangulating data. The analysis process resulted in refinement of the research questions and the combining and elimination of themes, followed by additional coding to better understand the remaining themes.

3.2.1 Credibility

In this study, credibility was addressed through careful control of bias throughout the data collection and analysis process to the greatest extent possible. Interviews were conducted by a trained graduate student to avoid the effects of researcher bias in the interview process. A variety of data sources were used for the purposes of triangulation, including focus groups and electronic surveys, and member checks were conducted with participating faculty to ensure results accurately represented their perspective.

3.2.2 Transferability

Transferability, like external validity in quantitative research methodologies, represents how well the results of a study can be transferred to another context. While this study is meant to illuminate the use of specific tools teacher preparation within a specific context, it may also inform teacher preparation practices in other contexts as well. The research was conducted in a state university in the Northeastern United States in a nationally accredited teacher preparation program. It is reasonable to believe that, the findings from this study could inform similar exploration in a variety of other contexts.

3.2.3 Dependability

Participating faculty represented a variety of experience levels, ranging from less than three years of student teacher supervision experience to over 20 years, as well as varying levels of proficiency with the technology employed. Results were triangulated from several different data sources drawn from throughout the study and analyzed via the Hyper Research qualitative research software and a digital research log was kept to limit problem shift and to ensure dependability.

3.2.4 Confirmability

Confirmability in this study was assessed through member checks and a follow-up electronic survey provided to several of the participants to verify the accuracy of analysis

in representing the participants' thoughts and beliefs. Additionally, multiple iterations of data analysis were conducted during this project to first inform and then confirm the development of codes and themes.

4. Results

Analysis revealed five interesting themes that impacted and informed the mobile tablet implementation in a variety of ways: 1) streamlined the observation and feedback process; 2) improved communication; 3) improved reflection; 4) simplified scheduling and record keeping; and 5) increased professional collaboration.

4.1 Streamlined Observation and Feedback Process

Initially, a direct digital translation of the previously used written student teacher observation instrument was used with the iPads. Unsurprisingly, these were found to be cumbersome and very text intensive, but supervisor feedback lead to a shift towards a checklist format for the instrument through the Pages app to leverage the touchscreen of the device. This new format was designed to directly assess all of the preservice teacher standards outlined by the various NCATE (National Council for Accreditation of Teacher Education) specialized professional associations. The narrative that had been included within the text was recorded using the Notability app, which allowed for the inclusion of text, audio, and pictures for review. Both student teachers and cooperating teachers indicated that, these multimedia aspects greatly enhanced student reflection and helped to provide concrete examples of the feedback given by the university supervisor. Gesture controls within the mobile tablet allowed for easy movement between documents within the two apps. The tool was also used to facilitate communication, sharing of information, and discussion through email, Box and Dropbox apps, each of which was linked directly to the Pages and Notability apps. One supervisor stated that, the device allowed her to *"keep everything consolidated and organized in one place…as I am running from school to school throughout an entire day."* All participating supervisors provided similar observations. Another supervisor noted the advantage of the immediacy of feedback.

We have the media integration…I am able to get online immediately and [I'm able to] give immediate access to video, audio, and also my narrative and when…we meet and counsel and talk to the students I tend to show them the videos and we talk through that.

The wireless capability of the tool along with the built-in recording features allow this supervisor to provide immediate, pertinent feedback with evidence to demonstrate points of concern or specific aspects on the teaching to take note of. This leverages the capabilities of the device to allow for reflection both in action (to be applied immediately within the context) and on action (to be reflected upon and considered for the future). Student teachers can apply their reflection to their teaching within a lesson, for a the next period, or in planning and teaching future lessons, based on the immediate, multimedia feedback provided through the device.

4.2 Improved Communication

One participating supervisor noted that the iPad provides, *"Almost unlimited potential for giving feedback to our students."* The version of the student teaching observation instrument used prior to mobile tablet integration involved feedback written by hand on triplicate carbon copy sheets. While these were convenient, there were often issues with clarity and legibility. The integration of iPad apps with communication tools, like Mail and Dropbox apps, provided equal or greater convenience for sharing information, while greatly improving clarity and legibility. When WiFi was available, feedback could be shared directly and immediately, with both the student teacher and the cooperating teacher. Further, the nature of the device and the apps chosen, incorporating a camera and recording options, allowed the feedback provided to include multimedia integration, which in turn could be easily and immediately provided to the student teachers. As noted in the quote above, *"We have the media integration…I am able to get online immediately and [I'm able to] give immediate access to video, audio, and also my narrative…".* This same supervisor stated, *"I make the video and audio available online for them to review through a file sharing system".* Both cooperating teachers and student teachers found the ease of communication to be particularly helpful.

It was also evident that, the quality of communication improved between student teachers and their supervisors through the development of common language like "inquiry," "authentic", and "hands-on teaching." The multimodal feedback provided a common venue for discussing and understanding these terms and ideas in a more tangible and immediate way. This gave both the supervisors and student teachers a tool for talking about and sharing what was working and what was missing in their instruction. They knew that, many of their students struggled with content, but had difficulty understanding where and why the breakdown occurred. The tool became a powerful way to share a language about learning, even when supervising students teaching outside of their areas of expertise.

4.3 Improved Reflection

The communication of immediate, useful feedback greatly facilitated student reflective practice. As indicated in the literature review, audio and video recording can positively impact the development and effectiveness of teacher reflective practice. The ease of input of a variety of media was indicated by supervisors to significantly assist in this aspect of supervision. One example provided by a supervisor described sharing with the student teacher video of a distracting mannerism that had previously gone unnoticed. Being able to see and hear this mannerism provided concrete evidence for student teacher self-reflection and correction that might have been difficult otherwise. Again, both student teachers and cooperating teachers indicated that, this was particularly helpful throughout their experience.

In using video analysis for examining strategy, the researchers also had to create a community environment of learners willing to take risks in their teaching. This process was scaffolded and required that, teachers think about themselves and their professional work in a new manner. Specifically, teachers had to see analysis of their teaching as a worthwhile endeavor and use it to inform their everyday work with students. Immediately following the teaching, novice teachers were required to adjust their teaching and lessons based on the feedback they received. Digital video increased the rigor of reflecting upon practice. Instead of reporting what happened, the teachers were expected to turn a critical eye toward their collected video, assessments, artifacts, and cooperating teachers' reflections and synthesize an argument for why the tools and teaching strategies they chose were improvements over traditional practices. Given the artifacts of learning, they could no longer rely upon remembered accounts.

4.4 Simplified Scheduling and Record Keeping

The integration of the observation instrument onto the relatively small, light and compact mobile tablet provided greater convenience to the supervisors. Laptop computers had been used by some supervisors before mobile tablet integration, but they could be heavy and cumbersome. With the mobile tablet participants indicated that, there was less materials to carry. It also facilitated organization. One supervisor indicated that, the iPad, *"consolidated all of my paperwork into one place".* This was particularly important when this supervisor was visiting multiple schools in one day, a common practice as the number of supervisors was limited and the geographical range of locations of placements tended to be quite large. In planning those visits, the supervisors found the built-in calendar app, iCal which is very convenient as well. For supervisors using Mac computers or iPhones, the iCal automatically synced across all devices, providing much greater organization in scheduling, which several reported to be a particularly challenging aspect of supervision. Further, the majority of participants indicated that, the tool was very easy to learn with limited time spent learning basic the use of the device, however it is important to note that, this is something that had to be taught to them; because, prior use of iPads and phones was quite limited. Several training sessions were held to better prepare supervisors to leverage the capabilities of the device. Despite the necessity, these sessions were generally poorly attended. Nevertheless, 4 of the 5 participating supervisors did indicate the usefulness of this particular aspect of the device.

4.5 Increased Professional Collaboration

A "hidden bonus" of the implementation was the additional collaboration between supervisors during integration. All

participants indicated benefits from collaboration with peers regarding the use of the mobile tablet as a supervision tool. Supervisors indicated that, these discussions helped them to improve practice and share ideas, even beyond the use of the tool itself and consistently indicated the need for continued discussion, collaboration and professional development.

5. Discussion and Implications

The mobile tablet integration impacted the practice of supervision in a variety of ways. As described above, it streamlined communication for most participating supervisors and helped supervisors facilitate student teacher reflection. The mobile tablet allowed supervisors to easily provide multimedia feedback, immediately following observations to enhance the quality of student teacher reflection. Further, this project facilitated greater collaboration among supervisors involved as they explored the potential of this new tool. The nature of the tool lead to adaptation of existing observation instruments, helping to standardize forms and assuring that NCATE standards were met for this particular assessment. The feedback from supervisors as part of this study informed supervisor training, which occurred more frequently than it had in prior semesters, focusing particularly on the use of the iPad. Interestingly, some supervisors indicated that they learned as much about supervision strategies as they did about the iPad during these trainings.

The immediate editing of digital video through these mobile tablets was more effective than the past reliance upon written reflections and collected student artifacts. The researchers believe the difference was likely due to the nature of the investment and the depth of interaction surrounding the recording, planning, and reflection on the final vignette and participating in the editing process. The extended engagement with their own teaching examples caused student teachers to think more critically about how their practice aligned with their beliefs. Digital video and the applied tools for constructing artifacts through this venue were central for constructing meaning of the intentions and context embedded in the complex teaching examples shared by all the learning communities.

While video has been used for reflection and teacher change in the past, digital video editing as a tool for analysis is still underutilized by practicing teachers for professional development. In their studies, digital video editing empowered teachers in the process of critically evaluating teaching, even in the period of a single semester. This time frame was relatively short for shifting teacher knowledge and expertise, but the researchers attribute the quickened pace to the context set up for digital analysis and discussion, which lent another set of eyes to the work the teachers need to do to see what works, what does not, and how to make sense of a new set of ideas.

While there are a huge number of functions and applications available for use with this tool, several emerged from this study as particularly useful. Apps integrated and highlighted during training sessions included Pages, Notability, iCal, Mail, Box, and Dropbox. Gesture controls were used to easily switch between apps during supervision. The chosen apps were designed to integrate easily to facilitate communication and sharing. Further, several of the apps incorporate the built-in iPad camera and recording capabilities. Portability and convenience of having all necessary tools and documents in one place were also of significant use. The onscreen keyboard presented some difficulties for the initially text heavy observation instrument, leading to the purchase of Bluetooth keyboards. These proved to be cumbersome for most supervisors and of little use in classroom observations. While some participants did continue to use the keyboards, adaptation of the observation instrument allowed the onscreen keyboard to be a viable option.

As stated above, mobile tablet integration was closely linked to improved collaboration amongst participating supervisors. This has a great deal to do with the close relationship between the tool itself and the best practices with that tool. In response to research questions 1 and 2, there are many features that the iPad allowed supervisors to do that would be difficult, impossible, or ineffective without this tool. As integration and collaboration continues, additional apps, functions, and strategies will emerge as useful tools for supervision. There was some disagreement

among participating supervisors regarding the need for changes to the technological infrastructure at the university with areas of concern being on-site internet access and availability of training with the tool. Despite several training sessions being provided, some supervisors who had not been able to attend reported, not using the new tool for lack of understanding the application of the tool to supervision. In the follow up survey, one such participant called for, *"practical application and training specific to using its features for supervision."* For these few supervisors, there was an apparent disconnect between the tool and practice that was not observed in supervisors who had attended, highlighting the importance of 1) practical training driven by supervisor feedback and 2) collaborative times for the sharing and discussing of practice and strategies.

Limitations

Several districts where observations took place did not allow photos or recording with the device in their classrooms. A concerted effort to obtain permissions from district superintendents and building principals was required, many times, resulting in requests getting lost in bureaucratic difficulties within districts. Even after permissions were obtained, some districts required supervisors to contact principals before any observation where recording would take place. This additional burden of recognizing individual rules for recording for each specific district lead several supervisors to forego recording altogether.

Supervisors also found lack of Internet connectivity to be inconvenient in the field. Only a small number of districts provided guest access to WiFi networks in their schools to university supervisors. Some schools did not even have someone on-site, who had the capability of sharing WiFi access. While this was not a major concern as documents could be shared visually in post observation debriefing sessions and shared documents would be available to student teachers as soon as the supervisor arrived at an available WiFi network, it did limit the ability to fully reach the potential of the device. Some supervisors used portable WiFi hotspots to work around this problem, while others provided documents after the observations when they arrived at an available network as they had with other tools in the past.

Conclusion

The findings presented indicate the need for structured implementation in projects of this type. An integration plan involving regular meetings for discussion of practice, professional development trainings based on the conversations at these meetings, and regular analysis and reflection to determine effectiveness, needs and next steps are all necessary components of successful implementation.

As this particular project continues, study of practices, aspects of the tool, and strategies will also continue. Similar research in other student teaching programs and with other tools will continue to shed light on best practices and strategies. Further research on this topic from the perspective of the student teachers and cooperating teachers also has potential to be greatly informative.

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Appendix

iPads for Supervision Interview Protocol

1) How long have you been supervising student teachers? What tools have you found helpful in supervising in the past?
2) What lead you to be involved in using the iPad for your supervision? How long have you been using this tool?
3) How do you use this tool now that you have it? What functions or apps do you find useful? Why are they useful? What don't you use? What have you used before to do the things that you do now with the iPad?
4) What Pros and cons do you see in the use of the iPad for supervision? What Barriers did you find that needed overcome? How did you solve these problems?
5) Describe the "Learning Curve" for this tool and figuring out the best practices for supervision? Did this impact your use of the tool? How about future use?
6) Would you recommend an iPad to a new faculty supervisor for use in supervision? Why/why not?
7) Does the current infrastructure support the use of an iPad for supervision? What needs to be changed/added?
8) Does the iPad improve your supervision? If so, how?
9) In what ways, if any, does this tool facilitate reflection? In what ways, if any, do you use this tool for reflection?
10) Is there anything else that you would like to tell me about this tool, this experience, or your feelings about using the iPad for supervision?

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