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Upping the Ante: Video and Tagging Software to Improve Teacher Candidate Performance

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This pilot study resulted in changes to how we support and understand the teacher candidate learning process. Student teachers recorded videos of several teaching segments and later both researchers and student teachers utilized software to identify, tag, and analyze teaching performances. The study was based on the following assertions: teacher candidates need to own their professional growth, and teaching behaviors can be identified, rated for proficiency and analyzed as a collection of techniques to enhance student learning. The findings suggested that use of the software has expanded our ability to document candidate performance and proficiency. Candidates not only became critically self-evaluative but also identified missed opportunities in teaching segments.

In these current times of high visibility of America's academic achievement records, it might be hard to find anyone who would dispute that it is the individual teacher that can accelerate or hinder student learning. The coined phrase, "The teacher makes the difference," has become a truism. The assertion that it is the quality of the teacher that accounts for variance in student learning has been confirmed in multiple research studies. Teacher competency as the factor that accounts for student academic achievement fuels the responsibility of teacher preparation programs to lay the foundations of highly competent teachers (Carnegie Corporation of New York, 2001; Darling-Hammond, 1997; Ferguson, 1991; Haycock, 1998; Strauss & Sawyer, 1986). Certainly, identifying and measuring highly qualified teachers, the mandate of *No Child Left Behind* legislation has significantly advanced the argument for measurement and rating of teachers. In addition, multiple academic studies have been corporate-funded research and other projects resulting in reports such as The New Teacher Project's, "The Widget Effect" (2009), the Center for American Progress's report, "Evaluating Teacher Effectiveness" (Darling-Hammond, 2010), and a growing number of findings produced by the MET Project (http://www.metproject.org/).

Colleges of Education do not escape the spotlight for their role in preparing effective teachers. The Committee on the Study of Teacher Preparation Programs in the United States (2010) researched the effects of different teacher education programs and reported "a dearth of robust measures of teachers' knowledge and practice" (p. 5). The National Council for Accreditation of Teacher Education (NCATE) released a blue ribbon report calling for more rigorous accountability of teacher education programs to prepare teachers that improve P-12 student learning. Included in the principles is a research agenda that provides, "More robust evidence on teaching effectiveness . . . and preparation program performance" (2010, p. 6). But how is this journey, the development of an effective teacher, documented? With the opportunity to revamp out middle level teacher preparation program, we challenged ourselves to examine documentable practices of teacher development such as reflective practice (Zeichner & Liston, 1996) and effective teacher preparation programs described in *Powerful Teacher Education* (Darling-Hammond, 2006).

Rationale and Purpose of the Study

As a preparation program for middle level teachers, we grappled in recent years with how to increase accountability and document results of our program. We followed the traditional pattern of classroom observation and feedback, and like most preparation programs, we integrated reflective practice into all field experiences. Candidates were asked to write reflections on field experiences and after an observation, submitted a reflection on the effectiveness of that lesson. However, we didn't find that candidates were particularly insightful nor did they address specific teaching behaviors. We had seriously questioned whether the post teaching feedback conference actually promoted any ownership or commitment to improve

identified behaviors. Quite often, candidates could not recall specific incidences on which we had focused for teaching improvement. At times, there was deliberate resistance to our effort to draw the candidates into self-analysis and commitment to change certain behaviors. We contend that the one performing needs to own their performance and, therefore, the need for improvement. Evaluation should come from self-examination with along coaching and support, and the traditional observation/feedback conference was not helping us make progress toward the goal of candidates who were reflective teachers who are self-analytical and driven toward continuous improvement. With that paramount goal, we embarked on digital video analysis as a means to achieve this goal.

A recent study reported that video review helped interns to focus less on themselves and more on student learning. Interns moved to a higher level of thinking about how they were able to facilitate learning (Rosaen, Lundeberg Cooper, Fritzen & Terpstra, 2008). Taking it to the next level by using video editing with guided reflection activities yielded "longer and more pedagogically connected reflective pieces" (Calandra, Brantley-Dias, Lee & Fox, 2009, p.81). We wanted our candidates to engage in this kind of deliberate reflection about their teaching techniques by not only viewing their teaching episodes, but also engaging in self-analysis through identification of teaching behaviors. We hoped to increase candidates' ability to rate teaching effectiveness and observe as their competence increased over a short period of time.

We aspired to break down resistance to supervision by having the candidates watch their own teaching videos, mark or tag behaviors, and reflect on concrete examples from their own teaching. We believe those who do the work, do the learning; therefore, our hypothesis was that candidates needed to be responsible for their own learning and growth. Our experiences reinforced the drive to revamp the preparation program with significantly more time in classrooms and engagement in self-analysis. We incorporated more time in classrooms through program policy change and district partnership efforts, which resulted in a full-time academic year in classrooms for candidates in their final year of the program.

Methodology and Procedures

The need to document teaching performances and track growth over time were two goals around which we based a pilot study utilizing digital video to record candidate teaching segments. The use of small digital cameras certainly made videotaping less intrusive and distracting, compared to the cumbersome larger cameras available in the 80s and 90s when capturing videos of teaching was prevalent. Additionally, innovative video analysis software enabled us to have more than a discussion about a teaching segment. This software put the ownership and accountability on the candidates to analyze and tag specific behaviors within their videos. The entire process provided the opportunity for our preparation program to collect a broad repertoire of effective teaching techniques and to develop a range of best practices that may enhance the learning experience of future teacher candidates.

Our pilot study, conducted during the spring student teaching semester, did provide a wealth of experience documenting how preservice candidates respond and engage in self-analysis through the act of tagging videos. Researchers invited a random sampling of middle level preservice candidates from placements in three school districts to participate. Eleven females and five males accepted and represented the average age and gender of the group. The group was made up of 13 math/science, one English-language arts/social studies, and two generalists candidates, which is similar to the composition of the overall group of candidates. Participants were welcome to opt out at any time during the pilot study. All components of student teaching were equal for candidates, with one exception - the use of video and tagging for reflection and growth among the pilot study participants. Sixteen candidates took part in the pilot and 22 remained in the regular program. All candidates signed a video release, which outlined how the videos would not only be used for research purposes, but also for the training and development of preservice teachers. The three school districts accepted this release with the caveat that video be utilized only for supervision and professional development, with no public posting or sharing of video. This stipulation was included in the video release signed by candidates.

In our efforts to ensure reliability and validity of research ratings, we engaged two teachers working toward principal certification from one partner school district who assisted in the triangulation of several candidate-tagged videos. These teachers reviewed video and candidate tags via recordings stored on a secure server rather than in a face-to-face setting. There was no direct contact between these raters and the candidates. This process provided an important triangulation of several candidate-tagged videos, verifying that the behaviors identified by the raters were in sync with those tagged by the candidates. Using this method confirmed that not only are candidates able to self identify and rate themselves, but that effective clinical supervision can take place within a distance context, especially when face-to-face observations might not be possible.

The software and video platform selected for this pilot was Dartfish Technologies, a leader in video software analysis, which had been used extensively for athletic training and performance analysis. One feature of this

software is customized tagging. A point and click system allowed video to be tagged when a particular teaching technique was observed. Candidate explanations and comments could be tallied and compared, across participants, as well as over time for individuals. Names and techniques from Lemov's *Teach Like a Champion* (2010) were adopted in order to create an initial evaluation rubric. The preparation program had utilized the book in an introductory course and students found the techniques and organization of categories easy to identify Lemov identified nine categories, each with five to eight techniques (see Table 1). Techniques are identified as a practice requiring refinement rather than a strategy identified as a decision (Lemov, 2010, p. 30). We systematically developed these techniques with practice and application, recognizing that without focused feedback and practice over time, candidates would not internalize techniques.

In addition to the incorporation of reflective analysis of video, we were also interested in the developing sense of self-efficacy of this pilot group, especially compared to others in the program. For some time, the middle level program had utilized the long form of *The Teachers' Sense of Self Efficacy Scale* (Tschannen-Moran & Woolfolk, 2001). We continued this practice with both groups and further asked pilot participants to respond to a survey regarding their sense of efficacy regarding the specific techniques. The survey was administered at the beginning and end of the pilot project and asked participants about their level of understanding and ability to implement techniques in each of the nine categories. Responses were recorded in likert form, but also allowed for open comments: (a) I do not know this technique; (b) I intend to try this technique; (c) I'm beginning to use this technique; (d) I use this technique regularly; and (e) I use this technique every time I teach.

Findings and Implications for Practice

Video Tagging Process. As previously mentioned, with the software's customized tagging feature, we developed tagging panels specific to Lemov's techniques (2012). The process is basically one where a candidate videotapes segments of a lesson, which is then downloaded into the software. Candidates watch the video and identify teaching behaviors by clicking on the labeled button and making comments for each tag, as desired. After tagging performances, the student teacher uploads the video to a password-protected collection stored by the software company in the cloud. We developed a database of all videos, searchable by collection, key words, and individual.

We found that when teacher candidates engaged in reflection with video they paid more attention to instruction components. We knew that we needed to extend the reflection from, "How did the lesson go?," or "In what ways were the objectives met?," or "What adjustments do I need to make for next time?," *to* specific identification and analysis of teaching behaviors by the candidates of their own teaching. The traditional method of asking students to reflect on their lesson and to provide feedback on what we [the university supervisors] observed, fell short of our expectations for candidate growth. Often, because student teachers were so consumed with getting through the lesson, reflection didn't provide clarity, nor did it achieve noteworthy change in future teaching behaviors. Conversely, by having the student teachers observe, tag and evaluate their own performance via video and software, they 'own' their growth. This is illustrated by comments made by candidates in a group meeting where they were tagging simultaneously and the discussion flowed freely. Individually, they were asked what they were doing and experiencing that day. It became clear that through skill attainment and progress over time, candidates became more evaluative of their teaching, as noted in the following quotes:

> Participant: I'm still working on my questioning. . the other difference was I tagged my 3rd and 4th video before my first. . . was that I really had all the steps in there, whereas my first video it's chaos.

> Participant: I can feel my movement in the classroom, but watching it is different. I was conscious to have a lot more questions. . . to keep them more engaged.

> Participant: To be honest with you, I probably would not have utilized that book [with the techniques] at all… even next year when I get my own classroom…never to this extent. But now, because of this program, this is my main way of reflecting on teaching. What did I incorporate in this lesson? What did I do? How can I break it down and be more critical about it. Whereas before, it was just a book.

The tagging sessions have given the university supervisor tremendous insight into the student teachers' awareness of behaviors and ability to make changes, while tracking their progress over time. We, the university supervisors-researchers, found that collaborating with candidates while they tagged their videos provided us with invaluable and insightful understanding of the individual candidate's thinking. We became more effective as we better understood where to probe, mentor, and encourage candidates. Like Sewall (2009), we also moved from the superficial toward greater depth of understanding in our supervision of their teaching. Candidates also weighed in on the collaborative tagging sessions as noted in the following quotes:

> Participant: The workshops forced me to set deadlines so I was guaranteed to have a video by that day. Then I knew I would be able to benefit from working together,

sharing with others, and get lots of feedback. It has really helped me with time [management].

Researcher: How do you feel about tagging? Participant: It's very simple. Actually, a lot easier than I thought it would be. This is my first time to tag…I've already tagged two videos today.

Researcher: What really stood out to you when you began to watch yourself teaching? Participant: Not catching students off task while you're teaching. You think you are, but you're not. There were a lot of kids who needed correction or feedback.

Researcher: What are your strongest teaching skills? Participant: By far, no opt out. It went from hearing crickets when I asked a question to developing strategies to get all of my students participating and increasing the pacing of my lessons.

Participant: My students were opting out all the time in the beginning. I had to stay with them, keep asking and prompting with questions. I learned that in your class. So I've really got that one down.

The Conversation Changed. We were very pleased that the teacher candidates were not intimidated by the software and that they took a great deal of ownership in their professional growth. But what surprised us even more was the dialogue between candidates during small group workshops. The process of tagging and identifying teaching behaviors changed the dynamics of 'teacher talk'. We found, during student teaching semester group discussions, that candidates engaged in renditions of typical teacher talk around issues like school schedules, frustrations with administration, testing, and student issues. However, during the tagging workshops the conversation literally changed. Candidates willingly showed their tagged videos to the group and talked through their angst at certain events and their commitments to improving their teaching performance. This was illustrated in one of the early sessions when a few of the student teachers were struggling as noted in the following quotes:

Participant: Here's where I tagged to show where I was supposed to start the lesson. I tried to clap to get their attention. I got louder…you see…and nothing worked at that point. I tried 'class, yes' but it wasn't consecutive. I hadn't used it every day. It didn't really have any meaning at that point. The desks were set up different… it didn't really work.

Participant's Teammate: The desk thing can work. It's just that…it might have worked better if…This is what we figured out after the first period [explains alternative desk arrangement].

Findings from our pilot study have led to changes in how we support and understand the teacher candidate learning process. We have gone to scale with all middle level teacher candidates in cohorts that followed the pilot (n=34; n=32). At this time, two additional full cohorts of candidates have continued to participate in the research. Because of networking and positive communication among preservice candidates, we have not had individuals opt out. Analysis of new data is under way. We are continuing with Lemov's identified techniques (2010; 2012) as tags. It has become the language for us and our teacher candidates. We have created several customized tagging panels to address certain aspects of teaching such as questioning strategies or introduction of new material in an I Do/We Do/You Do process. Adopting the following value scale, which candidates apply to rate themselves, promoted by Marzano, Frontier & Livingston (2011) has been helpful: (a) not using, (b) beginning, (c) developing, (d) applying, and (e) innovating.

The group discussions and collegial work proved so engaging that all software is now housed on computers in the college lab. The semester schedule is systematically set for workshop times on half-days and evenings. Student teachers bring their video memory card, download onto a computer, open the software, tag behaviors and rate their effectiveness. Candidates collaborate and observe/comment in teamed pairs. The tagged segments are published and uploaded to the protected collection. What we found most interesting was the engagement when candidates worked in pairs or small groups. The discussion about teaching and specific behaviors or actions was in stark contrast to our previous observations of student teacher reflection on teaching.

We are currently conducting a mixed methods analysis of data. The software functions allow us to examine the data from multiple data queries through key words, by individual for case studies, or by rating scales on downloadable excel sheets. Therefore, current and future research will focus on technique attainment and progression of skill in a time series design. A pre and post survey identifying use and comfort with all *Champion* techniques as well as teacher efficacy (2001) will remain as part of the data collection.

Conclusion

Two cohorts of middle level teacher candidates (n=42) have confirmed that the process of video recording teach-

ing segments and tagging with software is a manageable and viable process to promote teaching effectiveness. The dimension of utilizing software to tag specific behaviors significantly changed the focus from "How do I look?" to "What am I doing that is affecting student engagement and learning?" We initially anticipated that using the software might be cumbersome or that our candidates would feel vulnerable and exposed. However, this was not the case as candidates had little difficulty with the software, collaborated with each other, and willingly engaged in self and peer evaluation. The group dynamics and shift in culture was surprising and highly rewarding. We knew that these tagging experiences had value in the development of a self-evaluative mind-set about teaching As Marzano (2011) stated, "Opportunities to observe and discuss effective teaching are an important part of developing expertise among classroom teachers" (p. 7). We believe that an important aspect of our mission is to prepare teachers who have incorporated beliefs and behaviors into teaching practice and for whom discussions about effective teaching are the norm rather than isolated events. We want to send teachers into the field who expect that teaching and student learning are what teachers talk about (DuFour, Eaker, & DuFour, 2005; Jackson & Bruegmann, 2009). Our highest expectation is for these future teachers to regularly engage in "professional discourse with experienced and novice colleagues as part of their own development of knowledge in practice" (Hollins, 2011, p. 402).

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Table 1: *Teach Like a Champion* Techniques (Lemove, 2010)

Setting High Academic Expectations	**Creating a Strong Classroom Culture**
No Opt Out	Entry Routine
Right is Right	Do Now
Stretch It	Tight Transitions
Format Matters	Binder Control
Without Apology	SLANT
Planning for Academic Achievement	On Your Mark
Begin with End in Mind	Seat Signals
4 M's of objectives (Manageable, Measurable, Made First, & Most Important)	Props
Post It	**Setting and Maintaining High Behavioral Expectations**
Shortest Path	100 Percent
Double Plan	What to Do
Draw The Map	Strong Voice
Structuring and Delivering Your Lessons (I / We/ You Techniques)	Do it Again
"I " Techniques	Sweat the Details
The Hook	Threshold
Name the Steps	No Warnings
Board = Paper	**Building Character and Trust**
Circulate	Positive Framing
"We" Techniques	Precise Praise
Break It Down	Warm/Strict
Participation Ratio	The Joy-Factor
Check for Understanding	Emotional Constancy
"You" Techniques	Explain Everything
At Bats	Normalize Error
Exit Ticket	**Improving your Pacing**
Take a Stand	Change the Pace
Engaging Students in Your Lessons	Brighten Lines
Cold Call	All Hands
Call and Response	Every Minute Matters
Pepper	Look Forward
Wait Time	Work the Clock
Everybody Writes	
Vegas	
Challenging Students To Think Critically	
One at a Time	
Simple to Complex	
Verbatim	
Clear and Concise	
Stock Questions	
Hit Rate	