Using Teaching Videos to Integrate the Danielson Framework for Teaching into Secondary Certification Programs

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The purpose of this study was to examine if the use of teaching videos would heighten teacher candidates' ability to *notice* Danielson's instructional techniques as they implemented their own classroom instruction in a clinical setting. The investigation measured teacher candidates' performance over the course of two practicum experiences and compared the performance ratings of teacher candidates among different certification programs. The significance of this research was the use of video lessons to shed light on the intricacies of implementing the *Danielson Framework for Teaching* by helping teacher candidates to unpack the complexities of the model for interpretation during their practice teaching.

The purpose of this study was to examine if teaching videos that demonstrate instructional strategies would help teacher candidates to comprehend and utilize the instructional techniques represented in the *Danielson Framework of Teaching* (2013) during clinical experience. Teacher candidates from a variety of secondary and K-12 certifications programs were evaluated during practicum observations using the rubrics that comprise *Danielson Framework of Teaching* (2013). Before entering practicum classrooms, instructors used videos of teaching and discussions of the nuances of the rubrics to introduce the Danielson rubrics as tools to evaluate teaching and as exemplars of best practice according to program standards. During practicum experience, the rubrics were used as the basis for post-observation coaching. The Danielson rubrics were used in the practicum courses as they are the evaluation tool used in the state-wide teacher evaluation process.

According to the website, "The Danielson Framework for Teaching is a researched-based set of components of instruction, aligned to the INTASC standards, and grounded in a constructivist view of teaching and learning" (Danielson, 2017). It goes on to state that among its many purposes it can serve, "as the foundation for professional conversations among practitioners as they seek to enhance their skill in the complex task of teaching." *Danielson's Framework for Teaching* (2013) consists of five teaching domains measured by twenty-three rubrics. The study participants were 100 teacher candidates from two practicums courses across two semesters enrolled in 40 hour and a 90 hour classroom practicum courses. The structure of the courses provided several weeks of campus meetings before the classroom practicum, to review course assignments and program requirements. In summary, the study suggests that the use of teaching videos should be used as one helpful instructional tool to support teacher candidates' assimilation of the teaching behaviors and standards advocated by teacher preparation programs.

Literature Review

The definition of good teaching has changed in accordance with federal initiatives such as No Child Left Behind and Race to the To the Top to focus on teach*ing* quality to affect student learning, rather than on teach*er* quality with focus on teacher characteristics (Knight, Lloyd, Arbaugh, Gamson, McDonald, Nolan, & Whitney, 2015). This reconceptualization of teacher performance with emphasis on student outcomes demands a more complex set of teaching behaviors than were required of teachers in the past. Such classroom behaviors include instruction for higher order thinking, classroom practices that necessitate grouping strategies, and a style of instructional delivery that requires improvisational problem solving (Knight et al., 2015). The cognitive demands of this type of instruction are a far cry from teacher-directed, stand and deliver instructional methods of past secondary classrooms where high school teachers often used a static lesson plan with a few simple, teacher-centered instructional methods.

Such increased expectations for K-12 teacher classroom performance have thrust teacher preparation programs into a mode of program revision and transformation to meet K-12 educational needs and state certification demands. To that end, teacher preparation programs are experimenting with a variety of techniques including video technology to improve the efficiency and quality of teacher preparation. Using teaching videos has become a practical option as equipment and storage space for video have become more economical. Brophy discussed the purposes and the benefits of using video in teacher education (2004). He noted that it provides a permanent record of experience that can be viewed repeatedly and with the opportunity for extended review, reflection, and analysis. It also allows common observational experiences that can be shared, discussed and used as examples for teaching and problem solving. Lampert and Ball in their investigation claimed video had the power to transform teacher education (1998). More specifically, Sherin and van Es suggested that video can play a significant role in helping teachers to learn to *notice*, that is to focus on the most salient features of a teaching video to reflect upon and to gain understanding of their own teaching (2005).

To examine the potential of video technology, a number of researchers are exploring how the viewing of teaching videos can promote teacher candidate understanding and skill in developing effective classroom practices. Carter, Cushing, Sabers, Stein, and Berliner (1988) note that novice teachers lack skill as classroom observers and relate how they tend to first describe the static physical aspects of the classroom environment, rather than the instructional process and classroom interactions. Unlike expert teachers, novice teachers had difficulty identifying the most important characteristics of instruction, and described all aspects of the classroom as having equal informational value (Carter, Cushing, Sabers, Stein, & Berliner, 1988). This is cause for concern when many teacher preparation programs require extensive field experience and classroom observation. Researchers have found that explicit noticing is critical to teacher development because if candidates fail to notice the intricacies of a framework for good teaching, they cannot choose to adopt such methods in their own teaching (Sherin & van Es, 2005; van Es & Sherin, 2002; Rosaen, Lundeberg, Cooper, Fritzen, & Terpstra, 2008).

Van Es and Sherin (2002) used teaching videos to focus teacher candidates on the important aspects of the classroom. The videos were used to direct teacher candidates to make the connection of theory

to practice, and to apply those connections to planning for a given classroom context. Sherin and van Es (2005) followed two groups of teachers who video recorded their own teaching and used the videos to focus the teachers' professional discussions about teaching and learning.

Baecher and Kung's research about the use of learning videos demonstrated that videos are an effective tool to create cognitive dissonance in order to increase the awareness of teacher candidates' own practices (2011). Further, they found video analysis provided superior opportunities for lesson analysis than memory alone could afford and video lessons acted as shared experiences with group interaction in the analysis and discussion of teaching practices (Baecher & Kung, 2011).

One of the strongest studies indicating the benefits of video for documenting the development of teacher thinking was one that explored the relationship between different types of teacher knowledge and student learning. The researchers asserted, "Practically speaking, the use of video analysis as a window into teachers' knowledge allows us to assess teacher knowledge more easily than with the use of traditional instruments" (Kersting, Givvin, Sotelo, & Stigler, 2010, p. 179). An investigation by Star and Strickland used a pre- and post-test method to measure preservice teachers' ability to notice classroom events (2008). They found that using a framework for observation sharpened the preservice teachers' ability to notice the more salient aspects of teaching. The researchers concluded that videos used for professional development afford rich opportunities for candidates to develop their practice.

Kale and Whitehouse (2012) noted that teacher candidates may use teaching strategies that match their preferred approach to teaching. According to Grant, Hiebert, and Wearne, a teacher's conceptual framework for instruction has a powerful influence on teaching behavior and video discussion may play a role in clarifying new teachers' concepts of good teaching (1998).

The study addresses the following research questions: 1. Does the use of teaching videos as a tool to heighten teacher candidates' ability to notice Danielson's instruction techniques over time? 2. How do teacher candidates from four broadly defined content majors differ in their performance in teaching as measured by the Danielson rubric near the end of the semester? 3. Did teacher candidates rate themselves differently than the scores provided by the university supervisors?

Methods

Participants

Participants in this study were 100 teacher candidates recruited from two practicums courses in spring 2015 and fall 2015 semesters: The courses represented in the study consisted of two practicums, one that provided 40 hours and a second course that provided 90 hours in an assigned single classroom placement, supervised by a mentor teacher at the school and a university supervisor who conducted observations and provided clinical feedback. Most teacher candidates took the courses sequentially in the two semesters before their student teaching experience. The structure of the courses provided several weeks of campus meetings before the classroom practicum, to review course assignments and program requirements. Each practicum required a minimum of four preplanned and taught lesson plans that were submitted and scored using a rubric in an on-line assignment system. The programs represented in the courses were diverse, representing the degree programs residing outside of the college of education. These programs

included teacher certification in: art, biology, business-marketing, chemistry, family and consumer sciences, engineering-technology, English, health and physical education, modern languages, mathematics, music, physics, social studies, and TESOL. Each course enrolled 25-30 teacher candidates per semester.

The teacher candidate demographics for the 40 hour practicum in the spring 2015 semester included 24 candidates, 16 female and 8 male, with one candidate of Asian heritage and one of Latinx heritage, the remainder of candidates were white. The teacher candidate demographics for the 90 hour practicum included 25 candidates, 19 female and 6 male, with one candidate of African-American heritage and one of Latinx heritage, the remainder of candidates were white.

The teacher candidate demographics for the 40 hour practicum in the fall 2015 semester included 27 candidates, 16 female and 11 male. All 27 candidates were white. The teacher candidate demographics for the 90 hour practicum in the fall 2015 semester included 24 candidates, 17 female and 7 male, with one candidate of Asian heritage and two of Latinx heritage, the remainder of candidates were white. Nine teacher candidates (out of the 100 participants) did not complete all of the assessments for the study. Their incomplete data were excluded from this analysis.

The two university supervisors who observed, coached and evaluated the teacher candidates using the Danielson rubrics, were both experienced clinical faculty. They discussed and agreed upon the selection and use of the three rubrics from the Danielson Framework for Teaching for the two practicum courses. Both had participated in professional development about aims and purposes of the Danielson Framework and agreed that the rubrics were an effective method for measuring teacher candidate progress during the practicum courses.

Research Design and Procedures

The study employed a quasi-experimental design. The investigation used a variety of instructional interventions including coaching, reflection, scoring guides and video models of teaching as preparation for the practicum experience. Part of preparation for teaching is the transformation from the role of a *learner of content* to the role of a *teacher of content*. Videos to demonstrate content teaching combined with the use of an instructional framework were hypothesized by the researchers to speed the transformative process. With demands for higher levels of teaching performance from all teachers including novice teachers, researchers are increasingly interested in using video technology to increase the development of teaching performance (Bieda, Sela, & Chazan, 2015).

For this investigation, the Charlotte Danielson Framework of Instruction (2013) was used in a manner similar to the Star and Strickland (2008) and Kong, Shroff, and Hung (2009) studies. That is, a teaching video was used as a model in introduce the Framework and to guide teacher candidate reflection as a means to assimilate the constructs of the Danielson model. A teaching video was used to help teacher candidates learn to "notice" the features of classroom teaching that either conformed or not to the constructs of the Danielson Framework. It was thought that viewing a video of a teacher who represented many but not all of the characteristics of the Danielson model, would serve to improve teacher candidates' ability to notice the salient elements of the model. It would also produce the cognitive dissonance to allow teacher candidates to evaluate their own teaching and to consider if the teaching

provided in the Danielson model was a close match to facilitate development of their own teaching identities and methods.

According to the website, "The Danielson Framework for Teaching is a researched-based set of components of instruction, aligned to the INTASC standards, and grounded in a constructivist view of teaching and learning" (Danielson, 2017). It goes on to state that among its many purposes it can serve, "as the foundation for professional conversations among practitioners as they seek to enhance their skill in the complex task of teaching." Danielson's Framework for Teaching consists of five teaching domains measured by twenty-three rubrics. Teacher performance is determined by ratings on these twenty-three rubrics, scored by trained evaluators. For the practicum courses, three rubrics were selected to provide clinical feedback to teacher candidates during both their 40 hour and 90 hour practicum courses. These three rubrics were selected because they represented key skills that teacher candidates struggle to master, are basic to competent teaching, and provided observable classroom behavior for evaluation and feedback. The three rubrics used were 2D: Managing Student Behavior, 3A: Communicating with Students, and 3C: Engaging Students in Learning.

The rubric for *managing student behavior* describes the skills for creating classroom expectations, monitoring student behavior and providing appropriate responses to student misbehavior. The rubric for *communicating with students* determines if teachers state their expectations for learning, and if they provide clear directions and procedures during the lesson. The third rubric measures how effectively teachers *engage students in learning.* This last rubric determines if teachers provide appropriate activities and assignments to intellectually engage students. The criteria are the use of grouping strategies, use of effective lesson structure, and appropriate pacing to support higher order thinking. The skills represented by the three Danielson rubrics were considered fundamental to teaching competence and helpful to the process of monitoring progress as novice teachers explore and practice effective classroom practices.

Measures

The instrument selected for the research aspect of the courses was the 3C: Student Engagement rubric. The rating scale of the rubric included four levels of teaching quality described as *Exemplary, Accomplished, Developing,* and *Ineffective*. Before the teacher candidates visited their practicum classrooms, the candidates used the 3C rubric to evaluate a video lesson of a high school teacher providing instruction on the development and writing of the Declaration of Independence. The teaching video, entitled *Teaching American History: Declaration of Independence Classroom 1* (2009) was ten minutes long and published on *YouTube*, (2009). A male teacher presented a lesson on the Declaration of Independence, which was selected because it offered a topic that teacher candidates from a variety of degree programs were familiar and would be able to discuss. The viewing of the teaching video and the rubric ratings by the teacher candidates were conducted during a regularly scheduled session of the course. The instructor, provided teacher candidates an overview of the rubric criteria and purposes, then the candidates were asked to rate the instruction provided on the video according to the rubric.

With respect to rating of the video instruction, according to candidates in all four classes the teacher was viewed as effective in his use of some of, but not all of the techniques used in the 3C rubric

(N=100). For example, the video teacher does use *grouping* methods a criterion required for an "accomplished" score on the rubric. He also *engages* students in a discussion about interpreting the writer's purpose in writing the Declaration of Independence where students in small groups are shown engaged in lively discussion about the topic. However, on the criteria of the extent to which the teacher supports the use of student *higher order thinking* a debate arose among the teacher candidates and this generated the most variation in the scoring of the rubric. The debate centered on the interpretation of higher order teaching. The rating of the rubric seemed to be dependent on the candidates' definition of what constituted teaching for higher order thinking. Some teacher candidates claimed the video teacher supported higher order thinking and should be scored at the "accomplished" level while others insisted that his discussion simply guided the students to the teacher's conclusion. Candidates made the argument that recalling knowledge from a previous lesson does not require higher order processing, and therefore the teacher should earn a score of "developing." Danielson (2013) provides the following example of higher order thinking for the 3C rubric, "Students are asked to formulate a hypothesis about what might happen if the American voting system allowed for the direct election of presidents." Candidates' ratings (four types of ratings: engagement, pacing, grouping, and thinking) were compared with an expert's ratings (in engagement, pacing, grouping, and thinking) to calculate an absolute deviation total score (across the 4 types of ratings) for each teacher candidate. The absolute deviation total score represents teacher candidate's ability to notice Danielson's instruction techniques demonstrated by the high school teacher in the video lesson.

As the second measure for the investigation, during the regularly scheduled visit by university supervisors, observation of candidates' teaching and classroom management were rated using all three of the Danielson rubrics (N=149 observations). University supervisors provided coaching sessions directly after the observation to offer feedback about classroom events and to review the rubric ratings. As a program practice, the rubrics scores are considered part of clinical feedback and were not included as a graded assignment. After the completion of the course, the ratings of the rubrics by the university supervisors were recorded in a spreadsheet as individual candidates' scores with their program identification.

As a third measure, at the end of the course, teacher candidates were asked to rate themselves on the 3C rubric in terms of their current skill levels as represented by the rubric criteria (N=51). This measure was added after the first semester of results indicated that the differences between the ratings of the university supervisors and self reporting by the teacher candidates could provide insight into the candidate's own views of their progress in development of their teaching identities and levels of skills. Candidates' ratings (four types of ratings: engagement, pacing, grouping, and thinking) were compared with university supervisors' ratings to calculate an absolute deviation total score (across the 4 types of ratings) for each teacher candidate. The absolute deviation total score represents teacher candidate's ability to notice Danielson's instruction techniques demonstrated by themselves in their own observed classroom instruction.

Data analysis

1. Does the use of teaching videos as a tool heighten teacher candidates' ability to notice Danielson's instruction techniques as

measured by the absolute deviation total scores over time? A repeated measures ANOVA was conducted to examine the effect of teaching video use on teacher candidates' absolute deviation total scores using practicums courses (the 40 hour practicum vs. the 90 hour practicum) as the between-subjects variable, and time (early in the semester, near the end of the semester) as within-subjects variable.

2. How do teacher candidates from four broadly defined content majors differ in their performance in teaching as measured by the Danielson rubric near the end of the semester? A one-way multivariate analysis of variance (MANOVA) was conducted to examine whether there were any differences among the four broadly defined majors (CTE-HPE, Humanities, Music-Arts, and Math-Science) in the four types of ratings of the rubrics by the university supervisors (engagement, pacing, grouping, and thinking).

3. Did teacher candidates rate themselves differently than the scores provided by the university supervisors? Pearson product-moment correlation coefficients were calculated between university supervisor's rating engagement and candidate's self-report engagement; between university supervisor's rating pacing and candidate's self-report pacing; between university supervisor's rating grouping and candidate's self-report grouping; between university supervisor's rating thinking and candidate's self-report thinking.

Findings

Teacher Candidates' Ability to Notice Danielson's Instruction Techniques. Research question 1 sought to examine if the use of teaching videos as a tool heightens teacher candidates' ability to notice Danielson's instruction techniques over time. The means, standard deviations of teacher candidates' absolute deviation total scores in the early part of the semester and in the end part of the semester were provided in Table 1.

Table 1
Means and Standard Deviations of Absolute Deviation Total Scores in Early and End of the Semester by Practicum Courses

Absolute Deviation Total score	Early in the semester		End of the semester		
	M	SD	M	SD	N
40 hour practicum	3.91	1.51	1.00	0.86	22
90 hour practicum	4.13	1.22	1.33	1.35	23

The repeated measures ANOVA for absolute deviation total scores revealed a significant main effect for time $F(1, 43) = 96.13$, $p < .001$. Partial eta squared = 0.69, indicated large effect size. The main effect for types of practicum courses $F(1, 43) = 1.34$, $p > .05$ and time × practicum interaction $F(1, 43) = 0.03$, $p > .05$ were not significant. Candidates in the 90 hour practicum scored higher on the rubric than candidates in the 40 hour practicum, suggesting that viewing and analyzing videos was a helpful instructional practice to help candidates to learn and use the Danielson techniques.

Performance among Four Broadly Defined Majors. A second analysis was conducted on the data collected using the rubric instrument to determine if there was an effect demonstrated for the teacher candidates' discipline of study. The means and standard deviations of four types of ratings of the rubrics by the university supervisors (engagement, pacing, grouping, and thinking) by the four broadly-defined majors were reported in Table 2.

Table 2
Means and Standard Deviations of Four Types of Rubric Scores among Broadly Defined Majors

	Engagement		Pacing		Grouping		Thinking		
Majors	M	SD	M	SD	M	SD	M	SD	N
CTE-HPE	2.57	0.60	2.95	0.22	2.67	0.48	2.33	0.48	21
Humanities	2.75	0.42	2.84	0.37	2.75	0.44	2.77	0.42	32
Music-Arts	3.19	0.40	2.96	0.34	2.78	0.42	2.76	0.42	27
Math-Sci	2.91	0.83	2.73	0.47	2.55	0.52	2.68	0.46	11

The one-way MANOVA showed significant differences among the four broadly-defined majors on the combined dependent variables (engagement, pacing, grouping and thinking), $F (12, 223) = 3.75$, $p < 0.001$; Wilks' $\Lambda = 0.62$; partial eta squared = 0.15. When the results for the dependent variables were considered separately, the only difference to reach statistical significance, using a Bonferroni adjusted alpha level of 0.017, was engagement, $F (3, 87) = 6.16$, $p = 0.001$, partial eta squared = 0.18 and thinking, $F (3, 87) = 4.90$, $p = 0.003$, partial eta squared = 0.14. Follow-up multiple comparison of the engagement scores indicated that teacher candidates in the CTE-HPE and humanities significantly scored lower than those in the music-arts. In terms of thinking scores, the teacher candidates in CTE-HPE programs were significantly different from those in humanities and music-arts programs.

Correlation and Consistency between Self-ratings and Scores Provided by the University Supervisors. There was a strong correlation between instructor's rating grouping and candidate's self-report grouping ($r = 0.46$, $n=45$, $p =0.001$). The correlation between instructor's rating engagement and candidate's self-report engagement ($r = 0.239$, $p = 0.114$); between instructor's rating pacing and candidate's self-report pacing ($r = 0.123$, $p =0.423$); between instructor's rating thinking and candidate's self-report thinking ($r = 0.276$, $p = 0.066$) was not significant.

There were no measurable differences of the rating by the university supervisors and the teacher candidates' self-ratings. This indicates a coherence of agreement on the rubric ratings between the candidates and the university supervisors. This agreement speaks to a shared understanding between the candidates and the university supervisors about the teaching behaviors demonstrated in the rubrics and agreement as to the candidate's progress across the criteria as measured by the rubric.

Discussion and Conclusion

Overall, results indicate that the viewing of teaching videos provided one tool to assist the development of teacher candidates' understanding of Danielson Instructional Framework for Teaching. The systematic use of the Danielson rubric in conjunction with analysis of videoed teaching behaviors helped candidates to improve their skill in the use of instructional behaviors to engage students in learning. It suggests the continued use of teaching videos should be explored as a helpful instructional technique to help candidates to utilize the instructional techniques advocated by teacher preparation programs. An analysis of candidates' open responses explain how the framework rubric contributed to their understanding of teaching. Candidates remarked that the use of the rubrics drew their focus away from the teaching of content to explore how to engage students in learning. In one example, a candidate noted, "This rubric reminded me that student engagement is a reflection of the effectiveness of my teaching."

Also, the study notes differences among the content majors that may indicate preparation of the candidates in the humanities and fine arts may provide an advantage over the more technical orientation of the preparation of the candidates in mathematics, career and

technical education and health and physical education programs. Continued investigation of the differences in methods preparation for different majors should shed light on how different methodologies contribute to their students' ability to recognize and promote higher order thinking during lessons as well as provide lessons that engage students during the learning process.

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