

**Using Technology to Supervise Student Teachers**  
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**Abstract**

Student teaching is the most influential experience in teacher education programs, yet the cost and time involved for the university to provide supervision threaten the quality of the experience. This paper reports the use of videotaping and analyzing teaching episodes as an alternative approach to traditional face-to-face student teacher supervision. The data presented compares the nature of feedback provided as well as the cost and time involved with face-to-face supervision vs. using video analysis.

## **Background**

Consistently, student teachers report that the student teaching experience is the most important and influential aspect of their teacher preparation program (Rodgers & Jenkins, 2010). Yet, providing a quality student teaching experience is a challenge to teacher preparation programs because of the dearth of quality physical educators who can provide meaningful feedback as cooperating teachers, the lack of available adjuncts with supervision skills, the cost of supervision, and the time required to adequately supervise at multiple school sites. Moreover, these problems are compounded outside metropolitan areas where schools are widely distributed geographically.

Our concern over the quality of supervision and feedback provided to student teachers coupled with increased budget constraints within the college led us to explore using a hybrid approach to supervision. Across the semester, we provided four face-to-face (F2F) on site observations for student teachers. In addition, student teachers were required to submit videotapes of two teaching episodes to university supervisors through the Video Analysis Tool (VAT) system.

The Video Analysis Tool ([www.evirx.com](http://www.evirx.com)) is an intuitive, web-based tool that supports remote, evidence-informed supervision and assessment practices. The system is used worldwide in teacher education, leadership development, medical and veterinary practices, mental health training facilities, corporations, and compliance operations. Our students captured teaching episodes on videotape, uploaded them to a personal account within the VAT system, then gave their university supervisors permission to view the lesson. While a variety of analysis tools can be loaded into the VAT system to provide feedback, we elected to use a blank narrative form for comments to provide maximum flexibility for our supervisors.

After two years of informally incorporating this technology into our supervision of student teachers, we wanted to more fully evaluate our supervision approaches and practices. Specifically, our evaluation was driven by the following questions:

- 1) Does the type of feedback provided to student teachers differ based on the supervision approach used?
- 2) Does the time required for supervision differ based on the supervision approach used?
- 3) Does the cost of supervision differ based on the supervision approach used?
- 4) Does the content of the feedback provided by two supervision approaches differ?

## **Methodology**

To help us evaluate our supervision practices and to make decisions about how to provide quality, cost effective supervision as our teacher preparation grows, we collected data across two years (2009 & 2010) on cost and time involved with these two supervision approaches. Participants in the evaluation were five university supervisors of various academic ranks and the 52 student teachers they supervised. We collected and content analyzed written feedback provided to student teachers by university supervisors who used the two supervision methods in a hybrid approach. Our college requires six formal observations for each student teacher, so we conducted four F2F at the school site and two using the VAT system. University supervisors kept logs of their time and mileage using both supervision approaches. Using a hybrid approach enabled us to make comparisons of the feedback provided, time involved, and cost of supervision for each supervisor, allowing us to “control” for differences in the supervision approach or style

that would be confounding factors if comparisons were made of supervisors using only F2F or technology-based supervision.

## Results

Results of the evaluation of our hybrid supervision approach are presented below in response to the questions that drove our evaluation.

### 1) Does the type of feedback provided to student teachers differ based on the supervision approach used?

A total of 149 observation reports were used in this evaluation, 96 from F2F supervision and 53 from VAT supervision. Supervisors varied in the way they provided written observation reports to the student teachers whom they observed. For F2F supervision, some observation reports were hand-written and given to student teachers during the on-site observation (n=30). At other times, observation reports were typed and sent via email to the student teacher after the site visit (n=66). When supervision was provided using the VAT system, observation reports were typed and sent to students via email. Recognizing the importance of providing immediate feedback to student teachers, our policy was to provide supervision notes within 24 hours of when the student uploaded the videotape or was observed on site. However, we do not have data to verify that feedback was provided within 24 hours with either supervision method.

**Table 1. Format of Observation Reports using Face-to-Face vs. Video Supervision by Supervisor**

<b>Observation Reports</b>	<b>ADJ</b>	<b>IN1</b>	<b>IN2</b>	<b>ASP</b>	<b>FP</b>
Academic Rank	Adjunct	Instructor	Instructor	Assistant	Full
# F2F Hand Written Reports	4	0	25	0	1
Mean # Words	104.00	NA	117.32	NA	156.00
# F2F Typed Reports	0	28	0	26	12
Mean # Words	NA	364.61	NA	321.31	454.00
# VAT Typed Reports	5	14	12	12	10
Mean # Words	274.60	268.00	537.92	460.08	584.20
Comparison of Feedback Provided	2.64 times more feedback using video	1.36 times more feedback using F2F	4.58 times more feedback using video	1.43 times more feedback using video	3.74 times more feedback using video

Table 1 shows the format of observation reports provided by each of our five supervisors, whether hand-written or typed, for each supervision approach. Table 1 also shows the mean number of words for each observation report using each supervision method. The amount of feedback provided by supervisors varied across supervisors, and ranged from an average of 104.00 written words to 584.20 written words per observation.

**Table 2. Overall Mean Number of Words per Observation Report using F2F vs. Video Supervision**

<b>Observation Report</b>	<b>Mean Number of Words</b>	<b>Range of Number of Words</b>
F2F Hand Written (n=30)	116.83	60-184
F2F Typed (n=66)	363.80	155-848
All F2F Observations (n=96)	286.62	60-848
VAT Typed (n=53)	432.89	117-915

Table 2 shows that the amount of feedback provided to student teachers was greater when the feedback was typed rather than hand-written during F2F supervision (116.83 average words of feedback when hand-written compared to 363.80 words when typed written feedback was provided later via email). Overall, the range of feedback provided using F2F supervision was 60-184 words for immediate, hand-written feedback, 155-848 words for typed feedback after a F2F observation, and 117-915 words for supervision using technology. The overall mean number of written words provided as feedback to student teachers following observations of their teaching was greater when observations were conducted using technology – 286.62 average words of feedback with F2F supervision and 432.89 average words of feedback when using technology. While one university supervisor provided more feedback following F2F observation rather than VAT observation (1.36 times more written feedback after F2F observations), all other supervisors provided much more feedback when supervising using technology. Those university supervisors provided 1.43 – 4.58 times as much feedback when using technology, compared to feedback they provided using F2F observation.

In summary, our evaluation data suggest that the amount of written feedback provided to student teachers does vary based on the supervision approach used. Specifically, student teachers were given more written feedback when it was typed rather than hand-written on site, and the most written feedback when the observation was conducted using technology.

**2) Does the time required for supervision differ based on the supervision approach used?**

Because supervision of student teachers is considered to be time intensive, we wanted to see if using technology for supervision would save time. Supervisors kept detailed logs of the time associated with supervision. *Observation time* was defined as the amount of time spent directly observing and providing feedback to the student teacher, including time to word process and email feedback to the student teacher after an observation. *Supervision time* was the amount of time spent directly observing and providing feedback to the student teacher plus travel time to

and from the observation site. To compare the efficiency of supervision using the two approaches, we calculated the *on-task supervision time (OTS)*, which we defined as the percent of supervision time spent engaged with the student teacher through observation and providing feedback.

Table 3 compares the average or mean time for an observation using either method for each supervisor, followed by the observation and supervision times for F2F and VAT supervision. Mean values for each supervisor vary considerably, which may be a result of three obvious factors. First, the distance the supervisor traveled to school sites. Remote sites increased the supervision time but sometimes increased the observation time, the logic being that you don't get to remote sites as often, so you spend more time there than you ordinarily would. Grade level is a second influence, as elementary lessons are generally shorter than those at a high school. A third factor explaining variance across supervisors was supervision style. Supervision of student teachers is largely an isolated and individualistic assignment; little is known by the department about what actually goes on during supervision. While student teachers may like or dislike some supervisors, why this is remains largely unexplored. When we, in the department, talked about supervision, the discussion focused on the number of visits or concerns with individual student teachers rather than what actually goes on during the observation visit and the lens used by the supervisor to develop and provide feedback.

**Table 3. Comparison of Observation Time using F2F vs. Technology-based Supervision**

University Supervisor	Average Time per Observation Using Either Method (minutes)	Average Observation Time for F2F Approach (minutes)	Average Supervision time for F2F Approach (minutes)	On-Task Supervision Time (OTS) during F2F Supervision (minutes)	Average Observation Time for VAT Supervision (minutes)	Average Time Savings Using Technology (minutes)
ADJ	47.37	43.67	101.44	43.0	80.67	20.77
IN1	78.30	85.71	106.51	80.0	61.00	26.51
IN2	48.84	47.55	79.85	59.5	51.00	28.85
ASP	39.21	37.17	60.06	61.9	53.33	6.73
FP	68.00	76.80	140.20	54.8	55.78	84.42
Mean	56.34	58.06	97.61	68.44	60.36	33.46

Our content analysis of the written observation reports revealed differences in style based on personality and background, as well as disparities that may be a result of lack of training, orientation, and oversight of the supervisors. For example, the one supervisor whose F2F observations were longer than VAT observations has a counseling background; her feedback shows that she connected to and related to the student teachers very differently when using the different supervision approaches. These individual differences in supervision style will be explored more fully in the following discussion about the content of the feedback provided to student teachers.

The average observation time for F2F supervision ranged from 37.17 to 85.71 minutes per visit, and varied across supervisors by 48.54 minutes per visit. Average observation time using technology ranged from 53.33 to 80.67 minutes, and varied less across supervisors (by 29.67 minutes). Thus supervision time is more consistent across supervisors when technology is used.

The average or mean supervision time using F2F supervision ranged from 60.06 to 140.20 minutes per visit, with a mean of 97.61 minutes. Supervising using technology, with a mean of 60.36 minutes, saved time for all supervisors. Supervisor time savings using technology ranged from 6.73 to 84.42 minutes per observation, or an average of 33.46 minutes per observation. This was mainly due to eliminated travel time.

Specifically, overall only an average of 68.44% of the time used supervising F2F was on-task supervision time (OTS), or time spent “on-task” or engaged in observing or giving feedback to the student. The OTS for individual supervisors ranged from 43.00-80.00%, suggesting that time efficiency varied greatly across supervisors. In contrast, when using technology to supervise, 100% of the time was spent observing or providing feedback to the student teacher because travel time is eliminated and supervisors were fully engaged with the teaching episode.

Finally, while most supervisors spent less average time supervising with technology than F2F, all but one provided more written feedback to student teachers when using technology than when observing F2F. Table 2 shows the overall mean number of words provided as feedback was 286.62 for F2F supervision and 432.89 words with VAT supervision. Student teachers received 34% more written feedback when technology was used for supervision although those observations took an average of 33.46 minutes less time than comparable F2F visits.

In summary, the data suggest that using technology saves time and is more time efficient than F2F supervision. While the time savings and efficiency vary across faculty members, supervisors saved an average of 33.46 minutes per observation by using technology, largely due to eliminated travel time. Differences in efficiency are more obvious when supervision times rather than observation times are compared. While the average observation time doesn't vary greatly between the two methods (58.06 F2F and 60.36 VAT), when the supervision times are compared (i.e., travel time is included), we see that an average of only 68.44% of F2F supervision time is spent engaged in the “act of supervision” while 100% of supervision time using VAT is directed to observing and providing feedback to the student teacher.

### **3) Does the cost of supervision differ based on the supervision approach used?**

Rikard estimated that in 1985 the cost of a university supervisor was \$100 per hour to “conduct supervision that has little or no documented effect on student teacher behaviors” (Rikard, 1990, p. 86). While it is outside the scope of this paper to document the effect of supervision on student teachers, the fiscal stress on today's colleges of education led us to consider the comparative cost of supervision using alternative approaches. In 2009-2010, for example, our college spent over \$150,000 on student teacher supervision.

We defined a *supervision unit* as one three-credit hour load of student teachers to supervise. Our college policy defines this as a load of six to eight student teachers who receive six observation visits during the semester. We identified the cost of a supervision unit based on a professor's workload of eight courses (4-4) per year, as per Board of Regents policy. Ten month salary was divided by eight to determine the cost of one supervision unit, or course equivalent. The cost of adjunct supervisors is standardized across the college as \$2000 per supervision unit for masters' level and \$3000 per supervision unit for adjuncts who hold a doctoral degree. We calculated travel reimbursement at 55-cents per mile (2010 rate).

Based on the amount of time the supervisor reported for supervision, we calculated the cost per hour for each supervisor's work. Calculating the cost per minute enabled us to determine the cost per observation visit. We recognize that our figures represent the cost for the actual

supervision performed, rather than a standardized calculation of what should, contractually, have been performed. That is, the amount of time a supervisor spent supervising impacted the cost. We also note that while our calculations are based on a Board-prescribed teaching load of 4-4, in actuality professors teach a 3-3 or 3-4 load. Thus, our calculations of cost are conservative. Based on these calculations, the cost of supervision per hour ranged from \$69.00 to \$139.20 with an average rate of \$103.05 per hour (see Table 4). Note that we had complete data from only four of the five supervisors for this cost analysis.

**Table 4. Supervision Cost per Hour and Minute**

University Supervisor	Academic Rank & Highest Degree	Cost per Hour (dollars)	Cost per Minute (dollars)
ADJ	Adjunct (Ed.D.)	75.00	1.25
IN1	Instructor (M.S.)	69.00	1.15
ASP	Assistant (Ph.D)	129.00	2.15
FP	Full (Ph.D.)	139.20	2.32
Mean		103.05	1.72

Our calculations of costs required by the two supervision approaches are summarized in Table 5. Our data suggest that supervision costs are inflated by travel time for which the supervisor was compensated for both mileage and time. For example, FP and ADJ supervised student teachers at remote locations but reported fewer observations, while ASP reported high mileage but also a high number of observations because of multiple student teachers placed in the same building or adjacent buildings. Cost savings for supervising using technology vs. F2F ranged from \$14.47 to \$195.85 *per observation*, with an average of \$72.15 per observation visit. This cost savings varied by supervisor but averaged about 40%, and ranged from 11.20 to 42.73%. Savings were most dramatic when observations were remote (FP) or lengthy (IN1 and FP). Academic rank did not figure as prominently in cost savings (%) for supervision as did travel, number of observation visits, and time spent during observation. Because our institution does not use graduate assistants for supervision, we have not considered the impact of that academic rank on supervision cost.

**Table 5. Cost of F2F vs. VAT Supervision**

University Supervisor	Avg. Time for F2F Supervision (minutes)	Supervision Cost per Avg. F2F Observation (dollars)	Avg. Time for VAT Observation (minutes)	Supervision Cost per Avg. VAT Observation (dollars)	Cost Savings per Observation using Technology (dollars)	Cost Savings per Observation using Technology (%)
ADJ	101.44	126.80	80.67	100.84	25.96	20.47
IN1	106.51	122.49	61.00	70.15	52.34	42.73
ASP	60.06	129.13	53.33	114.66	14.47	11.20
FP	140.20	325.26	55.78	129.41	195.85	39.79
Mean	102.05	175.92	62.69	103.76	72.15	28.55

In summary, our data suggest that providing supervision through technology allows cost savings, the level of which is impacted by both distance and time involved with the observation. Coupled with the academic rank of the supervisor, cost savings can be dramatic – up to nearly \$200 *per observation visit* in our limited study.

**4) Does the content of the feedback provided by the two supervision approaches differ?**

To better understand the content of feedback that supervisors provided to student teachers, we performed an exploratory content analysis of observation reports developed following F2F and VAT observations to identify the general categories of feedback provided to our student teachers. We had a total of 149 useable reports available as shown in Table 6. We used only those reports completed by supervisors using both methods, only those reports that were legible, and only physical education lessons. We used a subset of observation reports for this general analysis; a subset consisting of eight randomly selected observation reports for each of the five supervisors, four using F2F supervision and four using VAT supervision. Thus, a total of 40 observation reports were content analyzed to identify general categories of feedback provided to student teachers.

**Table 6. Observation Reports Available for Content Analysis**

Type of Observation	2009	2010	Total Reports
F2F Reports	7	89	96
VAT Reports	7	46	53
Total Reports	14	128	149

As mentioned previously, the content analysis unexpectedly revealed different supervisory styles and foci across the five supervisors. For example, one supervisor outlined and described the lesson in the left hand column of the report form during F2F observations, using words and phrases, then provided a few sentences of “growth” suggestions on the right side of the page. When that supervisor provided feedback through the VAT system, the feedback was easier to read and more fully developed. There were not a great deal *more* comments, but they were better developed and illustrated in the VAT observation reports. Similarly, the other supervisor who hand wrote F2F observation reports provided much more feedback in the VAT reports, especially about the lesson, management, and student engagement. The VAT feedback was more fully developed because comments addressed not only what to do differently but also *why* those changes were important and valid.

Another supervisor provided the longest observation reports with both approaches, illustrating feedback with specific examples that were observed and connecting “best practices” and theory to the observations. The style of the report was conversational, hence the longer length. This supervisor provided more than twice as much feedback on lessons when using the VAT system, and more than twice as much feedback on personal qualities, especially voice level, when supervising F2F. In contrast, another supervisor consistently provided feedback directly and efficiently, often using evaluative words (adequate, exemplary, acceptable). That supervisor’s style included frequently posing questions related to the observation for the student teacher’s reflection and analysis. VAT reports by this supervisor were more detailed and warmer



in tone than the F2F observation reports and included almost twice as many comments on the lesson as with F2F supervision.

The most obvious contrast in style between the two supervision approaches, however, was with the supervisor who had a counseling background. Her F2F supervision reports were highly narrative, relational, and descriptive of what she observed. Most feedback was delivered tactfully or indirectly, often in the form of modified “I messages” (“when I saw you do this, I felt that...; I was wondering why you...”). She also provided feedback on affective aspects of the lesson far more than other supervisors. This humanistic approach was largely absent from the VAT observation reports, however. For example, this supervisor provided feedback on affective aspects of the lessons seven times as frequently during F2F observations than with VAT observations. VAT observation reports were shorter and more general, with undirected comments. The importance of personally and directly relating to the student teacher, as a person, was evident in the F2F reports and, surprisingly, absent when supervision was completed using technology. We would not have guessed that the two groups of reports were completed by the same supervisor.

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**Table 7. Content of Feedback Provided by Supervisors using F2F vs. Video Supervision**

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In the content analysis, we identified comments or sentence fragments that indicated a substantive idea or theme. In the 40 reports submitted to analysis, a total of 553 substantive comments were identified, 255 (46.11%) on F2F reports and 298 (53.89%) on VAT observation reports. As previously noted, the number of words provided in average VAT reports exceeded the number of words in average F2F observation reports by about 35%. This supports anecdotal observations about supervisory styles. Specifically, the VAT reports tended to be longer not because more feedback was given (that is, the number of substantive comments or suggestions), but rather because the comments were more fully developed and illustrated for the student teacher.

Specifically, the content analysis of feedback provided by supervisors using F2F vs. technology-based supervision revealed eight general categories of feedback (see Table 7), as follows:

- Lesson structure, development, methods, and implementation
- Management and monitoring of students
- Skill development especially with individuals or small groups
- Personal qualities such as voice projection, enthusiasm, and professionalism
- Student engagement or time on task
- Safety and equipment issues
- Verbal feedback and reinforcement of students
- Affective aspects of the lesson such as cooperation, support, and sharing.

The highest number of substantive comments was provided about the structure and delivery of the lesson (n=213, or 38.52% of total comments) in both F2F (n=86, or 33.72% of F2F comments) and VAT (n=127, or 42.62% of VAT comments) observation reports. This was followed by substantive comments or feedback related to management and monitoring of students (n = 124, or 22.42%) again in both F2F (n=59, or 23.14%) and VAT (n=65, or 21.82%) observation reports. It is interesting to note that while comments about the lesson, which focused most on the student teacher's performance, were much higher with VAT observation than with F2F observations. In contrast, comments about the student teachers' personal qualities and safety issues were noticeably higher in F2F observations than in VAT reports – characteristics that would be more obvious on a site visit and that are more relational in nature.

We noted that supervisors with formal, doctoral-level training in teacher education (IN2, ASP, FP) provided more written feedback than supervisors who were experienced K-12 teachers without graduate work in teacher education or pedagogy (IN1, ADJ). Those supervisors with K-12 teaching experience and doctoral training in teacher education provided the most substantive comments.

In summary, a content analysis of a randomly selected subset of observation reports revealed eight major themes or categories of feedback provided by supervisors. Most feedback focused on the lesson structure, development, and implementation or on management and monitoring of students. The content analysis showed differences in supervisory styles when providing feedback which may be a result of background experience, training, and personality. Generally, supervisors did not provide a great deal more feedback when using technology, but that feedback was more fully developed, linked to best practices, and encouraged reflection by the student teacher.

### **Lessons Learned and Next Steps**

We undertook this evaluation of our supervision practices to explore how we could deliver effective supervision in a cost and time efficient way. In addition, we gained insights into our own supervisory practices and behaviors. These insights will enable us to continue to refine our teacher education program. Lessons learned and next steps are provided below.

1) Though it is difficult to quantify, we noted that hand-written observation reports were usually difficult to read because they were composed largely of single words, sentence fragments, and abbreviations and were often cluttered rather than organized in complete, meaningful ways. While we understand that the reports would be made impactful with a verbal discussion following the lesson, we wonder how helpful many of those reports were when students referred to them later. We also recognize the importance of immediate feedback for student teachers. Thus, it seems best to provide feedback in typed form within 24 hours of the lesson observation. While this is our “policy”, we need to follow it more consistently.

2) Using technology to supervise saves time and money, especially when supervising student teachers in remote locations. Nevertheless, we recognize the importance of relationship and communication to a successful student teaching experience. This seems to support a hybrid approach to supervision. However, we need to be ready to adjust the ratio of F2F to VAT observations based on the strength and placement of the student teachers. If there are problems with student teacher performance or other issues at the school site, additional F2F visits or observations may be necessary. After all, most problems are more effectively resolved F2F.

3) For cost purposes, higher cost supervisors should work with student teachers who are placed closer to campus to reduce travel costs or should focus on VAT supervision. If these supervisors are more skilled, it would support the previous suggestion to place student teachers who need the most supervision closest to campus.

4) While all the feedback provided to student teachers is important, we would hope that the feedback provided by supervisors would mesh with and support the philosophy and objectives of our teacher preparation program. Based on the content analysis, some feedback does, but the match to our program objectives is unclear based on this general content analysis. Our supervision might more strongly reinforce program objectives if we identify six to eight essential teaching skills and dispositions and develop a supervision report form that directs supervisors' attention to those skills. This would also require initial orientation to these teaching behaviors and observation form for all supervisors, which could be reinforced throughout the semester by discussions about the teacher behaviors and how we see them demonstrated by our student teachers. This would also enable us to continuously refine our curriculum and program, to ensure that essential skills, knowledge, and dispositions are being taught modeled by faculty and understood and practiced by students.

This evaluation of our supervisory practices is on-going; we are in our third year of data collection to better understand how to maximize the growth opportunities in the student teaching experience. Our next steps, which are suggested from reviewing this data, include the following.

- 1) Submit the data to a more rigorous statistical analysis to test the level of significance of the findings.
- 2) Revisit the content analysis by analyzing a larger sample of observation reports using a more specific, specialized rubric that is linked to our program objectives. For example, while it is useful to know that most feedback focused on the lesson, it would benefit us to know the aspects of the lesson that are strong and which need more focus in our curriculum (e.g., demonstrations, assessment, checking for understanding, closure, etc.). Also, student teachers were given some feedback on their use of verbal reinforcement, but this analysis does not differentiate between the types of verbal feedback they provided (e.g., performance or motivational, specific or general) nor if it is appropriately used.
- 3) Modify the narrative observation form that we currently use for supervision to ensure that supervisors look for and provide feedback on the teaching behaviors that are the core of our program and that are essential to effective teaching.
- 4) Work toward providing feedback to student teachers within 24 hours, as per our policy.

## **Conclusion**

We see the value in a hybrid model for supervision from a cost and time perspective as well as the quality of feedback provided, as presented in this evaluation project. We need to understand more about how to strategically use technology in supervision, however. Is VAT supervision more suitable for use with some student teachers or in some contexts than in others? Are some supervisors more effective using one supervision approach over another? What feedback and delivery approach do student teachers value the most? Does using technology save time for supervisors but require more time and stress of student teachers? How can we use technology to strengthen reflection and self-analysis skills in our student teachers? These questions suggest an on-going agenda for our investigation of supervision practices.

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