*The Qualitative Report* Volume 17 Number 1 January 2012 200-221
http://www.nova.edu/ssss/QR/QR17-1/berrett.pdf

# Administrator Insights and Reflections: Technology Integration in Schools

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*There are numerous technology tools that educators utilize to support student learning. Often, technology is mandated from the top down with school administrators' responsible for overseeing the implementation. Innovative technological approaches to learning often meet resistance within schools. The pervasive culture in education is counteractive to technology integration, which may be useful to pedagogy and in the long run may help students deal with the ever growing level of technology present in today's society. Characteristics are identified at two out of four schools as a way of assessing the progress of technology integration and locating individuals who will help move the process forward. This knowledge, combined with competent leadership, makes the difference between success and failure of an innovation implementation. Key Words: Technology Integration, Leadership, Administrators, Schools, Case Study.*

Technology integration in schools is commonplace, so much so that educators often ignore what is thrown at them, hoping that it will disappear as many technology integrations often do (Inan & Lowther, 2010; Rogers, 2003). Technology integrations typically follow similar patterns no matter what "technology" is being introduced. A select group of educators see the value in a specific technology and this small group extols the technology for all of its virtues (Borsheim, Merritt, & Reed, 2008). "Unfortunately, increased availability of technology in schools does not necessarily lead to improvement in classroom teaching practices" (Ian & Lowther, p.137). When the technology is introduced into the mainstream, the virtues quickly become less evident as the problems multiply; problems with hardware, the technology is broken, it is too time consuming, the technology does not align with the curriculum, the teachers' use of the equipment does not fit with their curriculum schedule, and in essence the teacher puts the technology back on the shelf to collect dust (Strong-Wilson, 2008). The culmination of these problems leads to failed technology integrations (Hayes, 2006; Laurillard, 2008) and frequently teachers feel an "…ambivalence to administrative leadership as an important influence in their professional work" (Meister, 2010, p.893).

Technology has become a focal point of educational reform; federal, state, and local funds have been provided to implement educational policies and new technology integrations in school districts (Bailey, 2002; Christensen, & Knezek, 2007; Forte, 2010; Lowther, Inan, Strahl, & Ross, 2008), and effective leadership during the implementation process is vital (Anderson & Dexter, 2005; Bailey; Ertmer & Ottenbreit-Leftwich, 2010). One challenge for school district administrators is to adequately support teachers who are

implementing technology to enhance and improve the teaching and learning process (Subramaniam, 2007; Winne, 2006). The implementation of the U.S. Department of Education's No Child Left Behind Act (NCLB; Public Law 107-110) has impacted education in myriad ways (Donlevy, 2008; Forte; Gay, 2007; Schraw, 2010). Among these, funding sources have been established to integrate technology into the NCLB requirements, and Enhancing Education Through Technology (EETT) funding is one such source (Lowther, et al.,). In this study, researchers investigated administrators' perceptions of the implementation process of a laptop-based writing curriculum MY Access! IntelleMetric™ (n.d.) scoring system that assesses student writing abilities and the technology necessary to support the software as part of an EETT grant project at four middles schools in one school district.

Leadership and administrators' ability to lead is a significant factor in determining the success of implementing a new technology (Anderson & Dexter, 2005; Hayes, 2006). How principals perceive their role and their ability to listen to the teachers needs frequently impacts the implementation process. The purpose of this research was to understand the leadership process of the implementation of technology integration, specifically an Enhancing Education Through Technology (EETT) grant project, at four middle schools in Grove Unified School (pseudonym) in California. In order to understand the implementation process, the researcher first needed to identify how administrators viewed their role as participants in the grant community of Grove Unified School District. The common elements of tension in the district's culture that facilitated or prohibited administrators' participation in the project were also identified as well as the motivating factors of technology integration. The research questions were developed to provide in-depth descriptive information to allow the researcher a deeper understanding of the leadership characteristics within Grove Unified School District and the EETT grant project. Following are the specific research questions used to achieve the general purposes of this study:

1. What is the perception of the administrators of their role in the EETT grant in Grove Unified School District?
2. What are the tensions perceived by the administrators as they endeavor to participate in the project?
3. What internal or external goals do the administrators cite as motivational to participate in the project?

As part of the EETT grant for the Grove Unified School District, implementation required professional development activities for administrators. It also required professional development for mentors, who were technology savvy teachers selected by the principals at each school and teachers who were using the technology as part of their classroom instruction in Language Arts; however that data is not reported in this paper. Ultimately, the goals for this paper are to explore how the culture of schools and leadership by administrators can influence the integration of technology within the context of our research questions.

## Technology Integration and the Culture of School

Culture is a set of shared traditions, beliefs, values, and ways of life to which groups or individuals subscribe to varying degrees (Weber, 2003). Introducing a new technology into a school community can create tension within the existing culture of the school as the educational practices are reformed (Guzman & Nussbaum, 2009; Meister, 2010; Rogers, 2003). This requires a negotiation between the existing culture and a new culture as it is formulated. Educational reform involving technology integrations is often directed at changing the teaching methods of educators or modifying the delivery of the "product" to students. These reforms are often mandated as top-down initiatives from a variety of sources, most commonly government agencies (Schraw, 2010). Therefore, schools are vulnerable to the required implementation of technology integrations that have yet to be sufficiently researched to determine their viability and value.

Technology integrations are not always adequately tested, and often they gain support from the stakeholders of the educational community before being properly tested scientifically (Davis, Preston, & Sahin, 2009; O'Neil, 2000). One example of this is the No Child Left Behind Act (NCLB; Public Law 107-110), which was imposed upon our educational system by policymakers and while much has been written about NCLB "…little of what has been written is highly positive" (Schraw, 2010, p.71). Through this legislation, government officials require an increase in teacher quality through professional development. In many districts, money is allocated for professional development but current practices frequently do no adequately prepare teachers. Often schools offer quick-fix seminars or workshops designed to meet the letter of the law, and teachers return to their rooms and close the door, maintaining their autonomy as administrators attempt to maintain the status quo of the educational system (Burney, 2004; Fletcher, 2009; Meister, 2010).

One significant challenging facing educators are the changing needs of the students they serve and how best to integrate technology into the educational landscape (Johnson, Levine, Smith, & Haywood, 2010). The importance of teacher readiness and their willingness to participate in professional development cannot be underestimated (Davis et al., 2010). In addition, the importance of utilizing the knowledge and listening to the needs of teachers is paramount for successful technology integration. However, that rarely occurs in most educational mandate instances and frequently there is resentment towards administrators for not acknowledging teacher expertise (Meister, 2010). What administrators need to recognize is the role of the teachers as change agents who are able to identify the value of the technology tool using appropriate pedagogy (Ertmer & Ottenbreit-Leftwich, 2010). In order to understand technology integration, a closer look at administrators in the context of leadership within their schools is necessary.

## Technology Integration and Leadership

The term "leadership" in the context of education is evasive and ambiguous (Reeves, 2004). Indeed, "leadership is probably the single most important factor affecting the successful integration of technology into schools" (Byrom & Bingham, 2001, p. 4). There is often uncertainty and a lack of explicit roles for implementation of technology integrations that can negatively affect participants' levels of motivation (Elias, Zins,

Gracyk, & Weissberg, 2003). Leaders are needed who, regardless of title or school district role, can act as change agents to promote the successful implementation of technology (Ertmer & Ottenbreit-Leftwich, 2010). To gain a clear definition of leadership, Byrom and Bingham identified five leadership characteristics that influence "the effective use of technology for teaching and learning" (p. 1) based on their research working with 12 schools during a 5-year period. These characteristics are vision, leading by example, teacher support, open dialogue, and shared leadership. According to Byrom and Bingham, these characteristics enabled learners within a community to effectively integrate technology.

Leaders within a district or school need to clearly define and articulate the technology integration and what its function in the school community is. Administrators must incorporate multiple perspectives and others' values to create a shared vision that denotes a noble and uplifting future (Moos, Krejsler, & Kofod, 2008). In order to sustain any technology integration introduced, there must be a shared vision that is created by all of the individuals involved (Adelman & Taylor, 2003; Marks & Printy, 2003). A commitment to the vision creates a culture context in which the ideas and purpose of the technology integration are paramount as individuals work together toward shared goals (Doyle, 2004; Schmeltzer, 2001). The behavior of leaders must be aligned with the vision to inspire and share the responsibilities toward the achievement of technology integration and school reform.

Teacher professional development "is a process of learning how to put knowledge into practice through engagement in practice within a community of practitioners" (Schlager & Fusco, 2003, p. 205). Leaders in the process of change need to recognize that the transformation to a technology-rich environment happens gradually, allow time for it, and be supportive of the professional growth of all participants (Byrom & Bingham, 2001; Davis et al., 2010). Those who are able to identify the feelings of teachers who are in the process of change will be more adept at focusing the energy of the school community towards reform (Fink & Brayman, 2006). Schlager and Fusco (2003) noted that "a common challenge is the reluctance of teachers to engage in inquiry or dialogue that critiques the practice of their peers" (p. 205). The evaluative nature of change is necessary for transformation. Administrators must create and maintain an atmosphere that is conducive to open and honest communication among teachers.

Leading by example is mandatory for those trying to integrate technology into their schools. Individuals who are unable to effectively use email, the Internet, or other technology tools will have difficulty inspiring and leading others to use technology in order to enhance student learning (Creighton, 2003; Schmeltzer, 2001; Whitehead, Jensen, & Boschee, 2003). It is necessary for leaders to model the process, "When a new pedagogical approach or tool is presented, teachers make value judgments about weather that approach or tool is relevant to their goals" (Ertmer & Ottenbreit-Leftwich, 2010, p. 263). Administrators' behavior needs to be consistent with the message of the school: Technology is important and there are resources available for teachers. If the school believes that technology is important to educate effectively, then the necessary resources must be provided with the full support of the leadership in the school (Byrom & Bingham, 2001; Dawson & Rakes, 2003; Hayes, 2006). This includes providing support for teachers utilizing the technology, as well as identifying and leveraging community knowledge.

A shared leadership role for district boards, administrators, teachers, parents, and community members is a vital component "in making decisions that reflect the needs of a total school community" (Byrom & Bingham, 2001, p. 5). Leadership is not based on a top-down approach; rather it is facilitated by varied proponents of change and encompasses the views of all participants. Seifter and Economy (2001) stated that shared leadership ". . . arises naturally from fluid two-way communication between administrators of change [leaders] and team members; the leader's ideas and vision shape the opinions of others, but are in turn shaped by input they receive from team members" (p. 168). This distinction allows for all individuals to commit and contribute to the professional learning community across the boundaries of schools, districts, and states (Harris, 2003). Just as teachers must understand the mindset of their students to properly mediate their learning (Laurillard, 2008), leaders in education must first understand teachers and their culture in order to transform the way teachers teach. Leadership by administrators is a significant factor for success during a technology implementation process (Anderson & Dexter, 2005). One of the ways in which the educational community attempts to instigate change and improve teaching and learning is through the implementation of new technologies.

## Methodology

### Overview

An exploratory case study was determined to be most appropriate for this research. All data are reported in a manner to protect participant anonymity, including pseudonyms. All identifying remarks were removed so identification of the participants would not be possible, placing them at no risk of criminal or civil liability, not damaging the participants' financial standing, employability, reputation nor stigmatizing them in any way. Their participation in this project was voluntary. As part of the research protocols, potential risks associated with participation in the study were outlined, and the district and individuals participating gave consent prior to participation. The school sites involved also reviewed and approved the proposed research. Standards and requirements to obtain these approvals were explored and granted prior to data collection. The research was conducted in one of eight districts, Grove Unified School District (pseudonym for the actual name of the school district), which was part of a larger consortium that collaborated to obtain Enhancing Education Through Technology (EETT) funding. Rather than a broad view of the entire consortium of district administrators involved, it was determined that an in-depth examination of one district would provide a better perspective of what was occurring.

### Subjects

The specific focus was data collected from and about the four principals: one at each of four middle school sites within one school district, and the District Teacher Technology Specialist, who were all involved in the implementation of the technology integration at their school or district level. For the purposes of this research, the District Technology Specialist was intentionally coded as an administrator based on the data from

all participants. This study collected data from these five informants and was reliant on interviews and observations. The principals at each school site and the District Technology Specialist all agreed to be interviewed after the researcher called and sent an email explaining the nature of the study. Each of the four middle school principals and the District Technology Specialist agreed to participate in the study.

## Characterization of Interview Comments and Field Notes from the Observations

The process that was followed in order to characterize each informant's interview comments using the coding rubric is described in detail here to allow for a greater understanding of how participant data were coded and analyzed. The researchers to develop a coding rubric based on common ideas throughout the technology integration literature that organized the data into six specific themes (identity, relationships, tensions, transformation, needs, and motivation) as well as emergent subcategories, which provided the context to develop the research questions, which are intended to provide in-depth descriptive information to allow the researchers a deeper understanding of the technology integration within Grove Unified School District and the EETT grant project.

Each interview and field note was printed and read through initially with the intent to search out the general themes outlined in the rubric (Appendix A) created by the researchers. These themes were identity, relationships, tension, transformation, needs, and motivation. Each theme on the matrix was illuminated further with emergent subgroups that are outlined in the column below each theme. These subgroups were determined after the initial review of the data. "Qualitative studies may go beyond theme description and identification and develop additional subgroups to provide more sophisticated theme connections" (Creswell, 2003, p.194).

Each action or statement was studied and then highlighted based on its theme. After the completion of this initial process, another researcher went through the same coding process with the same data. Where there were discrepancies, the researchers communicated by phone, email, and or in person, and each inconsistency was discussed until consensus was reached. The same process was utilized to code the observation data, with the exception that three researchers analyzed the data and a group discussion took place to resolve conflicting analyses. After consensus was reached on coding for both the interviews and observations, the researcher put the comments and observations in a spreadsheet that mirrored the rubric in order to organize the data.

## Data Collection

Informants were given anonymous codes based on their place of work and the names of the district as well as the schools have been changed. The first principal interviewed became WP1 (Willow Middle School, Principal, first interviewee). The District Technology Specialist interviewed became Grove five (DTS5). Five administrators in all agreed to be interviewed and the information in Table 1 was taken from the interviews.

Table 1. *Information from Interviews—Administrators*

| Key informant: General information | | | |
|---|---|---|---|
| Administrator | Gender | # Years as administrator | # Years in district |
| Willow Principal 1 | M | 10 | 20 |
| Sycamore Principal 2 | F | 9 | 19 |
| Oak Principal 3 | M | 8 | 17 |
| Redwood Principal 4 | M | 7 | 15 |
| Technology specialist 5 | M | 5 | 9 |
| *N* = 5 | | *N* = 39 | *N* = 80 |
| | | X = 7.8 | X = 16 |
| | | *SD* = 1.9235 | *SD* = 4.3589 |

*Note.* It is worth noting that Oak Principal 3 had been an assistant principal under Willow Principal 1 and Redwood Principal 4 had been an assistant principal under Oak Principal 3. In addition, the Technology Specialist had been a teacher for 5 years under Willow Principal 1.

In the interviews, a series of open-ended questions (Appendix B) were asked of the participants in a conversational fashion, and the participants were encouraged to keep talking by use of follow-up probing questions (Maykut & Morehouse, 1994). "For the qualitative-minded researcher, the open-ended interview apparently offers the opportunity for an authentic gaze into the soul of another" (Denzin & Lincoln, 2000, pp. 822-823). The informants were asked to openly describe their various activities and routines around the grant program in detail, and by their doing so, the researcher was able to gain insight into their practices and also into their roles within the school and district. Questions were created and used as a guide during the interview of each informant (Appendix B). The combination of answers to these questions was used to address each research question.

In order to identify activities that were not revealed in the interviews, as well as to corroborate information obtained from the interviews, informants were observed in their roles as they moved forward with the implementation. Principals and the District Technology Specialist were observed as they worked with mentors and teachers at each school site or at off-site RTC grant meetings. Observations also occurred at some of the grant trainings scheduled over a four month period and were recorded as field notes. Field notes were taken to document the observations and when possible, more than one observer was present for validation. Table 2 documents the frequency at which the researcher observed informants both on- and off-site.

Table 2. *Administrator Observations*

| Administrator | On-site | In office | In meetings | Off-site | Total |
|---|---|---|---|---|---|
| WP1 | 1 | 1 | 4 | 0 | 6 |
| SP2 | 1 | 1 | 3 | 0 | 5 |
| OP3 | 3 | 3 | 5 | 1 | 12 |
| RP4 | 1 | 1 | 4 | 0 | 6 |
| DTS5 | 0 | 0 | 7 | 2 | 9 |
| Total | 6 | 6 | 23 | 3 | N = 38 |

Note: *On-site* refers to observations done on the school campus; *in office* are the observations done of principals while they were interacting with school personnel in their office; *in meetings* were the grant meetings the researcher attended on- and off-site; and *off-site* were lunches or other informal observations. All observations were dependant on the availability of the participants, which is why only three occurred off-site. WP = Willow Principal, SP = Sycamore Principal, OP = Oak Principal, RP = Redwood Principal, DTS5 = District Technology Specialist.

Observations were one both formally and informally and field notes were taken at each observation. The researcher paid close attention to how individuals interacted with each other, what the facility looked like, and the general atmosphere of each school. First-level description was used throughout the collection of the data as a means of orienting the researcher to the context of Grove Unified School District (Morse & Richards, 2002). The researcher first independently rated the observations. Then two other researchers coded the field notes, and the results were then discussed to reach consensus. The role of the researcher in these observations was that of the observer-as-participant (P. A. Adler & Adler, 1994).

## Results

Principals' perceptions varied by school, based on the data gathered in this study. Data specific to the District Technology Specialist provide another perspective on each school site, as well as what is occurring across the district. All the administrative informants indicated that they understood they were part of a larger community within the grant implementation process. As the data explains, these informants report that they influenced the school community and to some degree the ability of the Enhancing Education Through Technology (EETT) community to flourish or flounder in the implementation of the technology innovation within the schools.

### Research Question 1: What is the Perception of Administrators of their Role in the EETT Grant Community in Grove Unified School District?

The principal at Willow repeatedly gave credit to the teachers, mentors, and district technology support for the successes of the grant. "I haven't heard a negative word about the grant at all. I've heard only good things" (WP1). At the start of the interview the principal began by explaining his role in the implementation of the grant.

He said that his role has been to attend consortium meetings, develop the teaching schedule and oversee the implementation of the grant. He stated that the first responsibility for him was to select the two mentor teachers. Both individuals he selected were senior staff members at the site and one is the department chair. He identified both as leaders at the school site:

> I have such great coaches; I would applaud myself in only one area in that I picked great coaches. I just knew that they would spark from day one. I knew they were the ones that the staff would follow. Sounds trite but you know a great leader is a great leader if people follow him. You know you turn around and there's nobody there you're not a leader, you're a sprinter. (WP1)

He reported that he chose them based on his interactions with them and their attitude towards technology integration for the benefit of student achievement. He also explained that both mentors have assumed the leadership role by working with other teachers and finding answers to their questions.

The Redwood principal identified one of his primary strengths as the ability to believe in the power of technology and his ability to integrate it into the school culture. "If I had to coordinate it all myself, I wouldn't have time to do everything that they've done to make it work well" (RP4). He cited his gratitude for the mentors and his ability to delegate responsibilities to them to ensure success at the school site. He reported his role has been one of monitoring email communication between the district technology specialist and being open and available to meet with any mentor or teacher regarding questions or concerns about the project. "I step in only when I see that there is a conflict of facility use or there is a problem that's going to arise but mostly I kind of get bypassed and I kind a like it that way. I can watch what's going on" (RP4). He also reportedly attends Language Arts Department meetings to promote an open dialogue about the implementation and to gain an understanding of faculty concerns.

When asked about ongoing dialogue among the middle school principals in the district regarding the implementation, the Redwood principle explained that it rarely comes up at their monthly principal meetings. He explained that he is in frequent communication with the other principals, often informally at various athletic events; however, if he had a question regarding the implementation process he would immediately contact the District Technology Specialist. "He seems to have a handle on the whole thing and he usually has an answer. If he doesn't he's good at finding it and getting back to us" (RP4). As reported by this principal, the role the District Technology Specialist has played in the implementation process, technology issues, cart assembly and delivery, storage ideas, and scheduling have been invaluable at Redwood. At the first EETT principal training session, the Redwood principal explicitly stated that the key to success with this grant would be one individual, the District Technology Specialist.

A topic that the Oak principal felt strongly about was student technology competency. He reported that many of the students' knowledge of technology is greater than the knowledge of several of the veteran teachers at the school. He went on to explain that tech savvy students have surprised many of the Oak faculty, who are undergoing a paradigm shift. He reported that it has been a challenge for him to lead the

implementation process and also assist faculty with a wide range of technological expertise:

> I have some teachers who have been here since the 1970s and now all of a sudden they're being asked to implement technology. So for me being able to assist them or work through that with them is an incredible challenge. They've been in the classroom for almost 30 years and they're being asked to do something very, very different. (OP3).

Observations of the Oak principal showed that he was technologically competent as he easily accessed reports of MY Access! IntelleMetric™ (n.d.). He also explained that often assisting teachers required contacting the District Technology Specialist. Mediating the communication, trainings, and equipment delivery to the school site was also a role that the principal identified as part of his responsibility.

The Sycamore principal explained that her primary role is making programs like the Enhancing Education Through Technology EETT grant work. When the implementation process breaks down she fixes it or facilitates a solution. "That's what an administrator's supposed to do. Okay. So fair is fair. You bring order out of chaos. That's another way of saying it, or you try to" (SP2). She stated that she typically goes to the District Technology Specialist for help or information. The principal reported that the District Technology Specialist's participation in the grant implementation is an integral part of any success that is occurring with the program at Sycamore.

As reported by each of the four principals, the District Technology Specialist is the liaison between the consortium, the district, and each of the school sites and is the person responsible for all aspects of implementation within the district by default. He co-ordinates all purchases, resource allocation, scheduling for teacher and mentor trainings, and all aspects of logistical coordination and communication within the district for principals, mentors, and target teachers. "In some cases it goes up for approval and then out but in general it goes through me" (DTS5). He stated that he also does regular site visits at each of the middle schools and routinely initiates dialogue with teachers and mentors:

> Not to be intrusive, not to be sticking my head in classrooms all the time because I don't think that's what teachers want. If they do, I'll do that. I'm available to do that and if somebody wants the help I'm there. In general I just try to make sure that when I'm on the different campuses I get to talk to some different teachers real informally. Just say, "How's it going?" You know, "What's going on with you guys? How's it rolling out? What kind of good things are happening? What kind of problems are you having?" And the most important thing is to ask them "What can I do to help?" (DTS5)

In the interview he identified the network of mentors, working with each of the teachers, as his means of identifying and resolving problems. According to this informant, the successes of the grant are attributed to all practitioners involved. "We couldn't have done it without a whole lot of good teamwork" (DTS5).

The data reported by the administrators' indicates that two of the principals (Sycamore and Oak) chose to frequently rely on the district technology specialist, unwilling or unable to take an active role in the implementation even after acknowledging that their mentors were not equipped to deal with all of the administrative tasks that fell upon them throughout this process. These challenges at Sycamore and Oak middle schools revealed a school community that may have been in direct relation to the leadership and management styles being utilized at those sites. In contrast, the two administrators at Willow and Redwood place significant value and trust in their on site school mentors. Their perceived roles were identified as being supportive of the needs of their school mentors and teachers and depending on their expertise.

**Research Question 2: What are the Tensions Perceived by the Administrators as they Endeavor to Participate in the Project?**

Tension and transformation were the possible themes that were identified, and within those areas the researcher probed to find out what the informants presented as *tensions* or evidence of the transformation of the grant project.

The Willow Middle School principal had very little to report regarding problems with the grant. He spoke about relationships and how important they were when it came to successful implementation of the grant and cited those relationships as key to the schools progress with the project. He did, however, have two concerns when it came to the grant. The first concern he discussed was what would "happen down the road when the grant runs out and they needed to repair, replace and find support for the technology? Those decisions will have to be made in the next three years. The laptops are getting a lot of work, all day long every day" (WP1). He stated that he had given some thought to what would need to happen at the school level to ensure the continued use of the technology but had not yet come up with a proposed solution.

In the interview with the principal at Redwood Middle School, he reported that the veteran teachers see this project as the same as all the other ones they have seen in their career. However, he is interested in keeping this particular project alive beyond the life of the grant. The Redwood principal has developed an instinctive trust in the mentors and allows them to function independently while being involved in the ongoing dialogue to resolve problems. At Redwood, it was reported that the computers were "not charging, they're blowing the circuit" (RP4), so the principal bought surge protectors that worked to solve that problem. The laptops were not loaded with the software correctly, so the mentors, the district teacher technology specialist, and the onsite technology specialist were given time to correct the problems (RP4, DTS5). The principal relies on the mentors to inform him of issues and to solve problems as they arise. He is comfortable allowing them to take care of issues but is also supportive when they need something. "If we left it to principals or teachers who don't have any extra release time to do it, it wouldn't have gotten done" (RP4).

For the most part, the Oak principal reported feeling positive about the implementation process, and he was obviously committed to helping his staff be successful during the process. He did mention later that he was being forced out of his job, and the researchers wondered whether this had any effect on his leadership in the project. He stated he was worried about two areas, one was his teachers who were less

technologically inclined and the other was the logistics of implementation. He found that teachers were sometimes excited about what the technology was doing for kids and sometimes not. “They’re hot and cold with this they don’t always want to talk to me and that’s been a little bit of my communication breakdown” (OP3).

The Sycamore Middle School principal has had to make some difficult decisions and deal with issues that other schools have not had. Although she reports, “in terms of the grant everything is going fine,” 20 of their 40 laptops had been vandalized and sent out to be fixed, so the implementation was placed on hold for six weeks (SP2). In addition, she stated that the training schedule for the grant combined with the other program, were causing teachers and especially mentors to spend a significant amount of time out of their classrooms:

> I wonder when it becomes too much of a hassle, when they’re called to go to all these EETT training meetings and they have to leave their classroom. We’ve had other staff development this year for improving our test scores, we’ve had an awful a lot of in-service so these people are constantly leaving their classrooms. (SP2)

The time out of classroom seemed to be the biggest problem for the Sycamore principal, “when does it become a hassle—having this cart and all this training. Are the advantages worth it?” (SP2).

The District Technology Specialist reported a much broader view of the challenges during the implementation process because of the time he spends at each school site. The only issue he cited with his own position in the grant was that there was only one of him, and he was struggling to meet the needs of each school site.

> Before we got the grant and all the technology that came with it, I was busy, I mean the technology in this district is old and I was constantly working to do upkeep on everything. Now with the technology problems associated with the grant it is like I have two full time jobs. (DTS5)

He thought about asking for the district to hire another person but he felt he couldn’t, “when you work for a school district you pick those battles real carefully especially when you’re going to go make a request for something like that” (DTS5).

The data reported by the administrators showed that many tensions relating to the implementation still exist across this district. As the interview data show, some schools continue to have difficulty with the implementation process. Willow, Redwood and the District Office administrator had similar responses in the area of tension and transformation. The interview data for these groups indicated that although some *tensions* still existed, they had found ways to resolve the tension, utilizing the District Technology Specialist and on-site trainings to move beyond the logistics allowing them to become fully integrated in the implementation process.

**Research Question 3: What Internal or External Goals do the Administrators Cite as Motivational to their Participation in the Project?**

*Motivation* and *needs* were the themes that were identified, and within those areas the researcher probed to find out what the informants felt motivated them both internally and externally to implementing the project.

At Willow Middle School there are several motivating factors that were cited by the principal. First and foremost, he is passionate about his students getting access to technology. He knows that in his school's population, the socioeconomic level of most families does not afford much, if any, technology in the home.

> I'm more grateful than anything though that our kids from poor families are getting a chance to grow like they aren't from poor families. It's pretty cool. We have a lot of technology at our school so the kids do a lot but not as much as their own laptop on a desk. They just light up man. It's like this is their computer you know—for a few minutes they can pretend. (WP1)

He feels that what is happening at Willow with writing skills, teacher practice, and access to technology has increased motivation amongst students and teachers, and it is important and must continue.

The students are excited about writing, and the Principal at Redwood reports that is what really motivates him and the teachers involved in the program at Redwood. When he sees the effect it is having on the students, it motivates him even more to make sure this program gets a fair shake and a real chance for success:

> The kids are really enthused about it and they are really proud to show you the stuff that they've written and tell you whether they've gotten a good score. When we get them motivated to want to do it and they have more practice at doing it, I think things will improve. I think it will show. (RP4)

As with several other principals, he is beginning to look to the future and the sustainability of the program. He worries about funding. "If this program affects student writing in a positive way then the only thing I would want to change is to be able to increase the funding so that it was ongoing" (RP4).

Oak Principal 3 speaks very highly of the project in general terms, and when he was asked about the motivation to continue in the process, he reported that he was happy with the way it was progressing.

> The parents love it. They love it! When they heard that a laptop was being delivered to their child's classroom and their child was going to be writing on it. It's phenomenal. If there's any one thing the parents want is for it to happen more often and that's our biggest problem just not having enough. If we had more it would be even better. (OP3)

The Oak principal reports that he has had some positive interactions with teachers on staff as well. In this instance a "veteran" teacher came in to express her frustration with the technology and he was able to solve her problems in one conversation.

> She was kind of a veteran gal and she pretty much does things on her own and didn't ask for a lot of guidance and so when she came I think I was just surprised by it. So for me that was a real positive interaction with her and a couple of other staff members. (OP3)

The principal stated that historically his interaction with faculty and staff members is low and this increase in interactions that he has experienced has fueled his perception that things are going well in relation to his prior experiences.

Sycamore Middle School, due to its student population, is eligible for multiple federal programs, and this principal must facilitate many unrelated programs at one time so she understands the importance of delegating. The principal at Sycamore Middle School cited student access to technology as the number one motivation for making this program successful. She stated that some Sycamore students have never used or seen a laptop before. "They have had a chance to write on a computer rather than simply pencil and paper" (SP2). In addition, she stated that she understands they are achieving technology skills they would never have received otherwise. "I think kids are probably more computer savvy. I think they've enjoyed writing on it" (SP2). If these students, who are getting access to technology they have never had before are more tech savvy than the teachers, this might explain some of the logistical problems at Sycamore.

The District Technology Specialist interviewed is an instructional technology specialist at the district level and has a myriad of responsibilities and also works with a myriad of people throughout the district. He is often considered the "tech guy," but this grant has offered him an opportunity to show his other strengths, and that has been a real positive for him. He, too, can see the opportunities that this grant can provide him in his position, even if it does require additional work on his part:

> . . . it's been one more thing on my plate, it's been one I've enjoyed doing and don't want to give up but I think probably in terms of just the networking and the people I'm getting meet and work with it's been good. It's opened up a lot more doors. (DTS5)

He stated that although he knows that the teachers often see it [the grant] as another thing to do—one more responsibility—they are also seeing the benefits for their kids. "They are seeing that their kids are writing more and that a lot of their kids are developing ideas better. So it's a good tradeoff. I think at this point it hasn't started making their lives easier yet" (DTS5). He reported that he believes that one motivation for newer teachers to participate in this program is that they may see it as good for their professional growth and allow them to also show they have a different skill set.

Overall, the District Technology Specialist has found lots of motivation to make this program successful. He is one of the few participants in this project that can easily see the big picture and look ahead to the final outcome, and he openly shares that he is

proud to be a part of it. "It's so early in the process that I know when it's over this is going to be something we're going to look back on and be really proud of. It's nice to be part of those kinds of projects" (DTS5).

The interview data presented here told the story of principals who were motivated primarily because their students were getting access. The principals wanted to provide access for the teachers and students and support in learning the skills necessary to be successful with the program. During interviews, the principals uniformly voiced concern regarding the sustainability of the program and indicated that they were already trying to find ways to address that issue. However, none suggested they would be talking to each other about it, which correlates with their acknowledged lack of knowledge sharing that was evident in respect to the grant.

**Summary of Results**

The analysis of the data collected from the principals and the District Technology Specialist revealed two major findings. First and most importantly, there was no perceived community amongst principals/administrators surrounding the Enhancing Education Through Technology (EETT) project in Grove Unified School District. Although the principals from Willow and Redwood spoke informally because they attend social functions together, none of their conversations were reportedly about the project. The principals from Sycamore and Oak both expressed problems communicating with the other principals and stated that they did not see any value in talking about the implementation of the project. The researchers found it noteworthy that although the principals from Willow and Redwood reported that they never spoke about the project; both of their schools appear to have achieved much more success with the initial implementation of the project according to grant participants. The district technology specialist is in the perfect position to act as a conduit for sharing knowledge across the district, but at this point, based on the data, he is more of a troubleshooter and arrives at school sites and fixes things rather than sharing information with the grant participants. The district technology specialist reported that his job is tenuous. The researchers speculate that this may be the reason he holds so tightly to some of his knowledge—it secures his position in the district office.

The second finding was that all of the administrators were pleased with the early results found in student writing. They reported that the students were interested in the technology, and they felt that allowing the students to have access to technology made all of the problems worth solving. Willow and Redwood had communication lines set up and had figured out how to troubleshoot these problems at their school site, whereas Oak and Sycamore reportedly had teachers and mentors problem solving in isolation. The district technology specialist confirmed these reports when he told the researcher that all of his time spent at Oak and Sycamore was spent fixing technology without teaching anyone to do it, resulting in a second and third trip, often to do the same thing. Unless the principals acknowledge the issue and put the mentors in a position to learn what they need to know, these schools will remain mired in logistics. The principals at these sites delegated heavily to their mentors. However, the principal at Oak reported his mentors are ill equipped to deal with the issues there and the mentors at Sycamore are part-time and leave the school site each day by noon. Without better communication on site and district

wide or outside the intervention, it appears that Sycamore and Oak will continue to struggle with the implementation process.

## Limitations

One limitation of the study is that it presents information about the implementation of the EETT grant only from the perspective of administrators. The term "leadership" was not a theme or category for coding as we determined that the other six themes (identity, relationships, tensions, transformation, needs, and motivation) encompassed the concepts of leadership within the context of technology integration. Also, the period of time that data was collected was limited and can be strengthened with follow up interviews and observations. Additionally, there maybe an "interaction" effect as three of the administrators in this study have previously worked in a vice principal or teacher capacity under two of the administrators.

## Discussion

The purpose in this study was to understand from an administrators' perspective the implementation process of technology integration in Grove Unified School District. Six themes were initially identified (identity, relationships, tensions, transformation, needs, and motivation) that were determined to relate specifically to the integration of technology within the context of the Enhancing Education Through Technology (EETT) grant. One understanding that emerged from this analysis was that the culture of the school dramatically impacts the successes and failures of the technology implementation at each school site. Principals' perceptions varied by school, based on the data gathered in this study. All the administrative informants indicated that they understood they were part of a larger community within the grant implementation process. These informants report that they influenced the school community and to some degree the ability of the EETT community to flourish or flounder in the implementation of the technology integration within the schools. The data lead to the conclusion that there are two schools that have found ways to function despite the tensions and problems that occurred during the implementation of the project and two schools that are struggling to function amongst the discord. "One of the primary roles of school leadership is to support teachers and create a shared vision for technology use" (Ertmer & Ottenbreit-Leftwich, 2010, p. 275). Willow and Redwood have found a way to make the project work. The various tensions that emerged at Oak and Sycamore during the data collection process indicate some struggles during the implementation process of the EETT grant.

Technology integration in schools has been around for decades and so is the seemingly automatic resistance to it in the educational system. Hayes (2006) asserted that culture and change are antithetical, that change threatens the stability, predictability, and comfort of the culture. The participants who reported the most discomfort with the grant implementation reported constant struggles with technology. These problems were solved at Willow and Redwood, but because there was no cross-district communication, each school was left to problem solve alone. This was a problem because some schools were not able to resolve internal tensions successfully; for them, school technology integration was experienced as invasive or disruptive (Fink & Brayman, 2006) There is

tension when technological advances are imposed upon the educational system. The key challenge to making technology integration successful is to have a conceptual understanding of what the technology can do, have a significant amount of support and understanding from administrators, and make better use of the tools in one's own area of teaching.

Technology tools must be useful to the participants in a way that enhances what they already do. Not only is technology integration success difficult to measure; choosing who should determine whether a technology integration is successful is also a complicated task (Christensen, & Knezek, 2007). In this study the principals seemed to want to be kept informed of the program but not be a part of it, and this was successful at Willow and Redwood because the mentors chosen were able to handle the responsibility adeptly. "These teachers tend to be risk takers and feel a sense of safety because their principals do not condemn failure that is connected to a sincere and informed effort on behalf of change" (Meister, 2010, p. 884). Oak and Sycamore, however, had mentors that could not lead in this manner, and this may be contributing to the problems at some school sites. Technology leadership must emerge for implementation stability (Byrom & Bingham, 2001; Fink & Brayman, 2006).

In order for schools to sustain deep learning experiences for all students, the leadership both at the school site and in the district must support and promote learning, especially among those in leadership roles (Byrom & Bingham, 2001; Davis et al., 2009; Ertmer & Ottenbreit-Leftwich, 2010). "They should address the length and sustainability of school leadership over time, helping leaders plan for their own professional obsolescence and to think about their schools' need for continuity as well as change" (Hargreaves & Fink, 2003, p. 700). Ongoing leadership development for administrators is an important component of providing adequate support and guidance for potential leaders to become successful (Eller, 2010). In this study, two of the four school sites exhibited leadership characteristics that indicated success, which has made an impact on the most important participant, the student. The emergence of shared leadership has enabled implementation stability and the desired outcome of improved student writing has been achieved at two of the schools. In contrast, the other two middle schools are mired in issues that have prevented the technology integration from functioning with a shared purpose. It is recommended that future research in the area of integrating technology synthesize perspectives and data from all of the stakeholders, such as administrators, mentors, teachers, and students.

**Acknowledgements**

We are grateful to the administrators involved in this study for their participation and willingness to provide us with access into the schools. This paper would not have been possible without the support of Linda Polin, Ph.D., and the reviewers who provided extensive feedback.

## Appendix A. *Coding Rubric*

| ***Identity*** | ***Relationships*** | ***Tensions*** | ***Transformation*** | ***Needs*** | ***Motivation*** |
|---|---|---|---|---|---|
| Contained to historic role in school community perceived by participants | No value seen in having dialogue with others about the technology integration | Preventing interaction between participants to achieve outcome of technology integration | Supporting and enabling grant participants to successfully engage in the technology integration | More access to technology tools | Rules imposed by grant dictate technology integration |
| Expansion to grant role | Some dialogue and collaboration made within school with other participants | Contradictions between grant participants | Participants find solutions to contradictions | Transparency of technology; additional training, on-site support, more time to become proficient users of the required tools | Students propels actions of participants |
| | Connections made outside of school at a district level | Problems are dealt with effectively, revealing effective technology integration | | | Sustainability of the technology integration |

## Appendix B. *Administrator Interview Questions*

**Initial interview questions**

- **Probing questions**

Please tell me your name and the name of your school.
How many years have you worked within this district/at this school site?
How many years have you been an administrator at this school?
- How long have you been in education?

What is your sense/understanding of what the EETT project is about?
- Target curriculum?
- New instructional methods?
- Professional development?
- Technology in the classroom?

How do you think things are going?
- What do you view as the successes of the project so far?
- Problems or obstacles or challenges?

What specific responsibilities do you have with the implementation process?
- In the school?
- Outside of school?

What, if anything, do you think you would like more help with?
- Where do you go now for help with that?

Even though it's still fairly early on, please tell me if you have noticed any positive impact as a result of the project so far.
- In the students writing?
- In teachers?
- In the mentors?

What do you hope to get out of this implementation process?

- Are you getting it?

In the context of this project what are your strengths?

- What have you been able to do for yourself or others?

What would you like to see change about the project?

Are you able to communicate with other people that are working on this project?

- How often have you made an effort to communicate?
- About what?
- When or how does this happen?
- OR Why do you think this doesn't happen?

What would make it easier for you to:

- Meet with other administrators?
- Meet with the mentors/teachers?
- Get the support you need?

Has this project changed your interactions with the larger educational community outside your school, if at all?

Do you engage in online discussions about the project?

- If NO: Do you know how to use the online tool?
- If Yes: Does this add value for you at all?

Tell me about a time when you were helped as a result of a discussion or interaction with another person involved in the project.

We have about 10 minutes left, is there anything else that you would like to mention?

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## Article Citation

Berret, B., Murphy, J., & Sullivan, J. (2012). Administrator insights and reflections: Technology integration in schools. *The Qualitative Report*, *17*(1), 200-221. Retrieved from http://www.nova.edu/ssss/QR/QR17-1/berrett.pdf