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This article reports the findings of a study commissioned by the Montana Small Schools Alliance to explore the challenges and sustainability practices of frontier schools. A Montana frontier school is defined as a school district with 200 or fewer students with its attendant community located in a county with five or fewer people per square mile. The researchers surveyed teachers, administrators, and school board chairs in 141 frontier school districts and held six focus groups of community members. The top five most important challenges noted by school district personnel were low student enrollment, inadequate financial resources, unrealistic federal expectations, academically unmotivated students, and mixed grade levels of students in the classroom. School sustainability practices included operating mixed-age or multi-grade classrooms and using school facilities to serve critical community functions. Lay citizens, compared to persons employed by the school district, were more likely to view the school as necessary for maintaining a way of life associated with agriculture and related enterprises. Twelve research questions are offered for future research on issues of frontier schools.

Keywords: Montana schools; rural schools; rural education; school districts; boards of education; teaching conditions; sustainability.

Educational leaders facing declining student populations and dwindling budgets are once again struggling with the issue of how to sustain small schools in rural communities (Powers, 2009; Ross, 2011). With financial support of The Oro Y Plata Foundation, the Montana Small Schools Alliance (MSSA) established the Frontier Schools Project to increase understanding about, and to provide assistance to, the small rural schools and their communities in the most remote places of the state. As an essential first step the MSSA sought to understand the challenges and sustainability practices of this important element of public education in Montana. The rationale was that profiling the unique challenges facing these small “frontier” schools could enable MSSA and other organizations, as well as state and federal agencies, to develop possible solutions to the challenges and provide supportive assistance.

A further consideration was that revealing facts about frontier schools and their communities in Montana may also begin to inform urban-minded myths and fill an important void in the education literature about the circumstances of such schools that serve a necessary role in rural America. This article reports the findings of surveys and focus group research to identify the challenges and sustainability practices of Montana frontier school districts.

Challenges Rural Schools Face

The challenges facing rural schools impact all states across the country. For example, Allen and Sloan (2005) reported funding small schools is becoming a pressing issue in Maine because of numerous factors, including state and federal accountability laws and declining enrollments. Challenges facing Maine’s small rural schools include attracting and retaining qualified teachers, including specialty teachers such as music teachers, nurses, and science teachers; increasing proportions of students living in poverty, and declining availability of trained special education staff for students with severe, low-incidence disabilities.

Declining student populations, combined with instances of lower test scores and problems with teacher retention, have caused Midwestern states to revisit the question of whether further school consolidations — either through mandates or incentives — need to be considered as part of the solution to providing quality education for students in the 21st century (Kliewer, 2001). In California, the
economic crisis threatens the sustainability of small rural schools, particularly the one-room schoolhouses (The Associated Press, 2009). Minnesota researchers (Williams, Nierenberg, Munson, Riordan, & Corbett, 2009) noted proposed solutions to address economic issues in rural districts have included mandates to consolidate, collaborate and cooperate. Howley, Johnson, and Petrie (2011) pointed out, however, that the extent of consolidation varies across states due to their considerable differences in history, geography, population density, and politics. These authors emphasize "contemporary research does not support claims about the widespread benefits of consolidation. The assumptions behind such claims are most often dangerous oversimplifications" (p. 3).

Numerous researchers and authors have investigated and/or described the challenges rural schools face (Alliance for Excellent Education, 2010; Broton, Mueller, Schultz, & Gaona, 2009; Brown & Swanson, 2003; Harmon, 2003; Stephens, 1998) and the close relationship between a rural school and its community (Beaulieu & Gibbs, 2005; Chance & Cummins 1988; Gjelten, 1982; Harmon & Schafft, 2009; Lyson, 2002; Miller, 1993; Scaff & Harmon, 2010). But little is known about the smallest of the small rural schools, the “frontier schools” serving the most isolated of rural communities across the United States.

Frontier Schools

Approximately 10 years ago, Howley and Harmon (2000a) reported that more than 1,000 school districts with 200 or fewer students remained in rural areas of the United States. Generally, compared to other locales, a larger percentage of students in rural America are enrolled in very small public schools (Provasnik et al., 2007). At the elementary level, the percentage of students in rural areas attending public schools with an enrollment below 200 (10.4%) was about three times as large as the percentage in towns (3.4%), about 7 times as large as the percentage in cities (1.5%), and about 10 times as large as the percentage in suburbs (1%). At the secondary level, similar differences existed, with the percentage of students in rural areas attending public schools with enrollments of less than 200 (9%) more than three times larger than the percentages in cities, suburbs, and towns (ranging from 1 to 2%).

Educational historians might view small rural schools as remnants of the “one-room” or “country” school (Gaither, 2003; Fuller, 1982). Researchers might view them as outliers or anomalies that seldom fit “normal” schools today (DeYoung, 1991; DeYoung 1987). Yet, these schools possess many of the characteristics that current education reformers seek to implement, such as a smaller and more personalized learning environment for each student, better connections between the school and parents of students, and a focused curriculum that integrates academic and practical learning.

Defining Frontier Schools

A workable definition of rural schools on the “frontier” has been elusive for educators and researchers. However, when the federal government added the Small, Rural School Achievement Program to the Elementary and Secondary Education Act, it created a definition for allocating funds to small rural school districts. Eligible for funds were school districts of 600 or fewer students in a county with a population density of fewer than 10 persons per square mile and a U.S. Department of Education rural local code of 7 or 8 (US Department of Education, 2002). In the western part of the United States, however, such a definition of rural may be too inclusive. In Montana, for example, the definition included the majority of school districts in the state (McCulloch, 2008). Determining a more accurate operational definition proved to be the first challenge in researching schools on the Montana frontier. MSSA project investigators decided on the term “frontier” to identify the small schools and communities that are actually a sub-group of rural America. Frontier schools exist in places that are exceptionally remote, particularly in comparison to most rural schools in the eastern United States.

Although a review of literature in the Education Resources Information Center (ERIC) system contained considerable information on one-room schools, no documents discussed the modern frontier school. An Internet search revealed that The National Center for Frontier Communities (NCFC) based in Ojo Sarco, New Mexico claims it is “the only national organization dedicated to the smallest and most geographically isolated communities in the United States - the Frontier” (para #1, home page).

In 1997, NCFC used a methodology from the National Institutes of Health and convened a group of rural health professionals to read background papers and develop a scale of “frontierness” rather than a specific definition. The group weighed three factors. The first was density or persons per square mile; the second was distance to a market or service center, and the third was the time it took to drive to the nearest market or service center. While relevant, the matrix was not satisfactory for the Montana frontier schools project because of the sliding scale features. Consequently, the researchers considered various Montana features of frontier and created an
operational definition for the MSSA project. A Montana frontier school was defined as a school district with 200 or fewer students and its attendant community located in a county with five or fewer people per square mile. The 200-student maximum defined a much smaller school district than the federal definition of 600 students developed for the Small, Rural School Achievement Program. The determination of remoteness embraced a county with five or fewer persons per square mile. Because the school-aged population in Montana makes up 20% of the general population (Montana Department of Commerce, 2008), a county with five people per square mile would on average have only one student per square mile.

In Montana, 42 of the 56 counties have fewer than five people per square mile (CEIS-Montana, July 2008). Consequently, this became the defined geographic area for the MSSA Frontier Schools project. A review of 2008 student enrollment data from the Montana Office of Public Instruction (McCulloch, 2008) and the list of school districts in the five Montana Regional Service Areas revealed 141 districts that enrolled 200 or fewer students in the 42 counties.

Although many small schools in remote Montana areas offer a learning environment that larger schools in urban areas find almost impossible to emulate, these isolated schools face many challenges that jeopardize their future success and even their existence. The primary purpose of the study was to describe the challenges confronting small rural “frontier” schools in Montana and the practices that contribute to their sustainability. The study provided an opportunity for those most involved in frontier schools -- teachers, administrators, school board chairs, and community supporters (i.e., lay citizens) to provide their perceptions of challenges and sustainability practices of frontier schools.

Methods

The study used a mixed-methods approach that included initial surveys and follow-up focus groups. The study was conducted in two phases from February 2009 to April 2010. A total of 141 frontier school districts in 42 Montana counties comprised the target population for the study.

Instrument

Surveys for school district personnel and school board chairs were developed from a survey of K-12 unit schools in the United States designed by Howley and Harmon (2000a). The survey was pilot tested over a two-month period with four school districts in the fall of 2008 and slight modifications made to clarify selected questions. The survey contained 20 questions, including demographic information, current school district challenges, and practices that may contribute to the sustainability of the school. School and district personnel were asked to indicate (a) what they perceived were the major challenges to the district, and (b) to explain the first, second and third most important challenges. A challenge was defined as a pressing issue at the current time. School board chairs were asked to indicate in order of importance the three greatest challenges facing the school district at the current time. Using a rating scale of not important, somewhat important, important, very important, and extremely important, school district personnel and school board chairs were asked to rate the importance of eight factors in sustaining small rural public school(s) in the school district.

Procedures

In phase one, the Montana Small Schools Alliance office administered the survey to frontier school district personnel who participated in MSSA professional development workshop sessions in February and March, 2009. In phase two in January 2010, using Survey Monkey the same instrument was posted on the MSSA web site to solicit responses from personnel (i.e., teachers and administrators) in the frontier school districts who had not participated in the workshops. A similar paper and pencil survey was also developed for completion by school board chairs of each frontier school district. The MSSA office mailed the survey in January 2010, with a timeline of one month to respond, to the 141 school board chairs in the target group.

As a follow-up effort to solicit additional surveys from non-respondents to the web and mailed surveys, county superintendents and regional service center directors were asked to disseminate information about the study and to encourage response. A total of 237 school district personnel (92 MSSA workshop participants and 145 web survey participants) completed the surveys. Ensuring confidentiality for teachers and others in small schools was a prime concern for the researchers. Web-participants were requested to provide their school district’s four digit legal identity code as an identifier. As most respondents were unable to provide this code, it was impossible to calculate a response rate for the survey population of teachers and administrators; however, it was estimated at between 40 -60 % of the target population. The chairs of 57 school boards (40%) completed the paper and pencil survey.
Focus Group Participants

Additionally, workshop, web, and school board chair survey respondents were asked to provide the names and phone numbers of two community members (i.e., lay citizens) not employed by the school district who were strong advocates of the school and knew its value to the community or area the school served. These persons were defined as “local supporters” of the frontier school in their communities and made up the list of 202 potential focus group members, 60 of whom agreed to participate in a focus group. In phase two, the researchers conducted six focus groups across the state of Montana with 49 of the 60 “local supporters” of the frontier schools. A focus group protocol was developed by the researchers to guide focus group sessions. One researcher facilitated the protocol (consultant) while the second researcher (MSSA director) served as note taker. The focus group sessions were conducted in March and April of 2010 in restaurants at a regional location convenient to invited participants. Sessions were held from 6 pm to 8:30 pm with dinner provided. Focus group sessions were recorded, with written transcriptions produced by an experienced court reporter.

Data Analysis

Data from surveys were entered into the Statistical Package for the Social Sciences (SPSS 11.5 Windows) for analysis. Demographic characteristics were profiled. First, major challenges of the school districts were analyzed, followed by an analysis of practices that contributed to the sustainability of frontier schools. A Cronbach alpha reliability procedure was conducted on the scale of importance ratings for the eight sustainability reasons in the school district personnel survey (.816) and the school board chair survey (.709).

The researchers analyzed the focus group transcriptions as well as the notes taken by the one researcher at each focus group session. Themes regarding the frontier school as critical to a way of life were identified.

Findings

Highlights of respondent characteristics, school challenges, and sustainability practices and reasons are presented. A copy of the full report, Frontier Schools in Montana: Challenges and Sustainability Practices: A Research Report, is available from the Montana Small Schools Alliance web site at http://mtsmallschools.org/pdf/Montana%20Frontier%20Schools.pdf

Respondent Characteristics

Of the 237 respondents who were employed by school districts, 218 indicated their primary position of responsibility in the school district. Forty-two (19.3%) of these 218 respondents indicated county superintendent as their primary position of responsibility in the school district. Twenty-seven (12.4%) respondents indicated District Superintendent/Lead Teacher. Only six (2.8%) respondents indicated they served as District Superintendent and School Principal, while 98 (45.0%) respondents indicated District Supervising Teacher. Forty-six (19.7%) respondents were employed as Teachers, and two (0.9%) were employed as Clerks (business managers). In Montana, there are still K-8 districts with a Board of Trustees of three and a District Supervising Teacher, who is a classroom teacher with additional duties that in a larger district would be assigned to a principal. The county superintendent is the superintendent of record for these small K-8 schools with no other administrator.

Of the 237 respondents, 220 indicated the type of school district in which they were employed. One hundred and forty-two respondents (64.5%) were employed in K-8 districts; 44 respondents (20%) were employed in K-12 school districts comprised of only one school in district, and 34 respondents (15.5%) were employed in K-12 school districts that had more than one school in the district. Just over 40.5% of employees had held their current position for more than five years.

Agriculture was the most prevalent type of economic base in more than four-fifths (85.4%) of districts, followed by mixed economies, government services, and recreation and tourism. Manufacturing and retirement were indicated least frequently as the prevalent type of economic base in the school district.

District Student Population

Several questions on the survey asked the participants to describe the school district’s student population. Of the 221 respondents, 60 (27.1%) indicated a district enrollment of less than 10 students; over half (53.3%) specified district enrollment of 30 or fewer students and more than two-thirds (76.8%) worked in districts that enrolled 75 or fewer students. Fifty-eight (29.1%) respondents indicated that more than 50% of the students in the district were eligible for the federal free and/or
reduced lunch program. Forty-eight (24.1%) respondents reported no students eligible for free and/or reduced lunch. However, it is possible that in many of these small frontier schools the respondent did not know if students were eligible for free and/or reduced lunch because most of the schools do not offer a lunch program. Many frontier schools do not have a kitchen or a lunch facility.

**Table 1**

*District Challenges Noted by School District Personnel*

<table>
<thead>
<tr>
<th>Challenge</th>
<th>No. of Respondents</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Low student enrollment</td>
<td>137</td>
<td>57.8</td>
</tr>
<tr>
<td>2. Unrealistic federal regulations</td>
<td>119</td>
<td>50.2</td>
</tr>
<tr>
<td>3. Inadequate financial resources</td>
<td>116</td>
<td>48.9</td>
</tr>
<tr>
<td>4. Mixed grade levels of students in classroom</td>
<td>78</td>
<td>32.9</td>
</tr>
<tr>
<td>5. Difficulty recruiting qualified teacher(s)</td>
<td>78</td>
<td>32.9</td>
</tr>
<tr>
<td>6. Difficulty retaining teachers</td>
<td>76</td>
<td>32.1</td>
</tr>
<tr>
<td>7. Unrealistic state regulations</td>
<td>66</td>
<td>27.8</td>
</tr>
<tr>
<td>8. Unmotivated students academically</td>
<td>65</td>
<td>27.4</td>
</tr>
<tr>
<td>9. Threats of school consolidation or closure</td>
<td>57</td>
<td>24.1</td>
</tr>
<tr>
<td>10.Needs of special education students</td>
<td>53</td>
<td>22.4</td>
</tr>
<tr>
<td>11. Inadequate parent involvement</td>
<td>52</td>
<td>21.9</td>
</tr>
<tr>
<td>12. Antiquated school facilities</td>
<td>45</td>
<td>19.0</td>
</tr>
<tr>
<td>13. Providing teacher professional development opportunities</td>
<td>38</td>
<td>16.0</td>
</tr>
<tr>
<td>14. Low student achievement</td>
<td>33</td>
<td>14.0</td>
</tr>
<tr>
<td>15. Inadequate community support</td>
<td>29</td>
<td>12.2</td>
</tr>
<tr>
<td>16. Inappropriate student behavior</td>
<td>27</td>
<td>11.4</td>
</tr>
<tr>
<td>17. Lack of student support services</td>
<td>25</td>
<td>10.5</td>
</tr>
<tr>
<td>18. Inadequate distance learning technology (e.g., Internet connectivity)</td>
<td>21</td>
<td>8.9</td>
</tr>
<tr>
<td>19. Inadequate curriculum/course offerings</td>
<td>22</td>
<td>9.3</td>
</tr>
<tr>
<td>20. Inadequate number of support staff</td>
<td>22</td>
<td>9.3</td>
</tr>
<tr>
<td>21. Student use of alcohol</td>
<td>14</td>
<td>5.9</td>
</tr>
<tr>
<td>22. Meeting teacher certification requirements</td>
<td>13</td>
<td>5.5</td>
</tr>
<tr>
<td>23. Other</td>
<td>13</td>
<td>5.5</td>
</tr>
<tr>
<td>24. Student use of illegal drugs</td>
<td>6</td>
<td>2.5</td>
</tr>
</tbody>
</table>

The challenge noted by the highest percentage of respondents was *low student enrollment* (57.8%), followed by *unrealistic federal regulations* (50.2%), *inadequate financial resources* (48.9%), *mixed grade levels of students in classroom* (32.9%), and *difficulty recruiting qualified teacher(s)* (32.9%).

The challenges respondents noted least frequently were *student use of illegal drugs* (2.5%), *meeting teacher certification requirements* (5.5%), *student use of alcohol* (5.9%), *inadequate distance learning technology* (e.g., Internet connectivity) (8.9%), *inadequate curriculum/course offerings* (9.3%), and, *inadequate number of support staff* (9.3%).

**Major District Challenges**

Personnel employed by the school district were asked to indicate what they perceived were the major challenges of the district. A challenge was defined as a pressing issue at the current time (Table 1).
Most Important District Challenges

After indicating the major challenges faced by the school district, respondents were asked to specify what they perceived were the “most important, “second most important” and “third most important” challenges in the school district (Table 2).

Table 2

<table>
<thead>
<tr>
<th>Five Most Important Challenges Identified by School District Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Challenge</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>Low student enrollment</td>
</tr>
<tr>
<td>Inadequate financial resources</td>
</tr>
<tr>
<td>Unrealistic federal expectations</td>
</tr>
<tr>
<td>Academically unmotivated students</td>
</tr>
<tr>
<td>Mixed grade levels of students in the classroom</td>
</tr>
</tbody>
</table>

Respondents were asked to explain their reason for indicating a challenge as the most important. Sixty-five of the respondents who indicated that low student enrollment was the most important challenge provided an explanation. Most statements reflected the issue of how declining or low numbers of students translated into less funding, elimination of staff, and possible school consolidation or closure.

Fifty-seven respondents provided statements to explain why the item, inadequate financial resources, was the most important challenge for the school district. Statements reflected the impact of financial resources on instructional materials, facilities repair, teacher salaries, special education services, teacher recruitment and retention, linkage of student enrollment to state funding, and ability to offer necessary programs for all students.

Nineteen respondents provided statements to explain why unrealistic federal expectations was the most important challenge for the school district. Statements reflected unrealistic expectations of federal mandates because of small student enrollments, limited time for teachers to complete paperwork, an overemphasis on testing as the sole measure of student performance, inadequate federal funding to support implementing requirements of regulations, and a general preference for local control in school decision making.

Ten respondents provided statements to explain why academically unmotivated students was the most important challenge of the school district. Statements reflected the inability of students to see relevance in what they were learning, student unwillingness to extend enough effort to succeed academically, and/or a general lack of student responsibility and motivation.

Nine respondents provided statements to explain why the item, mixed-grade levels of students in classroom, was the most important challenge for the school district. Generally, statements reflected how the multi-grade classroom situation placed constraints on the teacher’s time to work with individual students in specific grades to meet expected learning standards.

School board chairs were asked to indicate their perceptions of the three greatest challenges (most pressing issues) in order of importance that currently existed in the school district (see Table 3). Low student enrollment was noted as the greatest challenge by the highest percentage of respondents (n=20, 35.1%), followed by inadequate financial resources (n=14, 24.6%), and unrealistic federal regulations (n=9, 15.8%). These same three challenges were also identified as the second greatest challenge by 12.7% of respondents. A slightly lower percentage of board chairs noted unrealistic state regulations (10.9%) and threats of school consolidation or closure (10.5%) as the second greatest challenge. With regard to the third greatest challenge, board chairs noted most frequently unrealistic federal regulations (21.6%) and threats of school consolidation or closure (21.6%).
Table 3

Greatest, Second Greatest, and Third Greatest Challenges Noted by Board Chairs

<table>
<thead>
<tr>
<th>District Challenge</th>
<th>Greatest Challenge</th>
<th>Second Greatest Challenge</th>
<th>Third Greatest Challenge</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>1. Low student enrollment</td>
<td>20 35.1</td>
<td>7 12.7</td>
<td>2 3.9</td>
</tr>
<tr>
<td>2. Inadequate financial resources</td>
<td>14 24.6</td>
<td>7 12.7</td>
<td>1 2.0</td>
</tr>
<tr>
<td>3. Unrealistic federal regulations</td>
<td>9 15.8</td>
<td>7 12.7</td>
<td>11 21.6</td>
</tr>
<tr>
<td>4. Difficulty recruiting qualified teacher(s)</td>
<td>4 7.0</td>
<td>3 5.3</td>
<td>4 7.8</td>
</tr>
<tr>
<td>5. Unrealistic state regulations</td>
<td>3 5.3</td>
<td>6 10.9</td>
<td>7 13.7</td>
</tr>
<tr>
<td>6. Threats of school consolidation or Closure</td>
<td>1 1.8</td>
<td>6 10.5</td>
<td>11 21.6</td>
</tr>
<tr>
<td>7. Difficulty retaining teachers</td>
<td>1 1.8</td>
<td>4 7.0</td>
<td>2 3.9</td>
</tr>
<tr>
<td>8. Antiquated school facilities</td>
<td>1 1.8</td>
<td>2 3.5</td>
<td>1 2.0</td>
</tr>
<tr>
<td>9. Inadequate distance learning technology (e.g., Internet connectivity)</td>
<td>1 2 3.5</td>
<td>2 3.9</td>
<td></td>
</tr>
<tr>
<td>10. Unmotivated students academically</td>
<td>1 1.8</td>
<td>1 1.8</td>
<td>1 2.0</td>
</tr>
<tr>
<td>11. Inadequate parent involvement</td>
<td>1 1.8</td>
<td>0 0</td>
<td>0 0</td>
</tr>
<tr>
<td>12. Inadequate curriculum/course offerings</td>
<td>1 1.8</td>
<td>0 0</td>
<td>0 0</td>
</tr>
<tr>
<td>13. Needs of special education students</td>
<td>0 0</td>
<td>5 9.1</td>
<td>2 3.9</td>
</tr>
<tr>
<td>14. Mixed grade levels of students in Classroom</td>
<td>0 0</td>
<td>2 3.6</td>
<td>1 2.0</td>
</tr>
<tr>
<td>15. Low student achievement</td>
<td>0 0</td>
<td>1 1.8</td>
<td>2 3.9</td>
</tr>
<tr>
<td>16. Providing teacher professional development opportunities</td>
<td>0 0</td>
<td>1 1.8</td>
<td>1 2.0</td>
</tr>
<tr>
<td>17. Inappropriate student behavior</td>
<td>0 0</td>
<td>1 1.8</td>
<td>0 0</td>
</tr>
<tr>
<td>18. Other (please specify)</td>
<td>0 0</td>
<td>0 0</td>
<td>2 3.9</td>
</tr>
<tr>
<td>19. Meeting teacher certification Requirements</td>
<td>0 0</td>
<td>0 0</td>
<td>1 2.0</td>
</tr>
<tr>
<td>20. Lack of student support services</td>
<td>0 0</td>
<td>0 0</td>
<td>0 0</td>
</tr>
<tr>
<td>Total</td>
<td>57 100.0</td>
<td>55 100.0</td>
<td>51 100.0</td>
</tr>
</tbody>
</table>

Sustainability Practices

School district personnel were asked to indicate if selected practices contributed to school sustainability in the district. These practices were grouped into four categories: (1) general operations, (2) staffing, (3) fiscal, and (4) distance learning technology. Approximately two-thirds of the respondents (n = 161, 67.9%) reported the general operations practice of operating multi-grade classrooms contributed to school sustainability in the district. Ninety-nine respondents (41.8%) indicated that operating school facilities to serve community functions positively impacted sustainability. Slightly more than one in ten (n=28, 11.9%) reported that operating on a 4-day schedule contributed to school sustainability.

The highest percentage of respondents (n=107, 45.1%) selected Made available special in-service opportunities as a staffing practice that contributed to school sustainability in the district. The second most commonly identified sustainability practice was Created partnerships with other districts (n=74, 31.2%), followed by Employed teacher(s) with multiple endorsements (n=73, 30.9%), Passed local levy (n=72, 30.4%), and Promoted reputation of school (n=72, 30.4%). Interestingly, only nine respondents selected Recruited teachers more aggressively from selected colleges and only two respondents indicated Offered teacher induction program as a staffing practices that contributed to school sustainability in the district. In small, remote rural schools it is difficult to operate a teacher induction program when the new teacher may be the only professional educator in the school.

The fiscal practices that the highest numbers of respondents perceived contributed to school sustainability in districts were Sought bids and comparison pricing for all purchases (n=93, 39.2%), Formed consortium of school districts to leverage...
resources (n=93, 39.2%). Cooperated with other districts for specialized personnel (n=92, 38.8%), Increased student count (e.g., all-day kindergarten) (n=88, 37.1%) and Hired teachers on low end of district pay scale (n=87, 36.7%).

With regard to distance learning technology practices that contribute to school sustainability in district, 97 (40.9%) respondents indicated Delivered professional development opportunities for teachers and 90 respondents (38.0%) selected Provided enrichment experiences for students. A much lower percentage of respondents designated the following as important technology practices that contribute to sustainability: Provided citizens access to Internet (n=40, 16.9%), Offered courses to meet state-mandated curriculum requirements (n=39, 16.5%), Offered advanced placement courses for college bound students (n=30, 12.7%), Offered school board training (n=30, 12.7%), and Delivered professional development opportunities for administrators (n=27, 11.4%). Because the vast majority of the respondents in the survey worked in elementary school district, a lower selection of the practices particularly relevant to high schools may be expected.

### Sustainability Reasons

Using a rating scale of not important, somewhat important, important, very important, and extremely important, school district personnel were asked to rate the importance of eight factors in sustaining small rural public school(s) in the school district (Table 4). Based on the combined ratings of very and extremely important, respondents indicated Importance of school to the community in educating children and/or youth almost twice as often (70%) as any other reason. Lack of opposition in the district to closing the school was selected as the reason by the second highest percentage (38.8%) of school district personnel.

<table>
<thead>
<tr>
<th>Sustainability Reason</th>
<th>Respondent Ratings (n = 183)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very Important</td>
</tr>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>1. Importance of school to the community in educating children and/or youth (n =190)</td>
<td>91</td>
</tr>
<tr>
<td>2. Lack of opposition in the district to closing the school (n =180)</td>
<td>51</td>
</tr>
<tr>
<td>3. Geography and road conditions are safer to travel in winter than nearest out-of-district school (n =180)</td>
<td>50</td>
</tr>
<tr>
<td>4. Lack of external pressure (outside of district) to close the school (n =180)</td>
<td>45</td>
</tr>
<tr>
<td>5. Travel distance is too far for students to attend nearest out-of-district school (n =189)</td>
<td>49</td>
</tr>
<tr>
<td>6. Importance of school to the community in meeting community development functions or needs (n =190)</td>
<td>43</td>
</tr>
<tr>
<td>7. Key politicians representing the rural area strongly support the school (n =182)</td>
<td>39</td>
</tr>
<tr>
<td>8. School operating expenditures basically same as schools in other neighboring districts</td>
<td>35</td>
</tr>
</tbody>
</table>

School board chairs also rated the importance of the eight reasons in sustaining the small rural public school(s) in the district (Table 5). Similar to school district personnel, the factor school board chairs rated most highly was Importance of school to the community in educating children and/or youth. In contrast to district personnel, however, school board chairs generally rated the sustainability impact of more factors as very or extremely important. In essence, personnel who work for the school district (e.g., teachers, administrators, others) perceive some sustainability factors as much less important than do school board chairs. For example, 73.7% of school board chairs indicated as extremely important the factor Importance of school to the community in educating children and/or youth, compared to 22.1% of school district personnel respondents. Given the political nature of the school board, it is not
surprising that 41.5% of school board chairs indicated as extremely important the sustainability impact of the factor Key politicians representing the rural area strongly support the school, compared to only 6% of the school district personnel.

Table 5

Rating of Sustainability Reasons by School Board Chairs

<table>
<thead>
<tr>
<th>Sustainability Reason</th>
<th>Very Important</th>
<th>Extremely Important</th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Importance of school to the community in educating children and/or youth (n=57)</td>
<td>11</td>
<td>9</td>
<td>20</td>
</tr>
<tr>
<td>2. Key politicians representing the rural area strongly support the school (n=53)</td>
<td>9</td>
<td>22</td>
<td>31</td>
</tr>
<tr>
<td>3. Geography and road conditions are safer to travel in winter than nearest out-of-district school (n=57)</td>
<td>18</td>
<td>15</td>
<td>33</td>
</tr>
<tr>
<td>4. Importance of school to the community in meeting community development functions or needs (n=57)</td>
<td>19</td>
<td>10</td>
<td>29</td>
</tr>
<tr>
<td>5. Travel distance is too far for students to attend nearest out-of-district school (n=57)</td>
<td>12</td>
<td>17</td>
<td>29</td>
</tr>
<tr>
<td>6. Lack of opposition in the district to closing the school (n=52)</td>
<td>6</td>
<td>20</td>
<td>26</td>
</tr>
<tr>
<td>7. Lack of external pressure (outside of district) to close the school (n=53)</td>
<td>6</td>
<td>15</td>
<td>21</td>
</tr>
<tr>
<td>8. School operating expenditures basically same as schools in other neighboring districts (n=56)</td>
<td>16</td>
<td>4</td>
<td>20</td>
</tr>
</tbody>
</table>

Frontier School Supporters

Forty-nine individuals suggested by school district personnel and board chairs as strong supporters of the frontier community school participated in the six focus group sessions. The 35 cars or trucks that brought the 49 participants to these sessions traveled 3,282 miles, a round trip on average of 96.8 miles. Reflecting the long distances that residents may need to travel to attend meetings in some rural areas of Montana served by frontier schools, one husband and wife traveled a 240 mile round trip to attend the session in their area.

Session participants were asked to describe characteristics of their school, how parents and community (or area) valued the school, the greatest challenge facing the school over the next three years, and to recommend possible solutions to the challenge. Session participants were also asked to explain why the school had been sustained, how the school might be different in five years, and what supporters in the community of frontier schools must do if they want the school to remain sustained and viable to meet the needs of students.

Although survey results provided much data to inform work of the Montana Small Schools Alliance, focus group results added critical information not previously collected in past years by MSSA. Survey results clearly revealed that agriculture is the most prevalent type of economic base in over four-fifths (85.4%) of respondents’ districts, followed by ‘mixed economies.’ Some mixed economies also included agriculture. This means that almost 90% of frontier school districts exist primarily because the parents work in the agriculture sector of the economy, producing important products such as beef, pork and wheat. One focus group participant described the school as closely associated with the culture of agriculture, as a way of life that was much different than life in town, noting: “It’s a culture. That’s how you’d say it, a heritage. Yeah, that’s a good way of saying it.” Another participant describing the frontier school noted.

I just think they’re definitely a necessity. I guess that’s how I would describe our [frontier] school. It’s a good place. We need to have a good foundation for our kids, as far as keeping the family closer to home, because once we have to shuttle the kids to town it’s a whole new world out there. And it puts a greater stress, I think, on the family unit.

This participant lived 38 miles from town, on an unpaved road, and explained that if the children had to go to the “town school” it would necessitate that the mother and children live in town during the week.
while the father lived and worked on the ranch. Such a living situation would cause additional stress on the family unit: “It's a hardship financially. It's a hardship emotionally. It's a great sacrifice.”

Focus group participants offered numerous examples of how they, other parents/families, and community members value their schools. One participant noted.

*It’s a whole different life when they have to go to town. My kids would be gone, you know, I’d have to leave by 5:30 am, maybe 6 am if the roads were good to get them to the bus so they could ride 15 or 16 more miles. We would have to drive them 25 miles on a dirt road to get them to the bus, or move to town.*

Another participant commented on the impact of school closure on the way of life, *If [the school] closes down you lose all the good people that are teaching there, and more than likely everything will follow. Everything will close because the families will leave, so then there’s nobody to support our store and the restaurant and businesses that are in town, which aren’t very many, but to us they are important. If we lose the school, it’s 35 miles to [the next school]…. That is not an option. It would be a 50-mile trip for her [the wife]. It would split the family. The husband would have to stay home and run the ranch, and she would have to go to town [with the children].*

Many focus group participants also saw the impact of having a school on the community, for example, when hiring employees for ranches and local businesses, the presence of a school was an important factor for potential applicants or sons or daughters considering returning to the community. On sustaining the school, one participant remarked.

*I think a lot of people are very supportive of having a school in the rural area because if they have a family that comes in to the area or a son that comes back with a family, they want to be able to have the school there for their children.*

Some participants wanted their children to go to a college and university to learn about modern agricultural practices as preparation for coming back to work in the area or to take over the ranching operation and provided numerous examples of how their children or children of others who attended the small school now live in the community and work as nurses, run their own business (e.g., outfitting) or are ranchers. One participant explained.

*Not all children want to leave the area. They didn’t leave. They love this life, they want to be in it, and they want to raise their kids in it. I think that comes from enjoying the school that they grew up in and the type of lifestyle that they were involved in. It is appealing to the children of our children. Not all of them, but a lot of them will come back and be the next generation of us.*

As one participant explained the importance of connecting children to their community roots, many other participants nodded their heads in agreement:

*In the country the small schools are necessity because of the desire to keep the children involved in ranching, in agribusiness. Most of the small towns are agricultural based areas. Parents desire to keep the kids involved and teach them along the way…. So by sending them to town, from kindergarten all the way up they’ve missed out on learning about ranching. They learn to work. And they’re important to the community.*

All participants agreed that schools are part of the communities, noting that “If we lose them, then we lose our communities.” They strongly emphasized the importance of schools in sustaining the rural ranching life-style.

*While farming and ranching do not require the number of Americans to be involved as in past decades, they do require some Americans who want to work the land and be part of the rural lifestyle associated with ranching. Removing the frontier schools would threaten the existence of agricultural production in Montana.*

**Discussion**

Small rural schools on the Montana “frontier” have numerous challenges, as do most schools in America. But the challenges of frontier schools in Montana appear unique to the agricultural way of life that has prevailed since establishment of the West. This finding is consistent with a national study of K-12 unit schools (i.e., all grades in one school) conducted more than a decade ago by Howley & Harmon (2000b). Their data revealed that K-12 unit schools were usually located in agricultural regions
where socioeconomic status was lower than the national average. Most K-12 unit schools were remote from resources such as hospitals, interstate highways, and cities. Howley and Harmon also found that community attitudes toward single-school districts were moderately and positively related to the sustainability of the school. Single school districts, compared to multi-school districts with a K-12 unit school, used cooperative strategies for maximizing resources, such as joining a regional educational service agency or cooperating with other districts. In Montana, a substantial percentage of the “frontier schools” join the Montana Small Schools Alliance for access to educational support services and networking. In 2005, a regional education service agency network began evolving in the state.

Arguably, elementary schools on the Montana frontier might be characterized as a modern version of the one-room schoolhouse of years gone by. Although many Montana elementary schools on the frontier have no cafeteria, lay citizens in focus group sessions did not see this as a disadvantage to the school or an issue that threatens its sustainability. Perhaps the parents of these children perceive packing a lunch as a parent’s responsibility, rather than the school having to provide a “free lunch.” Many ranching families have wealth as property owners but small incomes, and thus would have children that qualify as eligible for the federal free and reduced price lunch program. One cannot conclude that these “impoverished” children come from homes without the food necessary for bringing a nutritious lunch to school. It is likely also that packing a lunch when a student must be away from home for the day is an accepted way of life on the frontier. Additional research is necessary to investigate this issue, particularly for frontier schools catering to substantial numbers of children from non-ranching families, or single parent families.

Declining populations and subsequent loss of school revenue is the issue that most threatens sustaining the small frontier school and its community. Teachers and administrators typically express concerns about budget issues, curriculum offerings, managing multi-grade classrooms, inappropriate state and federal mandates, recruiting and retaining teachers, and isolation from colleagues. While these are critical schooling issues to educators, lay citizens, on the other hand, are more likely to see the school as a vital necessity for maintaining a way of life associated with agriculture and related enterprises. Although recognizing that children need a quality education that prepares them for living in a global world, lay citizens clearly expect the school to support the aspirations and values of living and working in agricultural or other enterprises on the frontier. Lay citizens in the focus groups also understood how agricultural and other enterprises are changing to accommodate global competition, technology innovations, markets for products, and other issues.

A vast majority of these lay citizens also believes that most Americans have little understanding of what it means to live and work in a ranching culture and community. In their view, most policymakers and funders of public education seem to lack an understanding of how very essential schools are to communities, families, and to the ways of life in isolated rural areas. This belief appears consistent with many reports describing the reasons parents and community residents give when combating school closure or consolidation (Beeson, 2002; Celis, 2002; Walker, 2010). For example, Howley & Harmon (2000b) described a small high school in Tennessee that survived and flourished because of community commitment based on values of family, hard work, and caring for others; community expectations that students may leave to discover a "vocation" elsewhere, but will return with new skills to benefit the community; and a willingness among wealthy residents and businesses to provide supplemental funding. In sustaining the high school, the community articulated a view of the outside world that reflected respect for local perspectives and put local purposes before global ones.

The viewpoints of Montana citizens who participated in the focus groups in this study resemble those presented in other research (Post & Stambach, 1999) that highlights a deep and enduring social tension between the centralizing movements of governing bodies, particularly to reduce the costs of providing a public education, and the decentralizing interests of local communities that seek to retain and to define their own identity. Moreover, viewpoints of focus group participants resemble long-held arguments that isolation in rural areas creates the necessity of small schools (Bass, 1988; Bohrson & Gann, 1963; Gjelten & Nachtigal, 1979) and the need to provide public education. In essence, focus group participants argue that residents throughout the state and across the nation enjoy the products that come from isolated rural areas of Montana. Thus, policymakers should support public education as a necessary basic service for citizens who produce the products and choose the associated way of life in isolated rural areas.

The divisive debates and the effects of school consolidation or closure in rural communities are captured in books like There Goes the Neighborhood: Rural School Consolidation at the Grass Roots in Early Twentieth-Century Iowa (Reynolds, 1999) and DeYoung’s (1995) The Life and Death of a Rural
Schools obviously play a critical role in the future provide a quality public education for all students. We are well aware of the future prosperity.

Results of this study bring to light issues of the one-room school and its historical struggle to exist as a center venue for community life in rural America (Zimmerman, 2009). As Zimmerman writes in Small Wonder: The Little Red Schoolhouse in History and Memory, the one-room school was “neither as rundown as critics claimed nor as bucolic as defenders imagined” (Cited in Kauffman, 2009). For many parents and citizens, the struggle to keep the one-room school was about defending principles of local autonomy and human-scale democracy.

Lay citizens who participated in the focus groups in this study believe they must begin networking with leaders inside and outside of their communities to collect and share factual information on the benefits of a frontier school to its community. In their view, working and living on the frontier is not for most people, but state and federal policy decisions should support public education that seeks to serve families and communities in isolated rural areas.

Conclusion

Both educators and lay citizens in this study provide numerous examples of how the small schools, immersed in a culture seldom experienced by most Americans, benefit them and students. The challenges of declining student populations, funding limitations, and other issues are accelerating, with negative consequences on schools and communities. Sustaining a public school in this unique place of the American landscape will require collaboration and change by those who live inside and outside frontier areas like Montana. Thanks to funding provided by the Oro Y Plata Foundation, this research will help guide work of the Montana Small Schools Alliance in supporting the frontier schools of Montana, as well as inform leaders in other rural communities that embrace public education as a cornerstone of their future prosperity.

Suggestions for Future Research

From this study, the researchers learned that educators and lay citizens on the Montana frontier are well aware of the modern demands on them to provide a quality public education for all students. Schools obviously play a critical role in the future prosperity of individual students as well as their communities. Schools are expected to support the culture and way of life associated with living on the frontier, while also educating students for a productive future regardless of where they choose to live.

Educating students in frontier areas seems to demand understanding a context that honors practicality for making a living and reinforces the unique value of culture in student and community development. Educators and other residents live on the frontier because they identify with and want to contribute to this unique way of life, but increasingly they face challenges that attract little attention from those who could help provide meaningful solutions.

We offer a list of 12 research questions that may help address some critical issues associated with offering public education in rural communities of states with “frontier” areas. Frontier schools are an important segment of public education that deserve the urgent attention of policymakers, researchers, technical assistance providers, and private foundations.

1. What collaborative approaches among communities, educators, governmental agencies, and entities in the private sector offer the most promise for addressing population loss in frontier areas?
2. What joint policy and funding strategies should be targeted between the US Department of Education and the US Department of Agriculture to support educating students in frontier areas?
3. What current and evolving learning technologies have applications for increasing curriculum offerings, student learning, and teacher development in frontier areas?
4. What are the most critical professional development needs of teachers who work in frontier schools for addressing meaningful problems of practice, particularly teachers who serve dual instructional and administrative roles?
5. What strategies offer the most promise in addressing teacher recruitment and retention issues of schools districts in frontier areas?
6. How could community leaders, lay citizens, and educators collect and disseminate accurate information to effectively reveal the essential role of schools to community viability and prosperity in frontier areas?
7. What state and federal education policy and funding practices are necessary to support educating students in frontier areas that complement local control of “public” schools, including virtual schools and public charter schools?
8. How does academic performance of students in frontier schools compare to that of students in other rural, urban and suburban schools?
9. If this study was replicated in other western states would the challenges and sustainability practices of those frontier schools be similar or different from the Montana study?
10. What are the educational and career aspirations of high school seniors in frontier areas?

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Dr. Claudette Morton served as the Executive Director of the Montana Small Schools Alliance for more than 14 years, retiring in June 2010. Now an independent consultant, Dr. Morton previously worked as a college administrator, staff member of the Montana state education agency, and administrator for the Montana Board of Public Education.

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Recommendations from the North Star State: Rural Administrators Speak Out

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Gerry Nierengarten
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Administrators in America’s rural school districts are uniquely challenged to meet increased achievement expectations despite decreasing resources. Mandated reform initiatives, population decline, and the complex formulas used to distribute tax-based funding have disproportionately affected rural schools. In this mixed-methods study, researchers first surveyed K-12 administrators and then conducted focus groups across six regions in Minnesota to determine the nature of the challenges specific to rural administrators and to document their perceived needs for interventions, training, and policy changes. The study identified two categories of common concern: student achievement and fiscal management. Within the category of student achievement, administrators identified four areas of need for assistance: testing and adequate yearly progress, achievement for all, staff and professional development, and data analysis. Within the category of fiscal management, needs for assistance included balancing budgets and transportation/sparsity policy. Analysis of the data gathered indicates statewide implications for professional development and policy review.

Key words: Rural schools, rural school challenges, rural school funding, rural school administration, Minnesota rural schools.

Across the United States, approximately one third of all children attend rural schools (Bryant, 2007). In Minnesota, thousands of yellow buses lumber down country roads, through cornfields, wheat fields, and orchards, across prairies, over streams, under tall pines, and across vast snow-buried acres, to bring one third of the state’s students to school (Johnson & Strange, 2007). Over the past two decades, administrators in Minnesota’s rural school districts have been continuously faced with the inequities and challenges of trying to meet both their districts’ educational goals and new state and federal educational mandates with consistently dwindling resources, and decreasing capacities for generation of financial support from their own towns and cities. In addition, since at least 1994, rural administrators have been juggling a steady stream of concurrent and consecutive state and national reform initiatives (Hargreaves & Goodson, 2006) including the intrusive No Child Left Behind Act of 2002.

Minnesota’s rural schools have unique needs and circumstances that impact the education of their student populations. Supported by a grant from the Center for Rural Policy and Development to identify those issues that most affect the state’s rural administrators, University of Minnesota -Duluth researchers gathered information from the state’s administrators of rural public schools (Williams, Nierengarten, Riordan, Munson, & Corbett, 2009).

The aim of this mixed methods study was not to add to the cries for more funding, but rather to identify possible levers that rural administrators may use to promote less disparity between country and city school children, and the opportunities they receive in schools. It was an attempt to give voice to administrators’ perceptions of the needs of Minnesota’s rural districts as distinct from those of urban districts, and to identify policies and procedures that currently present barricades specifically to rural districts as they attempt to balance budgets and address mandates.

Minnesota Rural District Challenges

Minnesota’s rural school districts, as opposed to the state’s urban and suburban districts, have been disproportionately affected by two factors in particular: population decline, and state and federally mandated reform efforts. Since 1995, as a result of legislation, indexed, inflation-adjusted PK-12 per pupil revenue (less building debt and special education expenses) in Minnesota has held relatively steady (Minnesota House Research Department, 2008). Increased achievement expectations, combined with rising expenses and without increased funds, have meant inevitable cuts to programs and staff state-wide. Rural schools have had to address the same expenditure cuts in addition to experiencing a steady decline in population due to lack of employment in mining and farming industries. The
impact of declining enrollment has proven challenging in terms of schools’ effectiveness and quality. Simply stated, Minnesota’s rural schools currently attempt to provide education to their students for significantly less funding per child each year than non-rural schools (Thorson & Edmondson, 2000; Thorson & Maxwell, 2002). The capacity to offer options for students to pursue special interests, accelerated course work, or remedial course work has been severely limited in rural schools.

In addition to decreased and unstable funding, Minnesota’s rural schools have faced and responded to two decades of concurrent and consecutive state and federal reform initiatives and mandates, state testing requirements, increased reporting, and threats of sanction. To compound the challenge for rural districts, state-level professional resources have dwindled. Agencies such as the Minnesota Department of Education (MDE) have found direct supports for outlying districts fiscally unfeasible in light of increased fuel costs and shifting priorities. Dwindling state support has served to increase the distance issues for rural access to services and information.

Identification of specific priorities of need in Minnesota’s rural districts may provide insight to focus the state’s available resources more effectively. Rural Minnesota researchers, McMurray and Ronningen (2006), have documented various rural district issues, including enrollment decline, linguistic diversity, and percentage of students receiving free and reduced lunch. Thorson and Maxwell (2002) established Minnesotan rural-to-non-rural discrepancies regarding access to internet, use of technology for teaching, variety of course offerings, extra-curricular activities and advanced placement courses, and recruitment and retention of teachers. Warne (2010) established issues relating to access to broadband internet, ability to use technology effectively, and provision of special education services. Warne also identified rural needs as inclusive of finance issues regarding local levy referendums, options for shared services administration, and stable funding streams.

National Rural District Challenges

On a national level, research identifies common issues for rural educators across the nation. Reeves (2003) studied the impact of NCLB legislation on rural districts and found issues of sparsity and transportation, funding formula inequities, fiscal management, attainment of student performance and learning goals, teacher recruitment and retention, teacher shortages, provision of professional development and access to technology to be significant. Others, including Bryant (2007), Cullen, Brush, Frey, Hinshaw, and Warren (2006), Lowe (2006), Harmon (2001), and Killeen and Sipple (2000), corroborate Reeves’ findings regarding issues of funding, NCLB compliance and student performance, recruitment and retention of quality teachers, and sparsity and transportation. Lamkin (2006) identified an additional challenge to rural superintendents that includes changes in the work and nature of school boards. She stated, “Many rural superintendents discussed the challenge of district politics and board relations, with some talk about the change in the nature of boards, increased shared decision-making and the demands of continuous communication” (p. 21).

Common Rural District Challenges

Common to both Minnesotan and national studies, issues identified as pertinent to rural districts include: attainment of student performance (Bryant, 2007; Reeves, 2003), curriculum and instruction (Harmon, 2001; Thorson & Maxwell, 2002), diverse learner needs (Harmon, 2001; McMurry & Ronnigan, 2006), fiscal management (Bryant, 2007; Harmon, 2001; Reeves, 2003; and Warne, 2010), professional development (Harmon, 2001; Reeves, 2003), mentoring, recruitment and retention of qualified teachers (Bryant, 2007; Reeves, 2003; Lowe, 2006; Thorson & Maxwell, 2002), sparsity and transportation (Reeves, 2003; Lowe, 2006; Thorson & Maxwell, 2002), students with special needs (Harmon, 2001; Warne, 2010), instructional technology (Cullen et al, 2006; Harmon, 2001; Thorson & Maxwell, 2002; Reeves, 2003; Warne, 2010), and working with school board members, including strategic planning (Harmon, 2001; Lamkin, 2006).

Context

Some Minnesota rural districts exist in close proximity to others, while others are isolated by waterways, sparse settlement, or as a result of severe weather (snow, mostly), some districts are less accessible than others in winter months.

As in other states, Minnesota’s rural schools have experienced chronic enrollment decline as a result of the changing economic base in many rural areas (Thorson & Maxwell, 2002). They have experienced challenges due to operational expenses such as rising health care costs, skyrocketing transportation costs for districts covering large geographic areas, and increasing costs and demand for special education services. In addition, unlike the
state’s concentrated urban school districts, Minnesota’s rural districts are limited in their capacities to link with corporate or grant funding, or to take advantage of the purchase power of scale (Farmer, 2009). In fact, part of the disparity in funding between large urban school districts and smaller rural districts is due to economies of scale that favor urban districts. The study, Small Schools under Siege (Thorson & Maxwell, 2002), indicates that it simply costs smaller districts more per pupil to educate students than it does in larger districts.

However, in Minnesota, there exists a strong and passionate social desire to maintain the commitment to rural students and their communities. The close association between the economy and vitality of a town and the presence of a school has not only been demonstrated mathematically (Mykerezi, Temple, & West, 2009), but is also reflected in heartfelt responses across the nation in conversations involving consolidation and collaboration (Bryant, 2007). School administrators are often placed at the demographic, geographic, financial, and perhaps even philosophic intersection of a rural community. Their decisions must consider the needs of school children and the political pressures of mandates and legislation. It is the role of the principals and superintendents to consider the needs of both internal and external constituents of the rural communities’ schools (Bagin, Gallagher, & Moore, 2007).

This study attempts to provide a glimpse into the needs for assistance that exist specifically in Minnesota’s rural schools in order to better understand the realities for rural school administrators and to generate recommendations for changes in policies and processes that do not create or continue obstacles and inequities. Guiding the project were two research questions:

1. What issues are most problematic for Minnesota’s rural administrators?
2. How do rural administrators perceive these issues may be addressed?

Methods

This was a mixed methods study using an initial survey and follow-up focus group interviews to gather information from Minnesota’s rural administrators about issues affecting rural schools. The UMD research team created a six-page electronic survey that asked practicing rural administrators to rank their own specific priorities relative to pertinent issues extracted from current literature and from a review of current legislation. The 13 themes identified were:

- Attainment of Student Performance and Learning Goals
- Curriculum and Instruction
- Diverse Learner Needs
- Fiscal Management
- Professional Development and/or Mentoring Services
- Recruitment of Qualified Teachers and other Professionals
- Retention of Qualified Teachers and Other Professionals
- Sparsity and Transportation
- Staff/student Ratio
- Strategic Planning
- Students with Special Needs (IEP or 504)
- Use of Instructional Technology
- Working with School Board Members

Sample

The sample selected was the entire membership listing of the Minnesota Rural Education Association (MREA), and included superintendents, business managers, and principals. MREA administrators were asked to share demographic information and insights about rural issues. A total of 432 electronic surveys were sent to 141 school districts. Eighty-nine surveys were returned, of which 82 were valid as they were completed by intended respondents. The valid returns represented all six of the designated regional settings, and each region’s responses included principals and superintendents. While survey respondents represented school districts that varied in size, and included one large district of over 8000 students, most respondents were from very small districts; indeed, more than two-thirds of the participating school districts served less than 1,000 students. Despite the lower return rate (19%) on the survey, all groups were represented. Percentages of respondents by group were divided as follows: superintendents – 26.8%, principals – 52.4%, business managers – 12.2%, and those who serve in mixed roles – 8.5%. The survey results were analyzed by frequency to determine most commonly identified issues to provide an agenda for conducting regional focus groups.

As a means of validation, triangulating and providing context for the results, researchers conducted six focus groups of school administrators to add depth and context to the survey responses, and to identify possible interventions in policy or processes. The focus group protocol was based on the issues identified by survey respondents and on current and proposed legislation. The focus groups were convened in the northwestern, northeastern, southwestern, southeastern, west central and east central portions of the state. Each focus group
consisted of either five to seven principals or superintendents, representing multiple districts within the regional settings. The conversations were electronically recorded and subsequently transcribed.

**Analysis and Results**

This study was conducted to address two research questions. The first question was: What issues are most problematic for Minnesota’s rural administrators?

To gather initial data regarding identification of priority issues for rural Minnesota administrators, the electronic survey solicited responses to rank 13 identified issues. Descriptive statistics were employed to rank the quantitative survey responses per item in order to determine priority of need for each role represented. Narrative survey responses were open-coded by the research team according to corresponding themes in literature reviewed (Strauss & Corbin, 1990). The narratives from the survey and the transcripts from focus groups were initially open-coded independently by each researcher according to the survey items. To establish common coding criteria, the research team collaboratively established selective codes. After common criteria to reduce and condense themes were established, all survey responses were selectively coded by teams of two researchers.

As survey respondents considered their own concerns, they offered narratives to constructed response items regarding their priority needs for assistance or services. Among the 13 items presented in the survey, respondents representing all of the surveyed administrative roles ranked *Attainment of student performance and learning goals* as 1 or 2. *Fiscal Management* was ranked second, but largely by superintendents rather than principals. These two priority concerns dominated the first- and second-place rankings of respondents (Table 1).

### Table 1

**School District Priorities Ranked by Administrative Roles**

<table>
<thead>
<tr>
<th>Administrative Role</th>
<th>School District Priority ranked 1 or 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Student Performance &amp; Learning Goals</td>
</tr>
<tr>
<td>Superintendent</td>
<td>11</td>
</tr>
<tr>
<td>School Principal</td>
<td>32</td>
</tr>
<tr>
<td>District Business Manager</td>
<td>0</td>
</tr>
<tr>
<td>Mixed Roles from above</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>48</td>
</tr>
</tbody>
</table>

*Note: These results represent 82 respondents to the survey. The respondents included 22 superintendents, 42 school principals, 10 district business administrators, and 7 who indicated they held mixed roles in their district.*

The research team identified themes of need based on responses to the survey, within the top priority concerns, and considerations for changes in policy and procedures affecting rural schools.

**How would the rural administrators like to see these needs addressed?**

Following the analysis of the returned surveys, the protocol for focus groups was designed to solicit either confirmation or discrepancy with the priorities established via the survey results, and to request recommendations for interventions that could address the needs of their schools. Questions included, *As you peruse the 11 listed priorities, on which do you wish you had more assistance, support, or collaboration?* And, *If you could recommend state, regional, or local policy changes that would assist or enhance collaboration or support, what would they be?* Participants were also asked to identify successes and obstacles relative to the identified needs in their sites or districts. The established selective-coding criteria were again employed to code the transcripts of each focus group’s proceedings. Two researchers completed coding independently, and discrepant items were brought to the larger research group for coding via consensus.

**Summary of Data Gathered**

The following six categories surfaced most frequently throughout the survey results as needs for assistance to address the two priority concerns, student achievement and fiscal management (See Table 2): testing and adequate yearly progress (AYP), achievement for all, staff and professional development, data analysis, balancing budgets, and transportation/sparsity.
Table 2

Most Frequent Concerns and Related Needs reported by School Administrators Surveyed

<table>
<thead>
<tr>
<th>A. Student Achievement Concerns:</th>
<th>% of Respondents Identifying</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Testing and AYP</td>
<td>65</td>
</tr>
<tr>
<td>2. Achievement for all</td>
<td>39</td>
</tr>
<tr>
<td>3. Staff/Professional Development</td>
<td>29</td>
</tr>
<tr>
<td>4. Data Analysis</td>
<td>29</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. Fiscal Management Concerns:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Balancing Budgets</td>
<td>52</td>
</tr>
<tr>
<td>6. Transportation/sparsity</td>
<td>32</td>
</tr>
</tbody>
</table>

**Testing and annual yearly progress.** The dominant theme of need identified by the surveyed administrators and the focus groups was, perhaps not surprisingly, related to state testing and AYP (annual yearly progress). Not only did the administrators express being overwhelmed with expectations for achievement within the identified underperforming subgroups, but they also expressed concern for subgroups of students, such as gifted and talented, students with specialized interests in agriculture, world languages, or fine arts, and disenfranchised students who meet the performance thresholds, who would be underserved as a result of the focus of the federal act. The administrators’ concerns were expressed through the surveys and reinforced in all six focus groups with statements such as:

*Student achievement has been artificially prioritized, often at the expense of student learning and growth. Meeting AYP is a top priority. Our school does a superb job in spite of the punitive accountability measures of NCLB.*

[Superintendent]

The effects of the priorities of the NCLB Act are exemplified in this principal’s statement:

*For so long, I think schools taught to the middle, you know, that’s where the largest number of your students were at, and maybe some of those kids on the fringes weren’t getting the resources they maybe needed. Well, now with federal No Child Left Behind, the focus has been on your at risk kids, which has been good. But now, on the other end, I think there’s all this pressure for the gifted kids to provide them opportunities, and I think we’re now teaching to the fringes more and focused on them, and we’re not really worrying about the average middle kid.*

[Principal]

**Balancing budgets.** Balancing budgets was the second most commonly identified issue. Administrators expressed concerns that ranged from fiscal management of fixed and unpredictable expenses, to finding means to fund all students adequately. These concerns were expressed through comments such as:

*We just kind of say, ‘One student, one price.’ And we all know that each student comes with a different price tag.*

[Principal]

*The education funding system ... basically states, the type of education to which you have access is determined by your zip code. And that’s wrong. Any kid, no matter where they live, should have access to the same educational opportunities.*

[Principal]

Frustrations for administrators included the difficulties of the range of student services needed, the inadequacies of weighted per pupil funding, and the differences in the realities of educating rural students.

**Achievement for all students.** The third most commonly identified issue on the survey was achievement for all students. This theme was often linked to the concept of testing, but statements from across regions also demonstrated concern for students achieving their best according to their abilities. From early intervention, to high school level at-risk students, the administrators expressed needs for assistance to serve students across the spectrum.

*It’s time that we look at early intervention before kindergarten. I really believe that we need to go down past the 5-year olds, and look into the 3 and 4, not only our highest risk population, but all students, to jump start them to maybe help try to close the gap before it gets to someone at the high school, and that gap has gotten so large...We all see the gaps already in kindergarten, kids that come in. There are kids who are reading already and flying and there are kids who cannot identify letters in their name.*

[Principal]

Many rural communities do not have access to early child intervention at the level that exists in urban settings, due to distance, communication, lack of providers, and access to resources.

**Transportation and sparsity.** Needs regarding
bussing and student transportation were discussed by administrators in each of the six regions. Distances to bring students to school were part of the difficulties facing the rural administrators in the study. Transportation to provide access for extracurricular activities from athletics to enrichment is compounded for rural students as extensive geographic separation exists in part due to designated school-size divisions for competition among High School League members. Expenses for extracurricular transportation were especially exaggerated for those districts whose populations exceeded the limits for sparsity aid, but were located amid several smaller towns that were classified as competitive only in other divisions of the high school league. Larger rural districts have been required to travel great distances, often across the entire state, in order to compete.

In addition to bussing expenses, transportation issues in rural districts involve open enrollment. In Minnesota, students may choose to enroll in any district that can accommodate them. For many smaller districts, that means yellow school buses from multiple districts cross over district boundaries and often travel the same road, some even stopping for children at the same houses. The administrators stated concerns regarding the public perception of waste in observing so many district buses, gas and time. One of the superintendents in a focus group mentioned, tongue in cheek, that s/he has nightmares about three districts’ school busses having a collision in the driveway of a single home in the country.

Transportation concerns included: We have 80 miles and it’s in the woods, and it’s scary, you know? (Superintendent)

Often, the bus routes in rural areas of Minnesota bring challenges due to poorly maintained roads, seasonal and wildlife hazards, and the dangers of driving before or after daylight. In addition, there are other, unexpected challenges, such as drastically fluctuating fuel prices.

The spike in gasoline and diesel fuel was unexpected last year. All of our new revenue ...was used to pay off our gasoline and diesel bill [Superintendent]

Paying for fuel is not only a transportation issue in Minnesota schools, it also includes significant costs relative to heating buildings in extreme cold.

Professional development. The administrators’ frustrations regarding staff development included the small amount of reserve resource that is mandated by state law for professional development. Rural personnel, for the most part, must travel great distances to obtain training. However, the state’s required general fund set-aside monies are not enough to provide adequate staff development dollars to meet the districts’ educational goals and priorities. Examples of administrative comments related to staff development included:

I think the one piece that’s so important for student performance in all areas is the teacher and so I think anything we do to focus on having the teachers do a better job, be able to teach better, is kind of a key, and I think a lot of colleges have gotten smart about offering graduate credits -- but I’m not sure they really have an impact on the teaching and changing teaching performance. [Superintendent]

While some graduate credit opportunities exist for rural district personnel, opportunities for staff to engage in professional development focus specifically on student achievement are available in multiple formats in more urban or suburban districts.

Data analysis. Over the past decade, the role of the educator in response to technology has been crucial to instruction and access. The capacity for districts to utilize vast stores of student demographic and achievement data has been helpful, and yet overwhelming. Interpretation of large-scale test scores and their role in planning school improvement was not required study for much of the generation of school administrators or teachers who currently practice in rural schools. Concerns regarding misinterpretation of data, and the lack of skill required to display and accurately communicate meaning were expressed by administrators in each of the six regions. Ability to disaggregate and effectively relate student scores to program effectiveness was also identified as an area of need for assistance. Administrators stated:

We’re standing hip deep in data with all of this stuff from the state, and our local data. Our teachers don’t necessarily know how to use it... We just don’t know how, at least in my district, to do that well and to keep focusing on it. We look at that whole list, and start running the different directions and start running after money; we haven’t had a chance to focus on it now. [Superintendent]

You look at your district data ... it just feels like a conspiracy, because if you do a presentation to the community on your district data, the message is, “The longer kids stay in school, the dumber they get.” [Superintendent]

Using data effectively, to garner support, celebrate success, and focus on improvement was a common theme in all focus groups.
Administrators’ Recommendations

In addition to identifying priority concerns and their districts’ needs to address those concerns, administrators in this study, through survey and focus group input, provided recommendations for how policies and resources could be improved to help tackle these issues. Two categories of recommendations were offered most frequently: a) policy recommendations related to the state funding formula, and b) resource recommendations related to State Department of Education and other agencies’ functions and services.

Funding distribution. Recommendations for funding distribution considerations were proposed by administrators in all of the state’s regions, and included advocacy for examination of funding practices addressing sparsity and transportation aid, budget prediction stability, capacity to address the needs for enrichment and at-risk, and designated funds for staff development.

Approximately 30% of the administrators surveyed and 100% of regional focus group participants noted that the state’s current funding formula rendered provision of equitable, quality education difficult. Administrators used many terms to express the idea that they wanted a funding formula to provide dependable, reliable, sustainable, and consistent, funding levels to assure at least an equal, basic level of desired education across the state. Inflation-indexed funding from the state was suggested as one approach to providing a dependable funding level. Applying the formula only after transportation cost was covered was another. Some administrators stressed the necessity to use appropriate levy options to meet local needs and goals for education.

The participants in this study identified a need to revisit the current state funding formula in several areas. General dissatisfaction with the allocations was prevalent, with a majority of the participants identifying disconnection between the reality of small, rural school districts and lawmakers at the capitol. The problems of distance and economy were expressed in each region, due to busing, fuel prices, and the expenses of travel and supervision that compound disparate funding. Reconfiguration of the funding categories of elementary and secondary sparsity and transportation aid to reflect rural realities could address and expose the inequities of rural education provision. A formula that distributed weight to increases in fuel costs, and the combined effects of lower enrollment and lower capacity of rural districts to raise additional local funds, and the additional costs of transportation would provide relief. Consideration should also include access to inter-district travel for enrichment, athletics, cooperative staff development, and collaborative planning.

In addition to allocation discrepancies, the regions referred to the difficulties of rural schools relative to unpredictable budgeting processes. Unstable and inaccurate budget projections reduce rural districts’ capacity to attract and retain quality staff, to maintain buildings, and to purchase cooperatively. The annual possibility of falling short of spring projections is not conducive to commitment to personnel or programs. In urban areas, shifts in district allocations do not necessarily result in families of workers being geographically stranded as well as unemployed, while rural districts routinely place staff at risk of both. It would benefit rural districts if legislation could guarantee allocations after spring projections.

Participants in this study also reported difficulty in decision-making regarding prioritizing course offerings for a diversity of rural students – for example, those college-bound, at-risk, and with special interests. Lower incidence of these students in small districts often have forced administrators to make decisions to provide for the need of one group at the expense of another. Collaboration and combined resources could benefit students who fall into either of these categories. If legislation would support the Department of Education, colleges, universities, and other providers to identify the needs of isolated rural learners and to offer on-line courses designed for at-risk and for enrichment, perhaps districts would not need to ignore the needs of some learners in order to provide for the needs of others.

Agency practices and procedures. Rural administrators have very limited personnel resources to help them address their curriculum needs to make Annual Yearly Progress as is required by the No Child Left Behind Act. In each region, administrators expressed a belief that the Minnesota Department of Education (MDE) should provide more support to rural areas. MDE, if directed by the legislature, could have a mandate to allocate staff resources and travel resources to bring expertise to rural school districts. A sense of this rural perspective is conveyed by this response:

Smaller districts, with the budget cuts, don’t have curriculum people. They don’t have test coordinators. They don’t have test [staff]... So if somebody in the district has to pick that up, the cuts at the state departments disproportionately affect the smaller school. [Superintendent]

In addition, professional development of staff to
affect student achievement was cited predominantly in each region as difficult to provide due to distance, but also due to lack of sufficient incentive to dedicate the state’s currently required 2% General Fund set-aside without exercising waiver options. Too often, district staff exercises a right to vote to return the 2% set-aside to the general fund in order to address other urgent needs. If a legislative session were to direct districts to maintain the current 2% General Fund set-aside requirement for staff development, or to increase incentives for rural schools not to exercise the current waiver options, perhaps funding for staff development may become less frequently redistributed, and teachers’ continued professional growth would become a common expectation among all districts.

Participants in each region offered possibilities for change in practices by the Minnesota Department of Education (MDE), state professional education organizations and unions, and colleges and universities that could directly and positively affect rural districts. The most prevalent requests for assistance were in regard to the Minnesota state tests and testing procedures. Mandated measurement that cannot yield data to inform in a timely and responsive manner may have little impact on instructional practice. Most often recommended were continued changes in the NCLB-required Minnesota Comprehensive Assessments to reflect growth within, rather than across cohorts, and for results to be provided to districts to use formatively for those students taking the tests. Several states have explored growth-based measures, and some actually have adopted commercial large-scale measurements in addition to, or rather than state-created instruments (United States General Accounting Office, 2003). Continued pursuit of options that define and effectively and efficiently measure growth in student learning is encouraged. Participants in the focus groups praised the procedural and professional development practices of the North West Evaluation Association (NWEA) and suggested the NWEA series as alternative to the state tests. According to the administrators, the NWEA test results are timely and instructionally sensitive, and the results are teacher-friendly and can be utilized to modify instruction.

A second theme of recommendation included issues of equal access to staff development opportunities. Distance to attend state-level staff development and the cost to the districts in rural Minnesota to bring MDE staff and other professional development providers to districts for assistance impede rural educators’ equal access to information and opportunities. If, however, the State Department of Education, colleges and universities, and professional education organizations were to offer online modules, or courses for initiatives defined in districts’ work or action plans, the options for rural educators to stay abreast of current best practices may increase. Additional consideration for establishment of online professional learning communities with focus on issues of data analysis for decision-making, student achievement, and special education would provide rural educators increased opportunities, and to address isolation and access to collegiality in addressing student achievement as well.

In addition to lack of professional development, and time and occasion to share among administrators, participants in regional focus groups in this study also revealed increasing frustration with administrators expressed disappointment in the loss of time and revenue used to establish collaborative grant work and the lack of continuous funding for programs that have provided effective interventions. If, however, colleges and universities sought partnership with regional rural districts to study and document the effectiveness of successful practices, including grant initiatives, and provide documentation for districts seeking continued funding for best practices, perhaps the lessons learned from one innovator or grantor could be utilized to inform others and to provide a basis for pursuit of addition funding. Consideration of the establishment of an electronic statewide registry of active grants and exemplary practices could provide a forum for sharing of promising practices to schools from all funding agencies. Access to reports from active grants, concluded grants, and other innovations could benefit districts, institutes of higher learning and state-level decision-makers.

Discussion

After analysis of this study’s survey responses and focus group discussions, the needs and priorities expressed by rural school and district leaders indicate opportunities to review and revise current funding policies, as well as considerations to modify or review procedures employed by state agencies, professional education organizations and higher education. The top two concerns that emerged were: (1) student achievement, and (2) fiscal management, both of which are also identified in Minnesota-based and in national studies. These concerns align with the findings of Reeves (2003), Bryant, (2007), Cullen, Brush, Frey, Hinshaw, and Warren (2006),
Lowe (2006), Harmon (2001), and Killeen and Sipple (2000), in regard to issues of student performance and funding concerns impacted significantly by formula inequities, transportation costs, and population decline. From within these concerns, the participants identified needs for specific assistance regarding: testing and adequate yearly progress, balancing budgets, achievement for all, transportation and sparsity, professional development, and data analysis. These identified needs reinforce the findings of Reeves (2003) with regard to identification of the impact of NCLB legislation and provision of professional development. The priorities and concerns of the Minnesota participants align with the literature; however, the identification of student performance and fiscal management, and needs regarding testing, transportation, professional development and use of data may indicate policy and procedural adjustments are required to address inequities for rural schools.

Although public funding is the foundation for public school’s viability, increasing funding may not be the only means by which the work of public education can be supported. In these difficult economic times, increases and decreases in allocations that do not include examination of policies and procedures impacting rural schools disproportionately relative to urban and suburban schools seem not to be in keeping with responsive, representative and constitutional government. The disproportionate impact of legislation on rural schools has been the focus of state and national studies (Bryant, 2007; McMurray & Ronnigan, 2006; Reeves, 2003; Thorson and Maxwell, 2006), and was clearly expressed in this study as well. Policy recommendations from study participants included changes to the state funding formula regarding sparsity, stability of rural populations, and staff development funding, which aligns with the findings of Reeves (2003), and others. Other recommendations fell into procedural categories, such as state testing, opportunities for collaboration, and professional development opportunities that are specific to Minnesota contexts.

It is clear that some rural educators perceive that it is within a state’s power to improve rural education. While it is true that additional financial resources may always be welcomed, participants in this study identified means by which rural education may be improved through revised allocation of current financial and personnel resources.

Limitations

The survey response rate (19%) was statistically acceptable for use (Bartlett, Kotrlik, & Higgins, 2001) but lower than researchers’ expectations. All six of the designated regional settings were represented in the responses as well as various school, providing an inclusive sample of the rural schools across the state. However, the number of returns per region was insufficient for inferences regarding regional discrepancies. Therefore, results in this study do not include regional disaggregation. The survey responses were used to appropriately frame questions for the statewide focus groups as a preliminary tool, and not used as stand-alone data for the analysis in this study.

Suggestions for Future Research

The findings of this study revealed issues and concerns that stimulate further investigation. Expanded survey responses and increased numbers of focus groups to investigate continued effects of current and proposed legislation, policy and procedures unique to rural schools in Minnesota and other states could enrich the communication between rural districts and state and federal legislators. Longitudinal studies have potential to identify trends in rural schools’ attempts to cope with disproportionate funding and service issues. Continued study may reveal possible solutions that may be useful to policy makers and rural schools across America.

Conclusion

To continue to offer quality education to children who do not live in cities or suburbs, changes in policy, priorities and procedures, if implemented in time, could make great differences to the children on the yellow buses going down the dusty roads. Perhaps by listening to the men and women who try to balance the needs and requirements of the federal and state mandates with the realities of the communities and the people they serve, we may be able to strengthen the connections between rural communities, their schools, and the folks who make decisions in places far removed.
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A Distance-delivered Teacher Education Program for Rural Culturally and Linguistically Diverse Teacher Candidates

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This article describes a collaborative, distance-delivered, teacher preparation program for rural, culturally and linguistically diverse (CLD) teacher candidates. Multiple institutions partnered with one university in order to diversify the teaching force in the region and meet the needs of CLD students living there. In describing the program’s design and implementation phases, a focus on cultural responsiveness to the candidates’ needs, their rural settings, and high populations of Latino/a students in the rural areas in which they were trained is presented. Assessment of each implementation phase guided program practice for the participants’ training as effective teachers. Relevant discussion indicates that even with responses to the pre-service teachers’ academic, social, and financial needs, issues of communication and barriers imposed by distances emerged. Additionally, while collaborative bonds among the partner institutions facilitated the candidates’ training as effective teachers, the building of multi-institutional partnerships concurrently with the implementation phases caused participants and implementers stress.

Key words: Culturally and linguistically diverse; teacher preparation program; distance education; rural.

The realities of teacher education programs in the 21st century require that prospective teachers know how to effectively teach an increasingly diverse population of children. Unfortunately, the teacher education system has persistently shown an inability to recruit and retain minority teachers who share the same racial, ethnic, and cultural backgrounds of these diverse students (Gay, Dingus, & Jackson, 2003). With culturally and linguistically diverse (CLD) students now representing approximately 45% of our public school populations (Noel & Sable, 2010), recruiting and retaining teachers of color is a critical issue. Thus, more institutions of higher education across the United States are considering that strong relationships and shared beliefs among school-and-university-based faculty can transform teacher education programs to positively increase the number of teachers of color who can effectively meet the needs of CLD children (Bernal & Aragon, 2004).

The purpose of this study is to describe one such collaborative effort among several educational institutions in an attempt to diversify a particular rural region’s teachers by designing and delivering a culturally responsive teacher preparation program to rural CLD candidates. Implications drawn from the program and its participants’ training as effective, culturally competent educators reflect a critical need for systemic and collaborative change in the educational continuum that more effectively addresses the historic problems faced in teacher recruitment, retention, and preparation (Cochran-Smith, 2004).

Interesting circumstances occurring in the rural Midwest involve the issues of increased student diversity and teacher recruitment and retention. To explain, similar to national trends, rural areas in the Midwest are experiencing significant growth in Latino/a populations (US Census Bureau, 2008). Too often a Latino/a student’s educational landscape is a “rocky terrain” (Valenciana, Weisman, & Flores, 2006, p. 82) that may be additionally compounded by a mismatch between his/her Latino/a cultural and historical background and the racial and ethnic make-up of his/her teachers. Rural local educational agencies are confronted with meeting the educational needs of its Latino/a students by employing highly effective teachers—an issue that becomes additionally problematic as remote, rural areas are frequently challenged to recruit and retain any teacher (Achinstein, Ogawa, Sextion, & Freitas, 2010). As in the current study, geographic location and access to resources serve as major hindrances for local school districts in recruiting and retaining highly qualified teachers (Gutierrez, 2006).
Contextual Factors

In rural areas, thus, the problem of recruiting, retaining, and preparing diverse teachers is compounded with the issue of distance. Currently, colleges and universities are exploring an array of methods to facilitate the delivery of instruction in teacher education, particularly to rural areas critically impacted by the teacher shortages (Jung, Gaylon-Keramidas, Collins, & Ladlow, 2006). Utilizing community resources via “grow your own” pre-service teacher training projects appears to be a viable means for combating such a problem. These rural pre-service teachers bring to the classroom an awareness of the community—an understanding of the cultural, social, and economic elements of rural living—by reflecting connections with the children they are teaching. Flores, Keehn, and Pérez (2002) noted that most grow-your-own programs are collaborative efforts among university teacher preparation programs and local school districts. Additionally, while not well-documented, community colleges can serve as strong academic partners within grow-your-own programs, as they are often easily accessible and more accommodating to non-traditional students’ schedules (Shroyer, Yahnke, Bennett, & Dunn, 2007).

In 2003, one such collaborative effort was initiated by a state university in the Midwest. At the onset of this effort, the university (referred to as Midwestern State) began a multi-institutional collaborative grant project funded by the US Department of Education. The grant focused on K-16 teacher improvement with an emphasis on increasing equity and access to diverse students. Additionally, the grant-financed collaboration among and across participating institutions—Midwestern State (both the College of Education and the College of Arts & Sciences), three community colleges, and three neighboring school districts located in rural areas of the state. Partnership efforts were numerous; however, for the purposes of this study, the researchers focused on the objective of teacher diversification in one rural region. As stated, this grant objective included implementing a distance-delivered elementary education program, responsive to the diverse needs of teacher candidates located in rural areas most impacted by recent demographic changes in CLD student populations.

Diversification required Midwestern State to go off-campus and collaborate with its rural community college partners to design and deliver a two-plus-two teacher preparation program. Pre-service teachers in the program completed their general education coursework (two years) via the community colleges and then completed upper level coursework through various distance-based modalities (two years) at Midwestern State. Delivering such a teacher preparation program was unique given that significant distances existed between these three partner communities and Midwestern State or other four-year universities or colleges in the tri-state area. Access to higher education or professional development of any kind in the region is a persistent challenge for practicing and aspiring teachers alike.

To begin, Midwestern State considered the specific processes, collaboration, and funds required for conducting a distance-delivered program for the teacher education candidates. Department of Education grant funds could be used to cover programmatic costs, and because it was a partnership grant and not a scholarship grant, Midwestern State could partner with a federal Title III scholarship grant, called Project Synergy, to supply the participants for the two-plus-two program as well as the tuition for these participants to complete a baccalaureate degree in elementary education. Project Synergy had already initiated its process of recruiting and retaining bilingual, Latino/as from rural communities in and nearby the locations of the three community colleges involved with the Department of Education grant. These participants, described as Mexican American, non-traditional, English language learners, and first generation college students, had been previously employed as para-educators or in other school-related occupations. The participants ranged in age from 22 to 57 years old, and each showed commitment to returning to his/her partner districts as teachers upon graduation.

Conceptual Framework

While recent investigations portray an increase in distance teacher preparation programs (Olson & Werhan, 2005), the development and delivery of such models to CLD pre-service teachers in rural, remote regions of the US appears limited. This need prompted Midwestern State to collaborate with multiple institutions to design and implement its own grow-your-own program. Because a critical program element was cultural responsiveness to the rural CLD participants, the theoretical lens used to frame the design of the program included not only research and pedagogy focused upon developing candidates’ effective teaching characteristics and distance learning practices that incorporated such pedagogy, but also cultural relevant pedagogy.

Effective Teaching Characteristics

Communities of practice. In the 1980s, literature emerged that described characteristics
programs must not only explicitly provide such content, but also directly model its practices within their candidates’ communities of practice. To explain, Rueda et al. (2004) concluded Latino/a para-educators’ inconsistent “use of their own funds of knowledge to mediate instruction for their students” (p. 70) reflected a lack of understanding of the important link between culture and learning. Research indicates that teachers who do contextualize their students’ learning by connecting their prior knowledge to new learning in meaningful ways impact student achievement positively (Ladson-Billings; 1995; Villegas & Lucas, 2007). Helping pre-service teachers become cognizant of culturally relevant strategies or “sociocultural scaffolding practices” (Rueda et al., 2004, p. 83) within their communities of practice is critical to their development of effective teaching characteristics.

**Issues in Distance-based Teacher Education.**

Traditional approaches to teacher development may interfere then with a teacher candidate’s understanding of effective teacher pedagogy. Reynolds, Treahy, Chao, & Barab (2001) offered that a lack of learning-as-a-part-of-community experience, such as that observed in Professional Development School settings, limits teachers’ engagement in self-reflective practice and conversation with others. While online learning environments supportive of an alternative sense of community are becoming more prevalent in teacher education (Knapczyk, Chapman, Rodes, & Chung, 2001; Skylar et al., 2005), much of the published work reflecting colleges and universities’ use of technology media and instructional methods in their distance coursework relates specifically to preparing special education teachers to teach in rural communities (Jung et al., 2006). Few models of teacher preparation programs for undergraduate pre-service teachers were found to relate specifically to the rural CLD participants, like in this particular distance-delivered program. Two models did reflect positive teacher preparation outcomes in terms of (1) facilitating Latino para-educators to become effective teachers and (2) helping rural pre-service teachers’ development of effective, cooperative skills through the use of student teams and partnerships with local school and university faculty.

To illustrate this relatedness, the Latino Teachers Project and the Navajo Nation Teacher Preparation Program addressed preparing para-educators to become teachers in hard-to-staff schools with high CLD student populations (Becket, 1998). Aspects of these projects were (a) highly collaborative in terms of the consortia participants’ approaches to

**Cultural relevant pedagogy and responsibility for teaching Latino/as.** While effective teacher preparation programs must strive to build and maintain strong professional bonds between institutions of higher education and K-12 schools in order to support professional communities of practice, it is equally as important for them to embed cultural sensitivity within all aspects of their professional communities (Flores, Clark, Claeyts, & Villarreal, 2007). Preparation of effective pre-service teachers requires knowledge, understanding, and use of pedagogy situated in cultural responsibility—a theoretical construct that highlights the role of social mediation in learning and the situated nature of knowledge (Vygotsky, 1986). Teachers who build upon their students’ prior knowledge by connecting not only school experiences, but also experiences from their homes, families, and communities impact learning positively (Rueda, Monzó, & Higareda, 2004). When considering these background experiences, Ladson-Billings (1995) and others (Gay, 2002; Portes, 2008) argued that CLD students, in particular, learn best through instructional approaches that take into account their languages and cultural practices. Effective teachers facilitate students’ engagement in learning of concepts by building upon these existing “funds of knowledge” (Moll, Amanti, Neff, & Gonzalez, 1992, p. 133). Importantly then, in order to produce educators who are equipped to teach in culturally relevant ways, teacher preparation
developing and operating flexible programs, (b) innovative in delivering program knowledge to para-educators via on-the-job-learning through support teams within local schools and flexible university classes held on site, and (c) effective in establishing strong mentoring relationships among para-educators, faculty members at the home school, and university professors over the course of their program. Becket reported the projects as yielding varying positive outcomes. In the second model, the Indiana University Collaborative Teacher Education Program initiated a model of teacher preparation in rural communities through distance education so teachers could complete requirements for licenses in special education (Knapczyk et al., 2001).

Delivery of courses to three off-campus, rural communities relied upon videoconferencing, the use of team teaching arrangements with on-campus instructors teaming with students on-site, and supervised visits by faculty to assess clinical field experiences. Practica were collaborative in nature with school-based teams of students developing lessons and interventions together. As with the first model, various elements of success were noted, with the most positive outcomes involving student-team-based collaborative networks that continued after the participants’ program completion.

Distance-delivered Teacher Preparation Program

In designing the distance-delivered teacher preparation program, Midwestern State relied upon its longstanding Professional Development School partnership model established in 1999 (Shroyer, Yahnke, Bennett, & Dunn, 2007) and research regarding culturally responsive teaching previously described. They further relied upon the research-based strategy of communities of practices for distance learners, particularly in teacher education (Becket, 1998; Knapczyk et al., 2001). These various distance learning teacher preparation models facilitated the selection of specific program components, like on-site student/mentor teacher teams. Assessment of the model’s effectiveness occurred continuously throughout its implementation phases (beginning in 2005). Sources of data included faculty surveys, participants’ academic progress reports, videotapes of participants’ teaching performances, lesson plans and reflections, feedback/evidence forms, student teaching final evaluations, as well as anecdotal field notes.

Setting of the distance-delivered program. All the partner school districts were geographically located in rural, remote regions of the state in cities with Latino populations ranging from a low of 38% to a high of 44%. These sparsely-populated regions had experienced dramatic increases in CLD populations, mostly of Mexican heritage, in the past ten years primarily because of development in the beef and chicken industries. As such, rural was defined as economic areas dependent upon agriculture, low population density, and locations more than 150 miles from urban centers. Distances from the cities to one another ranged from 60 to 105 miles and up to approximately 333 miles from the Midwestern State campus. Demographics for the three partner school districts ranged from total student populations of 1,730 students to over 7,300 students, low SES populations of 53% to 71%, and ethnic diversity populations of 61% to 75%. Latinos (mostly of Mexican descent) were noted as the largest ethnic populations in all three school districts, ranging from 52% to 69% of total school populations.

The 15 participants involved in the teacher preparation program functioned as a cohort of preservice teachers, beginning their professional teacher education coursework in fall of 2005. Fourteen of the participants were female and one participant was male. As previously noted, the participants were primarily place-bound, Mexican Americans who had mostly been employed in school-related occupations prior to their student teaching internships (Fall, 2007).

Implementation of phase #1 - the general education program. The first phase of the distance-delivered program was structured to allow the non-traditional, CLD teacher candidates to complete the first two years of their coursework (or general education courses) close to home at one of three community colleges. In many cases, the participants already had completed a great deal of coursework prior to joining the program. Unfortunately, their completed courses did not always “match” the established course requirements in Midwestern State’s elementary education program or their completed courses were not articulated in alignment with Midwestern State’s admission policies.

In order to streamline the transfer process for a community college student interested in completing his/her teaching degree through Midwestern State, the grant leadership realized that alignment in course offerings and changes in program guidelines were needed. Therefore, to gain “buy in” and to ensure institutionalization of necessary long term changes, the grant leaders/researchers established cross-institutional planning teams made up of faculty across institutions based on content areas. These content teams included the areas of Mathematics, Science, Language Arts, Humanities, Recruitment & Retention, Social Studies, and Professional
Each team had representation from K-12 teachers, community college faculty, and faculty from both the College of Education and the College of Arts & Sciences at Midwestern State. These teams met annually throughout the four years of the grant during Summer Institutes. As such, they provided a particularly critical role in building, delivering, and evaluating the effectiveness of the distance-delivered teacher program throughout all phases of implementation.

In this first phase, however, the teams participated in various tasks of developing and aligning community college and university courses to local and national teacher education standards. One important aspect of this process was the creation of curricula maps for each community college detailing coursework required at each partner community college to fulfill Midwestern State’s existing general education degree requirements. To do this, multiple conversations among community college administrators and both College of Education and College of Arts & Sciences faculty from the university occurred. Unfortunately, during this initial implementation phase, particularly, decisions were made while the partnering institutions were going through the process of developing both personal and professional relationships. As such, time was often limited in terms of the participating faculties’ determination of course design and delivery methods for the program and stressful reactions/emotions surfaced at times.

In conjunction with developing curricular maps, the advising of participants as to which general education courses to complete at each of the community colleges occurred during this implementation phase. Because each of the participants had unique life and educational experiences, long range plans of study were individually designed for each teacher candidate (see Figure 1).

<table>
<thead>
<tr>
<th>Fall '05</th>
<th>Spring '06</th>
<th>Summer '06</th>
<th>Fall '06</th>
<th>Spring '07</th>
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<td>Educ. Psychology (completed)</td>
<td>Teach. as Career (completed)</td>
<td>Block A Clinical Experience (completed)</td>
<td>Block B Practicum (completed)</td>
<td>Block C Student Teaching Internship (enrolled)</td>
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<tr>
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<td></td>
<td>ESL / Dual Lang Practicum (completed)</td>
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**Figure 1.** Example of a participant’s long range plan

These plans reflected cultural responsiveness, as the grant leaders/researchers considered a candidate’s specific needs, such as his/her previous coursework, work load, and family responsibilities. Additional advising issues arose as the participants engaged in particular general education courses and their needs for academic curricular support emerged. Because several of the pre-service teachers struggled with math and English communications coursework, tutorial support within their plans of study was identified, supported financially by the grant, and then delivered individually. Such tutorial support involved collaborative discussions among the faculty and staff within the College of Arts & Sciences English and mathematics departments, the community colleges’ English and math departments, the community colleges’ English as Second Language (ESL) departments, and the comprehensive learning centers (tutorial services) at each of the community colleges. To illustrate, in addition to one-on-one tutoring, enrollment in an Intermediate Grammar in ESL course offered at a community
college was one of various interventions used to address students’ specific English language needs. Other interventions included study groups and technological software. A final element considered in the first implementation phase regarded the planning and delivery of specific, required, upper-level (300-400 level) general education courses not previously offered by the community colleges. This need was addressed by faculty within the content teams who determined how to collaboratively design and deliver these content courses on-site to the participants. Importantly, as the institutional partners attended to each of these implementation aspects, their focus consistently remained on the participants’ strengths and needs—academic, social/emotional, and financial.

**Implementation of phase #2 - the professional teacher education program.** In planning for the final two years of their two-plus-two teacher preparation program, content teams and grant leaders considered the delivery processes of professional coursework. Implementation of this phase occurred through an array of teaching formats in a variety of delivery configurations. To explain, some courses were taught solely by Midwestern State faculty, while site-based instructors (e.g., community college faculty and school district faculty) taught others. In many instances, community college faculty and Midwestern State faculty collaborated to develop and deliver courses jointly. Moreover, course offerings were structured via a variety of both technology-mediated and direct instruction modalities. As an example, because the pre-service teachers’ technological literacies were predicted to be limited (Menlove & Lignugaris/Kraft, 2004), one of the first upper-level courses delivered was *Instructional Media & Technology*. Content in this course included, among other concepts, how to e-mail and use Blackboard, as well as how to navigate the World Wide Web. It was delivered via video conferencing to multiple sites, online modules, and through face-to-face class sessions on-site. These technology resources (Blackboard and e-mail) then provided communication pathways for other professional education coursework.

To add to the variety of delivery modalities, a few course elements in this phase of the program were also planned and delivered on Midwestern State’s campus, and arrangements and accommodations for the pre-service teachers’ participation were provided by the grant (lodging & travel). Although these on-campus course elements were typically brief, the students were required to come to Midwestern State in the fall (2006) at the beginning of their professional block of methods courses (Block A). For this particular block of courses, which included science methods, math methods, and a field experience, the teacher candidates stayed on-campus for approximately two weeks to receive the intensive hands-on training and content instruction needed to effectively teach science and math to students at the elementary level. The remainder of the Block A course activities were conducted off-campus in their home communities by Midwestern State faculty, with site-based faculty (from the community colleges and partner school districts) delivering both academic support and clinical support for participants’ field experiences. To maximize the candidates’ pedagogical development during the field experience, the grant implementers created school-based teams comprised of the Block A pre-service teachers and their clinical instructors and/or on-site university supervisor. Through the team-structure, the clinical instructor/university supervisor acted as an *interventionist* to facilitate discussions of the content and pedagogy previously covered by the on-campus methods faculty to the team participants, as they developed cultural awareness of their students’ contextualized factors and implemented the methods in real classroom settings. Given the amount of intervention and “re-teaching” provided during this phase, the planning teams determined that offering content instruction throughout a typical semester period was critical for the participants to effectively process methods coursework. Therefore, the grant implementers only considered face-to-face faculty/student delivery options for the candidates’ future methods coursework.

In planning for the supervision and assessment of the Block A clinical practicum, Midwestern State looked to the partner school districts as their administration and faculty had been trained in the College of Education conceptual framework (see Figure 2) and its assessment strategies during Summer Institute workshops. Because the partner schools were previously structured as communities of practice, the arrangement, placement, and supervision of Block A participants was therefore expedited. Each partner school district housed a clinical instructor or master teacher/administrator who acted as a liaison between the school district and the university. Additionally, federal grant funding provided for the salary of an on-site university supervisor who further coordinated collaboration among the partner school districts and the university. Assessment strategies planned for the Block A practicum included (primarily) direct observation feedback, but videotapes of the students’ math and science teaching episodes were also utilized. All sources of data were analyzed according to the
College of Education conceptual framework. Challenges reflected in the data analyses were then directly addressed in the delivery of the next phase of methods coursework (see Figure 3).

Figure 2. Midwestern State’s College of Education Conceptual Framework

Adapted from Danielson (2007) and reprinted by permission from ASCD
The students’ second block of professional courses (Block B) included reading methods, language arts methods, social studies methods, and a field experience. The on-site Midwestern State university supervisor, along with one local community college instructor and one Midwestern State teacher-in-residence, collaboratively taught this block on-site. This instructional design pulled together the rich and varied expertise of the three individuals to best support the students’ learning and application of course content. Plans for primarily direct contact delivery, with only some online components (e.g., Blackboard), took into account the grant leaders’ increased awareness that nearly half of the participants had limited access to personal computers and/or the Internet. Moreover, direct contact with the faculty expanded the candidates’ opportunities to learn effective lesson design and assessment, as individual feedback helped the participants better connect planning and instruction relationships. Clinical field experiences for Block B were planned and implemented similarly to the delivery of the Block A practicum. This time, importantly, assessment data indicated that participants were able to design and implement lessons and assessments more effectively and to ask questions more efficiently.

Implementation of phase #3 - the professional student teaching internship. For the third and final component of Midwestern State’s distance-delivered, teacher preparation program, the teacher candidates were required to complete a 16-week, field-based, internship block. Delivery of the internship coursework occurred via placement at one of the three partnership school districts. Participants were placed in elementary grade levels of kindergarten to fifth grade. Midwestern State faculty and three clinical instructors based at the three partner school districts supervised and assessed on-site clinical practica primarily through direct observations in the classroom, but video-recordings of the candidates’ teaching were also collected and utilized as additional evidence of performance.

A total of 4417 written evidences (actual teaching events) were analyzed from all the teacher candidates’ student teaching evidence/feedback forms. Seventy percent of all these teaching evidences demonstrated effective teaching characteristics. Specific categorical indicators, like using students’ prior learning to build upon skills and knowledge and implementing a variety of learning approaches with numerous resources, were consistently observed in all the participants’ teaching behaviors. These written evidences further indicated that the pre-service teachers effectively demonstrated cultural responsiveness by interacting positively with students and by communicating with families in their school districts. Particular evidences related to professionalism showed the participants’ cultural competence as they contextualized their students’ learning by linking content to their rural CLD backgrounds (e.g., comparing literature of Native American historical cultures to Mexican American historical cultures). Observations from the pre-service teachers’ video-taped teaching performances supported these written evidences. Moreover, their final student teaching evaluations reflected a mean rating that was above the required “basic” criterion rating based on the conceptual framework assessment.
scale established by the College of Education at Midwestern State.

To summarize the phases of the distance-delivered program model, considerable collaboration among all the partnership institutions was required to operationalize the distance-delivered, teacher preparation program. Consistently, the program used a cohort support system that reflected continuous assessment and subsequent responsiveness to the rural CLD participants’ emerging needs. Finally, the program design showed variety in its delivery of teaching modalities, use of mediated technology, and its level of face-to-face student/teacher interactions.

**Effectiveness of the distance-delivered program.** While assessment procedures occurred throughout the implementation phases, particular final assessment strategies were utilized to determine the participants’ effectiveness as teachers. To explain, ten Midwestern State and community college faculty and clinical instructors who taught program courses were asked to complete surveys about the distance-delivered teacher preparation program in terms of the pre-service teachers’ success in teaching as novice teachers. Two open-ended questions were posed: (1) From your experiences with the participants in Block A, Block B, and Student Teaching, comment on what you would consider the overarching strengths and challenges of working with this specific group and (2) Note individual candidates’ strength(s) and challenge(s) that stood out to you as they completed your course. Over half of the faculty and supervisors indicated that the participants’ teaching strengths were their proficiency in use of the Spanish language (six responses) and their cultural awareness (five responses), and therefore, their abilities to communicate and connect with Latino/as as English language learners and their families. Faculty and clinical instructors/university supervisors also noted that the candidates effectively utilized a variety of teaching approaches (seven responses) and resources and materials (five responses) to help all students learn. In identifying the participants’ greatest challenges in the program, over half of the 10 faculty members surveyed identified first the pre-service teachers’ language barriers in communicating in Standard English (oral and written), and secondly, their personal issues with driving extended distances to and from class settings and clinical experiences.

**Reflections on Implementing the Distance-delivered Program**

Darling-Hammond & Baratz-Snowden (2005) state that “learning to teach occurs most productively within professional communities” (p. 41) because groups of experienced educators share a set of norms, practices, and collective knowledge across fieldwork with teacher candidates that significantly influence their effective pedagogical skill development. In this teacher education program, a ‘community’ of learners with shared philosophies and effective teaching practices formed a common vision (frame) for the design, implementation, and continual cultural support of its rural CLD participants. As a result, the program fostered the teacher candidates’ development as effective CLD teachers.

As noted, the collaboration among the partnership institutions required that planning for each of the program phases occurred concurrently with actual implementation phases. This situation arose because Project Synergy had initiated its recruitment and selection process for the participants prior to the study, but the actual procedures for delivery of this program were not determined until late in the funding cycle of Project Synergy. Scholarship monies for the participants were limited to a time period, thereby forcing the distance-delivery program to be implemented and the teacher candidates’ programs to be completed by the time that the funding for Project Synergy ended. Such issues with financial considerations added to the stress of institutional partners’ figuring out how to build and deliver the program responsively.

**Communication Challenges for English Language Learner Teacher Candidates**

In reflecting on the needs of the non-traditional, CLD participants involved in the program, the program implementers responded by integrating strong peer cohorts into each phase of the distance-delivered program. Additionally, on-going academic support, consistent advising, and monitoring occurred. However, in spite of this responsiveness to the participants’ needs, data collected throughout the program revealed that participants’ issues with communication and problems in accessibility to technology (e.g., lack of personal computers) persisted throughout. Furthermore, as native Spanish speakers, the pre-service teachers’ primary language was not English, and thus use of the English language, both orally and in writing, presented obstacles. Problems were most evident in such areas as writing lesson plans.

While the distance-delivered program reflected modifications in response to the participants’ specific academic and social needs, few changes to the existing College of Education teacher preparation model at Midwestern State occurred. As such, the writing-intensive curricula posed problems for many
of the pre-service teachers. The need for extensive, targeted support and development of participants’ academic writing was one lesson learned in relation to implementation of the upper-level curricula.

**Barriers Imposed by Distance**

In terms of implementing the distance-delivered program, barriers imposed by distances proved challenging for the institutional partners. The extreme distances among the school districts, the community colleges, and Midwestern State frequently hindered effective communications and slowed the collaborative processes. Driving was inevitable; even the participants expressed concerns regarding the financial demands made on them due to travel. Distances lessened the participants’ direct contact with faculty and advisors. Even although some Project Synergy staff and partnership staff were located in the rural areas, the pre-service teachers’ opportunities for direct contact were limited due to distant locations imposed by their jobs and family situations, as well as the distances among the partner sites.

Distance also impacted the effectiveness of key content delivery. The program implementers considered that the pre-service teachers’ conceptual learning of planning and preparation pedagogy (e.g., lesson plan design and implementation) was affected by the distance delivery component of professional coursework, or more specifically, the Block A courses. As described, the teacher candidates’ instruction for Block A consisted of a hybrid “on-campus-intensive-two-weeks course” and an “off-campus-online-mediated course,” with clinical instructors/university supervisor offering on-site academic support. This hybrid method of delivery negatively affected the participants’ learning and thus limited their initial effectiveness in demonstrating pedagogical understanding.

**Implications for Teacher Education**

In this study, the researchers described the design, implementation, and evaluation of a distance-delivered teacher preparation program to rural, CLD participants, as they trained to become effective teachers. Findings indicated that collaborative endeavors were critical to the program’s development, and that the success of such a collaborative partnership has significant implications for the field of teacher education. The ultimate success story for the partner institutions, however, was the graduation of 13 of the 15 participants with bachelor degrees in education—effective, bilingual teachers who could return to their rural school districts and increase the number of CLD teachers in the region. At the close of the study, the remaining two participants were still in progress of completing their final coursework and requirements and had plans to graduate the following year. Because Midwestern State and its partners acknowledged various implementation issues in the discussion of its program, specific implications for future research endeavors can be drawn.

**Implication #1**

Distance-delivered models of teacher preparation can produce teachers who display effective teaching characteristics. However, this model demonstrated how delivery concerns may have impacted the teacher candidates’ development of effective lesson design; thus, each component within the model for preparing the teacher candidates’ pedagogical understanding must be evaluated critically. Future distance-delivered program endeavors need to consider elements of (a) time required by teacher candidates to process methods coursework in distance learning settings, (b) modification of core tasks to reflect communication issues likely to appear for distance learners, particularly English language learners, and (c) the positive impact that intertwining the core tasks of teaching—cultural competence and experience, reflection, and study—within the clinical practicum has upon the cultural experiences of rural and diverse student populations.

**Implication #2**

Utilizing community resources via “grow your own” pre-service teacher training programs can be a viable means for meeting the needs of CLD students in rural areas. In this model, the CLD teacher candidates were effective at responding to their pupils with a level of comfort or familiarity—aided by commonalities of ethnicity, language, community, and heritage. The participants showed cultural responsiveness by knowing how to connect the home and rural community experiences of their pupils, and because the candidates were Spanish speakers, they additionally offered language resources to both the school and the community. Their awareness of rural living provided them added experiential knowledge to facilitate their students’ learning.

**Conclusions**

The challenge of providing for the effective teaching of CLD students, particularly in rural, remote areas of the US, continues. Universities, colleges, and local school districts together must meet this challenge. While Flores, Keehn, and Pérez
(2002) assert that the grow-your-own approach is a feasible, asset-based alternative to rural districts’ desperate attempt to recruit teachers of color, the description of this teacher preparation program showed how extensive the collaborative nature of partnerships needs to be in order to successfully implement such a program. Findings from this study reflected that funding for all components of the program is essential. Implementers across the partnerships also acknowledged that even though they planned program components with non-traditional CLD participants’ backgrounds in mind, barriers, such as the participants’ lack of academic language proficiency, still presented significant obstacles. Despite these noted challenges, all teacher educators have an obligation to design and sustain collegiate environments conducive to recruiting and supporting CLD teachers into the existing teaching force. The need for rural CLD teachers is and will continue to be significant (Heimbecker, Medina, Peterson, Redsteer, & Prater, 2002). As reflected in this study, CLD teacher candidates offered significant cultural responsivity to rural, diverse populations of students—an effective teaching characteristic that is desperately needed for today’s children.

References


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Describing Connections between Science Content and Future Careers: Implementing Texas Curriculum for Rural At-Risk High School Students Using Purposefully-Designed Field Trips

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The state of Texas has an ‘essential knowledge’ component in some high school science courses indicating that students be able to describe connections between academic science content and future jobs or training through effective exposure to course content. The participants in this study were from a small rural high school in central Texas. Each was labeled as ‘at-risk’ and self-identified an inability to describe those types of connections after earning credit in more than one science course with that ‘essential knowledge’ component. A career-focused field trip to a local vocational/technology training center was designed to address that particular deficit. This study followed a narrative multiple-case case study design. Data included school records, surveys, individual and focus group interviews, and field notes from observations during the field trip. The effectiveness of the field trip was evident as each participant was able to describe connections immediately following the excursion.

Keywords: Field trips; At-risk students; Narratives; Science pedagogy; Consequences of high-stakes testing.

Universally students often lament that academic content bears little meaning to their experience (Bialeschki, 2007; Hardre, Crowson, Debacker, & White, 2007). Comments such as, Why do I have to learn that? or, When will I ever use this? resound in every classroom and in every discipline whether adolescents are engaged and participating or bored and frustrated. A good part of their vocalizing is likely peer-driven, normal and expected. However, some students actually realize very little connection between academic content and their lives or their futures (Hardre, 2007). For these students, school is simply a location and series of activities that consume seven or more hours of the day. In content areas where abstraction and analysis are necessary, such as higher mathematics and sciences, this disconnect can present particular frustrations for many adolescent students (Scarce, 1997; Kolb, 1984). The purpose of this study was to determine the efficacy of a purposefully designed field trip experienced by 12th grade students from a small, rural central Texas high school. Because there is also a chronic lack of research dealing with issues predominant in rural schools and their students, this project offered an opportunity to increase the knowledge base on engagement of rural students with academic content (Hardre et al., 2007). Having taught in rural schools for over twenty years, this research was personally significant as I continue to advocate for the inclusion of field trips across the curriculum, but most particularly with my academic content – high school science.

Field trips represent one pedagogical option teachers can employ for specific curricular outcomes. At its very basic level, a field trip provides students with something other than the mind-numbing day-to-day routines in the classroom and may provide a unique experience to construct or reinforce meanings and connections (Roberts, 2006). Such excursions help students recognize the need for learning to read and write, as well as to understand the concepts introduced in the classroom by exposing students to a world greater than the one they inhabit from day-to-day and the career possibilities in that larger context (Carroll, 2007). In this study, a field trip was designed to introduce students to several vocational training programs that build upon science instruction they should have experienced in their rural high school classes but that was identified as problematic or missing.

Texas Science Curriculum

The State Board of Education (SBOE) of Texas adopts and approves the complete curriculum presented in grades K-12 for all public schools across
Because the participants purposefully selected for this study indicated an inability to realize or describe the connections as required by the TEKS, documenting the immediate impact of a career-focused field trip created the basis for this research. The research questions that framed this study were:

1. How do rural students describe connections between high school science content (chemistry and physics) and future careers before and after purposefully designed field trips?
2. When do the connections become evident to students?
3. What effect or impact does newly discovered connections have on students’ and their families’ aspirations with regard to future career or vocational options?

**Field Trips and Experiential Education Research in K-12 Settings**

Experiential Education (EE) provided the theoretical framework for this research and has been defined as “learning activities that engage the learner directly in the phenomena being studied” (Wright, 2000, p. 121). Field trips are but one type of experiential education. While existing literature demonstrates that effective teaching is greatly enhanced through experiential learning (Rone, 2008), various pressures (i.e., NCLB and high-stakes test scores) have all but eliminated such experiences for public school students on most campuses nationwide (Popescu, 2008). Consequently, there is relatively little current research that addresses the efficacy of field trips or off-campus excursions in K-12 settings (Bracey, 2007; Rothstein & Jacobsen, 2006; Baker, Jensen & Kolb, 2002; Kolb, 1984).

As field trips, excursions and off-campus opportunities hold the promise of developing and deepening connections between academic content and real-world applications, any connection created or reinforced is most often realized through reflection on the part of the learner. Unlike the classroom, field trips are typically socially driven and conversation-rich settings. They offer students a more complete picture of the total environment into which they will enter as adults and afford them a more informed viewpoint when choosing their life’s work (Rothstein & Jacobsen, 2006).

As students consider and discuss their individual and collective experiences, reflection is a natural consequence that cements and/or reinforces connections whether they are fledgling or already firmly intact. While students generally experience a reduction in conversational interactions in a typical
adult-led classroom setting, there are indications that regular one-to-one access to adult mentors substantially increases the quality of learning in all children, but especially older children (Thomas, 1994). Curriculum-dependent field trips or excursions provide opportunities for such access. For students in rural settings, field trips may represent the only concrete examples of connections between academic content and future careers. Further, and similar to the status of rural research, there is an apparent lack of recent exploration (Rothstein & Jacobsen, 2006) with regard to planned implementation of directed experiences (field trips) for the purpose of learning, even while this practice is common and is well-researched as an effective option in the workplace (Baker et al., 2002; Kolb, 1984).

The push for high-stakes test scores under NCLB legislation is most often blamed on the reduction in field trips nationwide and on a corresponding decrease in research in this area (Bracey, 2007).

The goal of this study was to provide a collection of descriptive narrative of participants as they:

1. initially failed to identify potential connections between content and future careers;
2. experienced a field trip/excursion designed to provide opportunities to realize academic connections to careers grounded in basic science concepts; and
3. reflected on the impact of newly acquired connections with regard to vocational choices they may have realized as an immediate result of the experience.

Finally, the end product was a comparative analysis of the individual narratives using information provided by the participants in light of the original research questions.

**Designing the Study**

There is ample evidence to indicate that rural students are poorly represented in educational research. This study sought to investigate field trips/off-campus excursions as an effective pedagogical option in rural high school science classes. For those select students who indicated an inability to describe connections between academic content and potential careers, the researcher chose a qualitative approach, enlisting methods traditional to case study that included: participant selection through surveys, comparison of existing student records, observations and semi-structured interviews in both individual and focus group settings (Merriam, 1998).

**Multiple Narratives**

Case study is a research strategy that does not require the use of any particular data set or evidence collected (Yin, 1981). Because case study method seeks understanding, explanation, or description of a unique event, methods commonly used in case study were considered most appropriate for this project. Each participant’s narrative was treated as an individual unit of analysis. As the study sought to describe the changes experienced by the participants and to compare those changes across the cases, multiple-case narratives represented a better choice for this study (Yin, 2003).

Multiple factors influencing the learning and achievement of students are not always easily or effectively determined through quantitative methods or instruments. In this study, the first-person accounts/narratives were organized around the research questions and presented as described by the participants (Merriam, 1998). Although not directly addressed by the research questions herein, influences affecting the participants involved in this study certainly included any number or all of the following: individual personalities of participants, aspirations of participants, educational history of participants, school environment, teacher quality, participants’ experience/educational record in chemistry and physics, family socioeconomic status, parents’ educational achievement and aspirations for participant, parental employment, home language, citizenship status and ethnicity. Singular narratives, focused on each of the participants, allowed inclusion of such information, lending deeper understanding of these unique participants (Yin, 2003; Merriam, 1998; Wolcott, 1994).

**Data Sources**

As narratives of the participants were central to this project, data were gathered through multiple means and included qualifying surveys, interviews (both individual and focus group) as well as observations. All interviews were audio recorded and, where recording was not practical, field notes were used to document interactions between participants and individuals involved in the field trip (i.e., various instructors on site and the technology center recruiter).

Data gathered from formal academic records of the participants included the following: attendance records, family income (to determine free- or reduced-lunch eligibility), family structure (one-parent, two-parent, or guardianship), parents’
educational achievement and employment records, current GPA, science GPA, SAT/ACT scores, TAKS (Texas high-stakes test) scores, participants' aspirations and class rank.

Participant Selection

This project started in the fall of the students’ 12th grade year. The first criterion for consideration as a participant was enrollment records on the selected campus. Students had to be in the 12th grade and continuously enrolled (on the selected campus) from the 7th grade through the 11th grade. This requirement ensured that no student had received science instruction that was unique or different from any other student. Because the selected school was small and offered a single graduation plan, each high school science course (grades 9-11) was assigned a particular teacher in any given year (e.g., Mrs. X taught all of the 9th grade biology classes, Coach Y taught all of the 10th grade physics classes, and Dr. Z taught all of the 11th grade chemistry classes). With this arrangement, each potential participant experienced consistent exposure to science content from year to year. There were 43 students enrolled in the 12th grade at the time this project started. Based on the requirement of continuous enrollment, 37 students qualified for potential participation and were given a qualifying survey.

Data Collection

Step one – qualifying survey. The criterion-based survey used a Likert scale and asked students to agree or disagree with general statements concerning attitudes, study habits, homework, after-school jobs and future plans. There were also specific statements about science instruction. Those science-instruction statements simply indicated that the participants, as students, could describe connections between academic content and future jobs or training. Those who responded with agree were asked to provide an example. If the example given was appropriate, the student was considered ineligible to participate. If they responded with disagree, they were considered potential participants and passed to the next qualifying activity – an individual interview. The survey results indicated that 11 of the eligible 37 students were potential participants. Of those eleven, six were male. Three of the eleven were classified as ethnic minorities (black or Hispanic); additionally, three of the eleven either had records of previous special education services or were currently receiving them. In the period between the survey and initial qualifying survey, enrollment records were inspected to verify qualification for participation.

Step two – qualifying interviews. The first individual interview revealed that two of the eleven students should not have been included as potential participants. One male student misunderstood the statements and could appropriately describe connections. One female student did not correctly identify her enrollment as continuous from 7th through 11th grade; this was discovered when a review of enrollment records for the group of eleven was conducted and was further confirmed in her initial interview. The three students classified as ‘minority’ were disqualified from participation due to a district policy regarding credits earned toward graduation. As all three were lacking sufficient credits to remain with their 12th grade cohort, they were transferred to the alternative campus for credit recovery, and placed on the minimum graduation plan.

The final group of eligible participants was all white, consisting of four males and two females. None had visited a single campus or post-graduation training facility. Once the purpose of the project was revealed to the remaining participants (a career-focused field trip to the selected technology center), the two female students asked to be dropped from the study as they did not wish to participate in the research. The chief reason cited was they were both 12th grade cheerleaders and felt their schedules would be too crowded to allow them to fully participate in the study. Incidentally, they also reported that, in their opinions, any technical/vocational training center was not a good place for girls to go to college. When asked about that comment, both anticipated a college experience that culminated in marriage, not necessarily a degree.

After consent forms were signed by parents/guardians, a review of individual academic records revealed that all four participants had been identified as ‘academically at-risk’ by the school district at some point during their high school years. In each case, ‘academically at-risk’ was defined as an expectation that the student might not graduate with his (or her) cohort. The cohort for the participants was defined as the class of students with whom they enrolled at the start of the 9th grade. It was also revealed that all four were ranked in the bottom half of their graduating class, that they all qualified under the National School Lunch and Child Nutrition program for either free- or reduced-lunch programs, and that none of their parents (or step-parents) had experienced formal training through or possessed credentials issued by a higher education or vocational/technical agency. Only one of the
participants lived with both biological parents; two lived in blended families with step-fathers in the home, and the remaining participant’s mother was a widow with no adult male in the residence; he was an only child. They were all involved in extra-curricular sports and various other after-school activities. One participant was eligible for special education services throughout his enrollment, grades K-12 (Table 1).

<table>
<thead>
<tr>
<th>Description</th>
<th>Allen*</th>
<th>Doug*</th>
<th>Lane*</th>
<th>Stu*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethnicity</td>
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<td>White</td>
<td>White</td>
<td>White</td>
</tr>
<tr>
<td>Age (at survey)</td>
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<td>18</td>
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<tr>
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<td>Reduced</td>
<td>Free</td>
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<tr>
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<td>82.16</td>
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<td>87.74</td>
</tr>
<tr>
<td>Science GPA</td>
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<td>79.33</td>
<td>79.0</td>
<td>85.0</td>
</tr>
<tr>
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<td>39/39</td>
<td>20/39</td>
</tr>
<tr>
<td>IEP in records</td>
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<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>SAT/ACT Scores</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>15 ACT</td>
</tr>
</tbody>
</table>

Note: *Names are pseudonyms selected by the participants on the day of the field trip. **Although the class had 43 students enrolled at the time the study began, the final class had only 39 students qualified to actually graduate.

**Step three – First focus group.** During the first focus interview session, the four remaining male participants selected the programs they wished to visit while conducting an Internet search of the technology center’s campus website. This search was conducted as they sat together in the high school’s computer lab, the only point of Internet access for the four participants. In their individual interviews, Allen, Doug and Lane all reported that they had no computers at home and therefore no Internet access. Stu was the only participant who indicated that although there was a computer in his home, ‘dial-up’ was the only Internet service that was affordable to his parents but had been disconnected due to slow service.

While conducting the search, the participants were asked to consider the following open-ended questions (pre-exursion) during their Internet search.

1. Tell me about the information you are finding – what scientific terms do you notice or other information do you find telling how science is important to a program that is interesting to you?
2. Tell me if you are still having trouble understanding how science might be important, particularly in some program you think is interesting.
3. Tell me what you expect to discover when you visit the campus.

Because of the restrictive nature of the high school campus policy on Internet use, Stu asked: You mean we can just look around for stuff on the website? Once given permission, all four were enthusiastic but unsure how to navigate the designated website’s interactive components. As they began to search, it became obvious rather quickly that the computer network provided a high speed connection but blocked a good number of options available for users. In every case, where videos were embedded for more information, participants were unable to access those links for information and further discovery. Although the videos provided were blocked, all four indicated they were interested in the diesel mechanics program. Allen thought computer programming sounded interesting because the description included the term ‘gaming’: he pondered: Maybe you get to sit around and play games or create your own? Lane noticed the media/telecommunications program: Hey, look – radio and television – do you get to be on the air? Very quickly, three programs (despite limited access) were selected to visit.

**Step four – campus visit.** The site selected for the field trip was a local vocational/technology training campus less than ten miles from the participants’ high school. The facility was the site of a former military installation closed in the mid-1950s and reclaimed by the state in order to establish the vocational/technology training center in the mid-1960s. Programs offered were organized under six general areas of study with over 125 professional certificates available. Student employment rates, as required by the state in order to maintain funding, must remain over 90% from year to year.
All four participants were attentive and engaged the presenters/instructors in conversation to varying degrees. Having previously taught each of the participants, their resulting familiarity with me reduced the anxiety that was obvious once arriving on campus - an unknown and potentially threatening environment. Keenly aware that acting as a disengaged observer would not provide them with a fruitful experience, my role was one of guide and advocate (Yin, 2003), introducing them to each instructor/presenter and suggesting some questions that might reveal academic connections to the programs. Aside from a common interest in each of the selected programs, all of the participants indicated during the tour that geographic proximity and promise of job placement over a lifetime were also major considerations when researching post-graduation opportunities. The tour took four and a half hours, after which the participants dined off-campus and then met for a second focus group/debriefing session.

**Step five – second focus group.** Immediately following the field trip, the participants were interviewed in a second focus group setting. This interview was conducted before returning to the campus, allowing for immediate feedback and evidence of connections created as a result of their corporate experience and conversations. The following open-ended prompts/questions were provided to guide the conversations that were recorded and later transcribed:
1. Tell me what you learned this morning about science needed in the programs we visited.
2. Was there a point when you realized that science was important in each of the programs?
3. How much science do you already know that would be used in a program you saw?
4. Tell me about other jobs you realized or believe might use science that you know.

During the ensuing 90-minute conversation, participants considered and addressed the prompts collectively and revealed several common lines of thought, often agreeing and further reinforcing their individual and group debriefing of their experience.

**Typical comments included:**

_Just about everything we saw today had something to do with math and science…the lighting and sound stuff uses a lot stuff we learned in physics…and I didn’t know you had to know so much stuff about math for those computer things, I never heard of some of it…codes and stuff._ [Stu]

_There was a lot of stuff I never thought about with cameras in the studio, angles and stuff…that’s math, right? The sound boards and light monitors…there was a lot of equipment I didn’t know it took that much for a radio or TV show to be done. And the diesel mechanics guy with the equations…the hydraulics and stuff like that._ [Doug]

_Something else I saw out there, it was air-brushing painting…I didn’t know you could study stuff like that at college…I mean, I guess that’s a college class, right? And working on airplanes? That was really cool. I thought that was really cool that we could go in the hangar and look at where they were working on them._ [Lane]

_Yeah, I know – I liked seeing like the airplanes and how they are built, where all the different controls are. And all of the diesel mechanics stuff, all of the training involved for the different engines, because there’s a lot more to it than just a regular car._ [Allen]

**Step six – final interview.** A second, and final, individual interview was conducted 7-10 days later, allowing the participants time to share their newfound information with parents. The purpose of the second interview was to assess any changes in post-graduation plans for college, vocational or technical training. During this final session, the following open-ended prompts/questions were provided to allow students’ reflections on the experience to be fully explored:

1. Tell me what you understand now about the need to study science in high school.
2. We took a field trip in the second semester of your senior year. When would it have been more helpful to you…to help you understand why science classes are important in order have a good job and/or college options after you graduate? Why do think that would be the best time to visit off-campus?
3. After you shared this information from the field trip with your parents, how did your plans and their support change?

As in both focus group sessions, comments from the participants were typical of normal conversation, with comments and answers overlapping and reiterated, providing deeper understanding of their experiences as the interviews progressed. The following comments are combinations of both unique and commonly shared insights revealed in each interview.

_ I didn’t know so much science and math would be important…I mean I thought computers would be interesting but it is ridiculous…I don’t get why you’d have to have so much math to do codes and stuff to make up games…if you have to..._
do that, then I didn’t get nearly enough (referring to math skills). [Stu]

_The freshman or sophomore year. Earlier than that, you don’t know what you’re doing – it’s just a trip to get out of class. That’s about when you start trying to figure out what you’re doing._ [Lane]

Considering that nobody in my family has gone to college, they’d support me. They want me to finish. They would support me, no matter what I do. [Stu]

I think junior high might be a good time to start. Kids don’t know what they might want to do yet, but they could start seeing some things instead of just talking about it or seeing it in books. [Allen]

When I found out they had programs to help you pay for it and that it was cheaper than any of the other colleges around, my parents were really glad. They also have to help you find a job from now on…that’s good. [Doug]

I really wish I’d paid more attention in physics – I didn’t know you could figure out so much stuff about…well, everything basically…I wasted a lot of time but I guess they can teach me what I need to know…this time, I’ll pay more attention, ’cause I’ll be paying for it (laughing). [Allen]

**Individual Narrative Analysis**

All qualitative research seeks to provide a descriptive component, but description alone is not a sufficient reason to conduct research (Merriam, 1998). The data provided in this study are a collection of narratives, investigating the effectiveness of experiential education (EE) when applied to older, adolescent participants (Creswell, 1997). Analysis under the qualitative framework tends to work from the ground up, dealing with a specific problem(s) and eventually producing a hypothesis or solution to the problem under investigation (Lichtman, 2006). Inductive analysis of the participants’ perceptions as they moved through the excursion experience provided evidence of EE effectiveness. The inductive approach proved effective when working with the data from each participant, subjected to analysis as it was collected. The demographic data, collected prior to the excursion, is summarized on Table 1. Measures taken to establish internal validity included triangulation, member checks, participant involvement and researcher bias (Merriam, 1998). External validity is in evidence as transferability to similar populations would be expected to render similar results (Yin, 2003).

**Analysis across the Narratives**

Each narrative was subject to identical and separate scrutiny in light of the original research questions and related strands of inquiry that emerged as a result of conversations (Creswell, 1997). Again, using the same research questions as focal points, the individual narratives were collectively analyzed for responses that were considered generalizable or similar through an open coding of the transcribed individual interviews and focus group settings (Merriam, 1998). Table 2 provides the results of the coding process in light of:

1. the ability to describe connections between content before and after the field trip;
2. recognizing a singular event when connections were realized; and
3. the perceived impact on future plans on the part of participants and parents/guardians.

### Table 2

**Summary of Analysis across the Narratives**

<table>
<thead>
<tr>
<th>Case</th>
<th>Question One</th>
<th>Question Two</th>
<th>Question Three</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Describing connections</td>
<td>Recognizing connections</td>
<td>Impact on future plans</td>
</tr>
<tr>
<td>Pre</td>
<td>Post</td>
<td>Field trip</td>
<td>During field trip</td>
</tr>
<tr>
<td>1. Allen</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>2. Doug</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>3. Lane</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>4. Stu</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

*Note:* - Negative Response; + Positive Response; * Greatest Increase in Response
Discussion

Research Question 1 – An Inability to Describe Connections

The first area of research explored the changes in perception and ability to describe connections between academic science content and careers as experienced by the participants immediately following the field trip. Common characteristics of the participants included step-parent or widowed-parent households, economically-stressed households (allowing enrollment in the National School Lunch and Child Nutrition Program), active participation in multiple extra-curricular activities, local church membership and/or attendance, and membership in volunteer after-school organizations - all were members of the volunteer fire department. Academically, all were ranked in the lower half of their graduating class, found science content confusing and/or incomprehensible at times, and were not interested in science classes beyond those required for graduation. None had experienced any field trips that were science or career-specific (e.g., museums, zoos, or any available from local venues or industry) nor had any of the participants visited any colleges or vocational training facilities at the time of the initial surveys and first individual interviews.

When interviewed initially about participating in the project, each participant indicated that he would probably not enroll for additional science courses because, as Doug commented, studying science sometimes makes me anxious or nervous. Additionally, the common comment, Why would I? I don’t have to take any more science to graduate, was an indication of the collective negative association these students had with science content. However, when they were asked about participating in a field trip and visiting a training center, typical responses were, A field trip? Yes! and It’s a chance to see a school – haven’t visited one yet. Without the suggestion that they would have to report anything specifically observed, this project provided participants with a single field trip experience, designed to ensure exposure to some previously taught science content in multiple vocational settings.

Research Question 2 – Initially Identifying Connections

The second area of research focused on a specific instance that participants could identify as central to realizing connections between academic science content and future careers. The participants all reported connections were created in one particular setting, during the diesel mechanics program tour. The faculty member conducting the classroom tour explained the need for basic physics equations and metric conversions, used in both chemistry and physics classes, to the participants. While participants had unanimously reported their high school physics class as a very negative experience, they agreed that this instructor demonstrated a practical, common sense use of knowledge and skills. Allen’s comment was perhaps the best: When we walked into that one classroom with the formulas on the board… it looked just like the equations from the physics class at school. Further Allen was impressed with the practical approach taken by the instructor to solve a problem common to most science students.

The guy said he had trouble with the difference between metric tools and our (standard) tools and he ended up making his own conversion chart that he put in his wallet so he wouldn’t keep getting confused. I never thought about making my own cheat sheet [laughing]. That was a BIG surprise to me.

This comment drew immediate agreement from Doug, Lane and Stu.

The next two programs visited were computer programming and media/telecommunications. While initially excited about those programs, the participants as a group were decidedly less enthusiastic once realizing that both would require additional college math classes. Misconceptions with both programs also involved notions such as, computers would be fun because you could make up games and stuff, not realizing the critical need for advanced mathematics. With regard to the computer program department, Stu’s comment was affirmed by the other participants – That computer thing or whatever? There were so many codes, so much math…stuff like that for (creating) games? It’s ridiculous. The media/telecommunications program met with similar (negative) reactions once they realized not only the heavy reliance on instrumentation when working with light, sound and projection, but also the decided lack of ‘face time’ in front of the camera.

Research Question 3– Changes in Participants’ Perceptions

The final area of research dealt with potential changes in students’ plans or perceptions with regard to career options not previously realized or identified. All of the participants anticipated some type of career training or college prior to the field trip. As a result of this singular experience, during their final individual interviews, each participant agreed that this should be a ‘connecting piece’ included in
science and other academic content areas allowing students to begin understanding the need for said content in the workplace. Their suggestions for appropriate grade level inclusion ranged from 7th to 10th grade, with the most common grade level reported as the sophomore or 10th grade year.

Conclusion

Like many rural schools in central Texas and across the country, teacher quality is a critical concern. This study began in the fall of 2009. The number of science teachers returning to the school under study was 20% (1 out of 5). All of the high school teachers were assigned middle school classes to teach in addition to their high school courses and all taught what was considered a full load, six classes per day. In the four years the participants were enrolled, four different physics teachers and three different chemistry teachers were hired, stayed for a year or two and then resigned or were refused subsequent contracts. With such high turnover, it is difficult to assume that the science faculty had much understanding of problems unique to isolated, rural youth or that they had much impact on the resulting knowledge and/or skills gained by students. Due to the fact that the district is located fairly near a large campus with an education department as well as two programs offering alternative certification, a relatively sure supply of teachers is available. The high school science teachers who came and went during this period of time were all from one of these credentialing programs. Of the seven high school science teachers who taught the cohort of participants, five were not offered subsequent contracts, four due to a lack of competence or misconduct in the classroom and one for criminal behavior involving students; one left mid-year for personal reasons and did not return the following year. One physics teacher left during this period because he accepted a teaching job closer to aging parents. An area for future research may be the effect of science teacher transience on science connections/career choice of rural school students.

The rural school district that served as the focus of this study receives minimal federal funding based on its average daily attendance (ADA), a direct consequence of small enrollment. With regard to state funding, this particular district receives the least funding possible under the current formulas because it is considered a ‘small school by choice’ – there are four other somewhat larger rural districts within twelve miles in which students could enroll and boost the ADA levels. It is important to note that while twelve miles may seem like a short distance, local community identity and membership is determined by the high school attended and a source of local pride. Not only do these funding restrictions negatively affect pay for teachers, another consequence is a reduced curriculum and few program options. All enrolled students are expected to graduate under a single graduation plan. Every student therefore, regardless of ability or lack thereof, is expected to complete the requirements under that plan in order to graduate. Students at the extremes of abilities are left to fend for themselves. This often results in special needs students falling behind, becoming ‘at-risk’ for graduation and, for some, ultimate placement in an alternative high school setting where the basic, and possibly more appropriate, diploma becomes an option.

Field trips/off-campus excursions designed around basic curriculum represent a crucial option for students everywhere. Particularly when faced with high faculty turnover and a lack of adult role models at home, students’ understandings of the work world they will enter are fragile. Field trips provide an opportunity to establish practical experiential backgrounds against which students can make more informed decisions regarding their plans after graduation. Informal education of this type has been valued and practiced by countless generations. It was strongly supported by Dewey and others in the early 20th century. By the end of that same century, field trips were and continue to be a casualty of No Child Left Behind (NCLB) legislation (Popescu, 2008). The participants in this study were 12th grade students in a rural school setting who, except for athletic and/or extracurricular events, had experienced no off-campus academically-driven excursions during their high school years. Although the high school was located fewer than fifteen miles from three different vocational/technical and traditional campuses, they had not visited any of the three (nor any other facility) during their entire high school enrollment. Their narratives indicated that a singular, well-designed, purposeful field trip can have significant effects on their ability to conceptualize the need for content presented in the classroom.

Significance and Implications of this Study

This research touched on two specific areas in which relatively small knowledge base exists. The first underlying area critical to this study is rural education. For those interested in or actively researching rural education, the statistics are well known and heavily documented. Some of the more recent statistics available indicate that over 30% of the nation’s public schools are located in communities described as rural. The number of students attending rural schools nationwide remains
consistently around or slightly less than 20% (Gandara, Gutierrez & O’Hara, 2001). Despite their number and impact on educational outcomes, rural public schools and their student populations are statistically underrepresented in current educational research, generally accounting for less than 6% of the sampled population in some recent studies (Hardre, et al., 2007). Rural schools have more diverse populations, higher rates of poverty, and higher numbers of single or no parent households than most urban schools. Since rural property values are generally lower than urban or suburban properties, rural schools typically have lower tax revenues with which to supplement teacher state salaries and experience greater difficulty attracting and retaining highly qualified teachers (Hardre, 2007). Isolation is a typical feature of many rural schools and, with 340 of the poorest 386 counties in the US classified as rural (Lichter & Johnson 2006), the lack of research is often indicative of difficulties encountered by researchers when investigating these schools (Springer & Gardner, 2010). While this research project took less than one school year to complete, the relationships that made it possible and comfortable for all involved took four years to establish. This is but one of the difficulties encountered when qualitative, rich descriptions of rural problems are desired.

The second area is experiential education in grades K-12. In concert with traditional educational theory and practice, the purposefully designed excursion proved a positive experience for each of the participants involved. This field trip was designed with an emphasis on careers requiring some degree of science content commonly taught in high school science classes. The positive impact of a single, purposeful field trip suggests that students can successfully develop connections between academic content and future careers when placed in appropriate contexts. This may be particularly true for students who are academically challenged or described as ‘at-risk’ due to low performance on high-stakes tests or performance in the classroom and, like these participants, have little or no opportunity for academic field trips.

Experiential education, in the form of field trips or off-campus excursions, deserves further investigation in K-12 settings. With its successful application at the corporate and higher education levels, it stands to reason that basic learning styles remain fairly unchanged. In simpler terms, what works when you are an adult is quite likely what worked when you were younger. The overall positive results of this study, from describing connections to increased awareness as well as expanded awareness of other programs and opportunities, would indicate that field trips should be further studied as effective pedagogy in rural high school science classes. If this is indeed an effective option for ‘at-risk’ rural high school students, field trips may represent an effective pedagogy for all high school students across the curriculum because they may all be ‘at-risk’ to some degree.

At the end of it all, comments like Doug’s Could we come back tomorrow? I mean this was good today, I’d like to see some other programs, were the greatest indicator of the success of this project. Who knew, Lane chimed in, there was so much out there to do? And to see? This was really exciting, a little confusing and kinda scary, but still…this was terrific! Students deserve the best we can provide when it comes to educational practice. Field trips represent one of the best, most proven, pedagogical options available. Advocate for your students – go out on a limb, insist on field trips…or, on second thought, go out on a bus.

References


Tommye Hutson is a science teacher and has worked in southern rural classrooms for the past 25 years. Her research interests include equity in education, teacher education and rural education. She continues to work with rural teachers in central Texas, concentrating on STEM initiatives and field trips. She would like to sincerely thank both Dr. Cooper and Dr. Talbert who worked diligently as collaborators and mentors on this project.