

## Reasons for student dropout in an online course in a rural K–12 setting

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Rural schools in the USA use online courses to overcome problems such as attracting and retaining teachers, geographic isolation, low student enrollment, and financial constraints. This paper reports on the reasons that 39% of rural high school students who enrolled in an online Advanced Placement course subsequently dropped the course. Students who dropped the course were asked to provide an email statement detailing their reasons for doing so. On-site facilitators—local staff members situated in the small rural schools where students were enrolled—also provided reasons whenever one of their students dropped the course. Results indicate that the reasons given by students and on-site facilitators for dropping the course often agreed, and tended to fall within the following five categories: scheduling and time constraints, academic rigor and motivation, technology problems, problems with online medium and lack of teacher immediacy, and parental influences.

**Keywords:** distance education; dropout; facilitators; K–12; rural schools

Over the past decade K–12 schools in the USA and Canada have experienced exponential growth in the use of online distance education (Barbour & Reeves, 2009; Clark, 2008; Glass & Welner, 2011; Hannum & McCombs, 2008; Watson & Ryan, 2007). Indeed, online learning is “the fastest growing alternative to traditional K–12 education in the United States” (Glass & Welner, 2011, p. 3). US rural schools use online courses to surmount a variety of difficulties including the ability to attract and retain teachers, geographic isolation, small numbers of students, and financial constraints (Barbour, 2007a; Barley & Brigham, 2008; Beeson & Strange, 2000; Hobbs, 2004; Monk, 2007).

Though rural schools use online courses to provide students with a comprehensive curriculum and advanced courses (Hannum, Irvin, Banks, & Farmer, 2009), online learning can also have more far-reaching effects. Specifically, online learning may prevent rural districts from having to close or consolidate schools (Hobbs, 2004; Jimerson, 2006; Schafft, Alter, & Bridger, 2006; Seal & Harmon, 1995). As rural schools are often the major source of employment and the center of social activity for communities, keeping rural schools open can be vital to students and

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their families (D'Amico, Matthes, Sankar, Merchant, & Zurita, 1996; Jennings, Swidler, & Koliba, 2005; Lyson, 2002; Schafft et al., 2006).

Little research on online learning in the USA has focused on rural K–12 schools, despite the fact that rural schools make up one-third of all schools in the USA and educate approximately 12 million children (Aud et al., 2013). This is noteworthy in several respects. Rural districts in the USA utilize distance education more than urban and suburban schools. Setzer and Lewis (2005) reported that 46% of rural districts have students taking distance education—twice that of urban districts (23%) and substantially more than in suburban districts (28%). In addition, 85% of rural schools classified as small and low income, according to the Rural Education Achievement Program, indicate that they are currently using or have previously used distance education, and that most frequently this is in the form of asynchronous online courses and to provide students advanced or enrichment courses (Hannum et al., 2009).

Meta-analyses have demonstrated no significant difference in academic outcomes between K–12 students taking a course online vs. in a traditional face-to-face setting (Cavanaugh, Gillan, Kromrey, Hess, & Blomeyer, 2004; Smith, Clark, & Blomeyer, 2005; Tallent-Runnels et al., 2006). Some caution that while these modes of instruction are broadly comparable, such studies generally fail to adequately examine the variability between online and face-to-face settings (Bernard et al., 2004, p. 408). Others have criticized these studies for only considering short-term standardized test performance and mostly focusing on math and reading (Glass & Welner, 2011). To us, however, there is an even more disconcerting aspect to online learning apparent in the literature: high levels of dropout in online courses have been noted in several studies (Carr, 2000; Dupin-Bryant, 2004; Glass & Welner, 2011; Osborn, 2001; Wojciechowski & Palmer, 2005).

Some estimates suggest that dropout in online courses may be 10%–20% higher than traditional face-to-face settings (Carr, 2000; Stover, 2005; Wojciechowski & Palmer, 2005). Other figures indicate that as many as 50% to 60% of online students may drop out (Morris, Wu, & Finnegan, 2005; Oblender, 2002; Roblyer, 2006). These figures are imprecise because of the lack of a common definition for dropout, discrepancies in calculating dropout rates, disproportionate enrollment of vulnerable students, and a lack of relevant K–12 research. However, numerous researchers concur that there is ample reason to be concerned and a need to understand dropout in online courses (Barbour & Mulcahy, 2006; Glass & Welner, 2011; Nash, 2005; Roblyer, 2006; Stover, 2005).

Despite the ongoing expansion in the enrollment of K–12 students in online courses, most of the research on dropout in online learning has involved students in postsecondary educational settings. Yet, the reasons adults drop out may differ from those of high school students, who have different goals (Barbour & Reeves, 2009; DiPietro, Ferdig, Black, & Preston, 2008).

Accordingly, the overarching purpose of this study is to identify factors potentially involved in dropout from an advanced online course among students in rural US high schools.

## Review of the literature

Previous research has examined various factors that may be involved in students' dropout from online courses. The review of the literature that follows is organized

around the main individuals involved in a model used by many providers of K–12 online learning in the USA and Canada: the teacher–facilitator model. In the teacher–facilitator model, students take online courses at their local school, or sometimes at home, while the online instructor who is largely responsible for delivering the course content and instruction is situated at a remote location. In addition, a local on-site adult serves as a facilitator. The role of the facilitator is to troubleshoot computer and software problems, distribute instructional materials, answer questions, and communicate with the online instructor (de la Varre, Keane, & Irvin, 2010). Facilitators are given technical training for their role as well as recommendations for monitoring student progress. In addition, facilitators may be required to communicate with parents, and address issues such as plagiarism, cheating, and missing assignments, and often go beyond their prescribed roles when helping students (Barbour & Mulcahy, 2009; Harms, Niederhauser, Davis, Roblyer, & Gilbert, 2006; U.S. Department of Education, 2007).

In this study, we were interested in factors related to the role of the online teacher, on-site facilitator, and students themselves, and how these may influence or contribute to dropout from an online course. In part, this stems from the fact that in the teacher–facilitator model, students are situated in a blended learning environment (de la Varre et al., 2011). Though the content and instruction are delivered online by the instructor, the on-site facilitator is largely responsible for setting the local climate, and this influences students' overall online experience. Thus, the online instructor, on-site facilitator, and students comprise the key factors to be considered in order to more fully understand the complexity of students' experiences and learning in online courses (Stacey & Gerbic, 2008).

### ***Role of online instructors***

Online teachers have an essential role in helping prevent student attrition and isolation by creating a comfortable online learning environment where students can build community and establish trust. Coppola, Hiltz, and Rotter (2004) suggested that online teachers establish their presence in the course immediately, behaving in consistent and predictable ways, responding to students' messages and questions with enthusiasm, and expressing positive course expectations. Likewise, Davis and colleagues (Davis & Roblyer, 2005; Davis et al., 2007) have noted that there is a need for effective interaction with and support for students in online courses, which requires particular skills and experiences from instructors. Other designers and researchers of online learning have also espoused the importance of interactivity and communication (e.g., Barbour, 2007b; Gilbert & Moore, 1998; Hobbs, 2004; Susman, 1998). Consistent with these recommendations, Abdous and Yen (2010) reported that student–instructor interaction determines student satisfaction and learning outcomes. Several studies have also found that frequent contact and prompt responses from online teachers are vital to learning (e.g., Choy, McNickle, & Clayton, 2002; Roach & Lemasters, 2006) and student satisfaction (Arbaugh, 2000, 2001; Hara & Kling, 1999; Thurmond, Wambach, Connors, & Frey, 2002).

### ***Role of on-site facilitators***

Providers of K–12 online courses often rely on the teacher–facilitator model to address issues of student dropout, isolation, and lack of support. It is difficult for

online teachers to have a personal relationship with every student in an online course because often they have multiple course sections and may have 75–100 students or more. As on-site facilitators work with small groups of familiar students and interact with them regularly, facilitators support students on many levels (Hannum & McCombs, 2008). Accordingly, several researchers have found that facilitators are vital to students' success (Barbour & Mulcahy, 2008; Roblyer, Freeman, Stabler, & Schneidmiller, 2007) or noted that facilitators have a key role in reducing dropout (Charania et al., 2008; Roblyer, 2003). A major aspect of students' online experiences that facilitators provide is setting the climate for learning through encouraging, acknowledging, and reinforcing student contributions (de la Varre et al., 2011).

### ***Role and experiences of students***

Numerous variables related to the students themselves are likely involved in students dropping out from online courses (Dupin-Bryant, 2004). For one, students' previous experience and comfort with computers and online courses are important (Lim, 2001; Osborn, 2001). Researchers found that various indices of technology adeptness predicted course completion, as does students' academic background, for example, prior achievement or class rank (Dupin-Bryant, 2004; Lim, 2001; Morris et al., 2005; Osborn, 2001). As online courses continue largely to target and benefit more self-directed and advanced students, good study skills and habits are essential as well (Barbour & Reeves, 2009). Consistent with this, Wang and Newlin (2000) showed that several measures of study habits were strongly correlated with grades in an online course. In more directly related results, Oblender (2002) found that although the students in one virtual high school were bright, capable, and mature, some did not have the time-management skills and self-discipline needed to succeed in online courses, and consequently dropped out. Of the factors discussed in this section, students in small and low-income rural schools are reportedly well prepared in their computer skills, less so in their academic background, and least prepared in their study skills (Irvin, Hannum, de la Varre, Farmer, & Keane, 2011). Though few studies of online learning have examined students' motivation and self-efficacy, several researchers have also recognized the importance of these factors to students' success in online courses (Artino, 2008; Chen & Jang, 2010; Cocea & Weibelzahl, 2006; Gibson, 1996; Keller, 1999; Lin, Lin, & Laffey, 2008).

Students' experiences in online courses also likely contribute to dropout. Levy (2007) demonstrated that student satisfaction with the course is a predictor of student persistence. Online courses are prone to a lack of teacher immediacy, or the psychological closeness that is conveyed in traditional classrooms through nonverbal signals such as smiling, eye contact, relaxed body posture, and verbal signals such as praise, use of humor, and tone of voice (Arbaugh, 2001; Rourke, Anderson, Garrison, & Archer, 1999). Shea (2006) found that online students perceived a "stronger sense of learning community" (p. 41) when exposed to teachers who displayed more immediacy behaviors. This psychological or transactional distance between students and teachers in online courses largely stems from the physical separation that prevents online teachers from attending to these factors (Moore, 1993; Moore & Kearsley, 1996). As a result, students often feel more isolated in online courses, and this may be a central factor in the high rates of dropout (Rovai, 2000, 2002). Rural students are also used to small classes and close relationships

with teachers, and thus may find online courses more challenging than their urban or suburban counterparts (Irvin, Hannum, Farmer, de la Varre, & Keane, 2009).

### ***Limitations of existing literature***

Several limitations of the existing literature on dropout in online courses are evident. First, few studies have examined students' own reported reasons for dropping out. Rather, research has often used quantitative measures and methods to determine which variables relate to or predict dropout. Though this type of work is useful, it may fail to elucidate some reasons for students' dropout that were not specifically asked about or included as a measure. Second, little research has also included the corresponding reasons for dropout reported by key adults, such as on-site facilitators, and examined whether those are similar to or different from the reasons that students report. Such information is important for not only for providing corroborating evidence but also to determine whether students and key adults have different views on the factors involved in dropout. As previously noted, most research of online learning has involved college students or adult learners rather than K–12 students (Cavanaugh et al., 2004; Rice, 2006), and even less work with rural schools has been undertaken (Barbour, 2007b; Rice, 2006). Therefore, rural K–12 students and schools that use online learning have largely been ignored in previous studies.

Finally, and perhaps most importantly in our view, most research on dropout in online courses has focused on the students themselves rather than also considering other important factors within the context of this blended learning setting, such as online teachers and on-site facilitators. Yet, the onus to prevent dropout lies not only with online institutions and course providers, but with teachers, on-site facilitators, and others who are cognizant of the need for both proactive and reactive communication with students (Simpson, 2004). Understanding the reasons K–12 students choose to drop out of distance education courses may potentially provide useful information to increase persistence, and also move us toward a better understanding of the distance education phenomenon overall.

### **Purpose and context of the current study**

The overarching purpose of this study is to identify factors that may be involved in dropout from an advanced online course among rural US high school students. Toward that end, we examine the reasons that rural high school students themselves gave for dropping out of the course. We also examine the corresponding reasons provided by each student's on-site facilitator. The following specific research questions guide the study:

- What are the reasons that rural high school students may drop out of an advanced online course?
- Do the reasons that rural high school students may drop out of an advanced online course involve students, online teachers, on-site facilitators, and/or others?
- Are the reasons given by students for dropping out similar to or different from on-site facilitators' reported reasons for student dropout?
- Can the factors involved in dropping out be addressed by students, online teachers, on-site facilitators, or others in order to prevent or reduce dropout?

The data were collected as part of a cluster randomized controlled study designed to develop and examine the impact of a program to train on-site facilitators to better support rural students taking an advanced online course. The study involved two cohorts of students and facilitators: the first cohort participated during the academic year one, and the second cohort participated during the academic year two. Across both years, approximately 720 high school students from 93 rural schools geographically distributed in 29 states across the USA took a year-long Advanced Placement (AP) English Literature and Composition course online. The gender ratio was 77% females to 23% males. Ethnically, the student participants were 91% white, 2.4% Hispanic, and less than 2% each black, Asian, and American Indian. The course was delivered entirely online via Blackboard™, a widely used course management system. Students were situated in a classroom of typically 4–10 students, in a small rural school, and each school was monitored by a local facilitator with administrative and supervisory duties but no teaching responsibilities. Students across four rural schools were combined to form a single virtual course section taught by one online teacher, and there were 20 sections altogether. Overall, approximately 39% of the students dropped out of the course. Of those who dropped out more than two-thirds (68.8%) did so within the first four weeks.

## Methods

Each student who dropped the course was asked to provide an email statement regarding the reasons for dropping the course. The student's on-site facilitator was also asked to provide a similar email statement. These statements were imported as text files into MAXQDA—software for content analysis and management of textual data—and were coded and categorized by two coders. Content analysis is “any qualitative data reduction and sense-making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings” (Patton, 2002, p. 453). As a methodology, content analysis involves a systematic search for patterns within textual data (Krippendorff, 2004), and is interpretive in that the goal is to uncover and categorize patterns in the text (Schrire, 2006). Our aim was to look for themes and categories in the dropout statements from students and facilitators with the intent of summarizing the data. Our approach was inductive, and involved reading through the entire data-set several times, using two coders. As themes were identified, the data were coded, and after several rounds of reading and coder discussion no new themes emerged. The themes identified are listed in the Results section. As nearly all the dropout statements were short and simple, the level of agreement between coders was almost 100%, and we did not feel that a chance-corrected measure of inter-coder reliability was necessary.

## Results

Reasons given by students and facilitators for dropping the course were usually in agreement with each other, although there were times when the reasons students and facilitators gave for the student dropping out of the online course disagreed. Reasons generally fell within the following categories that are discussed further below: scheduling and time constraints, academic rigor of class and motivation, technology problems, problems with online medium and lack of teacher immediacy, and

parental influences. In addition, some students dropped out of the online course because of a combination of factors.

### ***Scheduling and time constraints***

Several reasons fell within the category of scheduling and time constraints. These ranged from having too short a class period, unwillingness or inability to make the time commitment needed to succeed in the class, perceptions that the workload was excessive, conflict with other classes, conflict with an employment schedule, or conflict with extracurricular activities. Examples of student comments in this category include:

- I would not have been able to juggle the online course, my family, and work all at the same time. I would not have been able to find time to sit down and do the assignments with all my other work from my other classes.
- I'm involved in volleyball, the school play, and I work two jobs outside of school. Therefore I only had one class period to get all the in class work and out of class homework done. This was basically impossible.
- Between work, cheerleading, my other classes, this class, and my boyfriend, I couldn't find the time.
- Many of my fellow classmates hate the class! They say that it's too much to do in our 40- minute classes. I can understand that because all the college classes I take at the local college are an hour and a half.
- My English class period isn't long enough to complete each assignment, and it gets frustrating trying to get caught up during the day when I have nine other classes, three of which are also AP. I also have basketball until 8:30 pm, giving me no time at home to get my English done, or anything else for that matter.
- My schedule has become so hectic that I really didn't have any other choice. I have 10 classes a day. My first class starts at 6:00 am and I get out of school at 4:00 pm then I go home and do my jobs and whatever my mom needs me to do and at 6:00 pm I go back to the school for basketball practice ... every day.

Facilitators' also commented on their students' busy schedules, and on their priorities:

- Her family has a farm and she said it was very hard to do her chores, play soccer, and do the AP work. She seemed to think the work was rather difficult and time consuming.

### ***Academic rigor of class and motivation***

Many students who dropped out complained of the demanding schedule, fast pace, or amount of homework required in the course, as well as feeling overwhelmed, intimidated, or underprepared for the rigor of an AP-level class. Motivation was also a factor often embedded in the following comments and connected to the rigor of the online course:

- I was up until after midnight every night trying to finish my homework.
- I am definitely not a strong reader, and my homework was taking at least an hour and a half a night.
- The reason I dropped the AP class is because it was hard. I didn't want to read again until I am in college.
- The grading was very harsh. I am a straight A student, and my instructor thought I would be happy just passing.

Facilitator comments echoed these concerns:

- He doesn't like to do much work, and he found another English class to take with less work.
- The students didn't want to do the readings and the daily work. This class was more demanding and they "wanted an easier senior year." They were very capable of doing the class work but didn't want to.
- Our school culture just didn't prepare them for the rigors of this type of course. Our students weren't prepared, which is a problem from our end.
- I do not believe that either boy had a good understanding of what to expect from the online course to begin with. They were just completely overwhelmed from the moment that they logged into Blackboard and read the teacher's introduction.
- When I handed out the first two books, she sighed loudly and said, "Ugh, I want to have fun my senior year." She keeps saying she wants to be a writer, but she refuses to read.
- When her animal was sick for a few days, she missed a week of school.
- He does not seem bothered by missing assignments or points on his journal and does not have the internal drive to take a course at this level. He's also a sophomore in high school, still very young and immature.
- Sadly, when the decision came to read *Invisible Man* or play Rock Band, Rock Band won.
- His tendency is to slide by, doing work at the last minute (if at all) because he is smart enough to do well with very little effort. This course did not provide enough accountability and structure for him despite my best efforts.
- Her future plans are to marry following graduation, so she does not think she needs AP.

### ***Technology problems***

Several students had issues relating to technology such as being confused by the content management system that delivered the course, or the online directions. Facilitators reported:

- Glitches such as tests not being turned on in time for class, which should have been a non-issue, became an issue because they added to the sense of frustration and disconnect.
- The website had constant problems; I could not get my assignments many times or the website would freeze.



- The course organization relies on a lot of information organized through multiple windows and documents; to get oriented on assignments several different windows must be accessed. This led to a lot of confusion for the first few days for all of us. It just shook their confidence from the start.
- Neither boy was completely comfortable with technology, and the intensity of the first day's information was truly shocking to them.

### ***Problems with online medium and lack of teacher immediacy***

The online format of the course was challenging for a number of students. Some disliked the lack of teacher presence or immediate feedback. In this course, teachers aimed to respond to students' questions within a 24-h period; however, there were several complaints from students about the timeliness of feedback, the medium and grading:

- I do not enjoy the online class because we cannot talk face to face. I learn better by listening and taking notes rather than reading, which is the only method of learning with an online class. I feel I am "talking" to a computer screen. I also do not enjoy writing in the discussion boards to my classmates who are sitting right beside me, when I could just turn and talk to them about whatever questions I have.
- It is hard to critique and learn from your work if you have forgotten what the assignment was about by the time that you get the graded paper back.
- I think it is much easier for a teacher to be there in the classroom with you rather than in another state.
- I feel it was not interactive enough. I need someone to explain to me and show examples and make sure I understand it. Maybe if there was a live chat during the class to check into and ask questions and get answers right away it might be more successful.
- I absolutely hate not having a real person explain things to me.

Facilitators' comments echoed these sentiments:

- Feedback has been inexcusably slow, in our opinion, and probably more importantly, incredibly sparse. Both students have expressed a frustration about what they are learning in the course and whether they will be well prepared for the AP exam. Neither felt the discussions generated on the boards were of much value, and both expressed the desire to hear from the instructor at some point.
- We are small, and even our most difficult classes are presented in a very personal and non-threatening way. This class was impersonal and very difficult.
- The main reason these students dropped was the way that the instructor communicated with them. I don't want to make this a personal attack, but they just didn't have a good connection with her at all. Because her grading is necessarily very meticulous, it is very important for her to develop a strong positive connection with the students. That just didn't happen.

- It took over a school day for a reply to be sent to us concerning questions with assignments. Therefore, we would get the help right before, or even after, the assignment was to be sent.

### *Parental influence*

One recurring theme was parental influence on their child's decision to drop the course. In some instances parents were concerned about the effect of lower class grades on grade point average (GPA) or valedictorian status. Facilitators reported that some parents placed priority on extracurricular activities rather than on education. Parents also expressed concerns about the course rigor, and even moral objections to content:

- A few parents complained that their child is working on this course at home and spending all of their free time on this course. I think this is a good thing, but for some reason the parents don't.
- The adults quickly move in to defend their child and don't allow them to struggle and learn. If they stick with it throughout the year, chances are they will pass and do well on the exam in the spring, but it is hard to convince kids (and parents) to do that.
- The student's parents feel the extracurricular activities are more important than this class.
- The mother felt that the content of the book was not acceptable for her child to be reading. She understood that this was a college-level class and book, but felt that the book went against their family's values. This is a hard one to argue with as I cannot question the morals and values of our students' families. This discussion continued with the other parents, and it was decided as a group that they were going to discontinue the course.
- His family feel his life experiences that he is participating in outside of school are just as beneficial. I tried to get him caught up and worked with our counselor but he has made his mind up and his parents agree with his decision.

### *Combination of factors*

Perhaps one of the more important findings in our view is that many of the comments received from students clearly indicate that students' challenges were multifactorial. In fact, the majority of reasons for dropping out involved multiple factors. The following examples illustrate this:

- I understand that this class is supposed to be challenging, but I was just not prepared to take it on. Also this experience helped me realize that I prefer to have a physical teacher in front of me rather than a computerized course. I don't think this learning style was for me. I also found myself confused when trying to find out when things were due and where to find assignments because everything was scattered around. I did not understand the method of date that was used.
- There are several reasons why I dropped the course. I do not feel that the Internet classroom is the best way for me to learn as a student. I feel more

comfortable in a classroom with a teacher giving me directions every day where I can ask a question and get an immediate response. Grades were not returned in a timely fashion, and therefore we could not get an accurate picture of how we were doing. Directions were not always given as clearly as they could have been. Since the teacher wasn't right there with us, we couldn't get answers as quickly as we may have needed. The class itself caused me stress because I was left wondering about so many things that the teacher did not have time to answer.

- Firstly, I do not feel up to the workload/level of difficulty in the course work. In normal English classes I have always excelled, but I am apparently just not ready for the higher level of academics the course requires. Also, it is very hard for me to keep up with assignments via the convoluted technology of Blackboard. I always feel as if I'm missing something. The impersonal feel of Blackboard likewise attributes to my inability to forge a personal connection to the instructor and other classmates. I am not very adept with non-verbal face-to-face communication, and it shows in the Blackboard environment. And while a personal connection and live discussion may not be the only ways to learn English, they are the best ways for me.

Problems with the technology or the online medium sometimes led to confusion and lower confidence or motivation, while individual traits or characteristics, for example, being a poor reader, may have been barriers to student success. In at least one instance, an additional reason that a number of students dropped out was because their school did not follow the design and format of the online course:

- I knew it would be a challenge; however, I did not think it would be as complicated as it was. Due to scheduling conflicts at my school, all of the students would have access to the computer lab at different times. This made solving technical problems extremely difficult. Also, we didn't have the opportunity to discuss our readings, homework, or even frustrations with anyone else. My reason for dropping the class was not how the program was set up, or run, it was because of scheduling conflicts and the class not being carried out in the way that it was meant to be.

However, even in this situation students tended to give more than one reason for dropping out:

- I signed up for AP English knowing it was an online course. I did not know that we would not have a class period to do this. I think that was our school's fault. Every student had to go in during a separate study hall and do their assignments. I could not discuss any of the assignments with them. I also did not like that fact that my teacher lives in [another state]. If I had a question I couldn't simply just ask her, I had to email her, which could take a whole day for a response.

Comments by facilitators also often referenced multiple reasons for dropout:

- Difficulty navigating the website (Blackboard) and frustration with the differences between it and other distance learning formats he had previously

experienced. He preferred a more anonymous and self-paced type of distance learning.

- Neither girl was ready for an AP class or an advanced online class: both had difficulty keeping pace with the course schedule, both had difficulty working in such an independent manner while wrestling with such difficult material.
- She always takes a long time on her tests because she wants to do her best. She is also a student who likes to ask a great deal of questions about assignments to make sure she understands the assignment. She likes immediate feedback so she can get started on it. An online course doesn't fit her learning style.
- This course has been an eye opener and a great challenge. The biggest concern they had at the beginning was that the course would count against their GPA. So, we allowed them to take the course as pass or fail. Now, I believe it's just the time commitment that is an issue.

### ***Disagreement between facilitator and student reasons for dropping out***

In most cases, the reasons for dropping out reported by students and their facilitators were similar. However, occasionally the reasons for dropping out given by facilitator and student did not match. When facilitators believed that students were unmotivated or immature, unsurprisingly students would provide different reasons for dropping out. For example, one facilitator stated that, "they quit because they have a little 'lazy streak' in them. I don't think they would admit this to you." In another facilitator's opinion, "determining why teenagers do anything is not easy." Several students who claimed to be dropping the course due to conflicting class schedules were, according to the facilitators, actually worried about their GPAs. Other students reported that they did not like the online format or lack of immediate feedback while their facilitator said they were dropping the course due to over-scheduling. It is possible that both perspectives were valid, as in many instances students dropped out for a combination of factors. It is also possible that in some cases facilitators were not necessarily aware of students' reasons for dropping the course. However, as one facilitator opined, "I think lack of confidence, willingness to take risks, and fear of failure were probably at the heart of all the excuses."

### **Discussion**

The first two research questions that guided the study concerned the reasons that rural high school students dropped out of an advanced online course and whether those reasons involved students, online teachers, on-site facilitators, and/or others. Several of the reasons that rural high school students reported for dropping out of the online course were largely due to factors related to themselves and their experiences (e.g., time constraints, and motivation). However, some of the reasons that students dropped out of the online course also involved others (e.g., online teacher immediacy and parental influence). Specifically, the reasons that students dropped out of the online course included scheduling and time constraints, academic rigor of class and motivation, problems with technology, problems with online medium and teacher immediacy, and parental influences. In our view, the most notable finding was that most of the reasons for dropping out involved multiple factors. That is, not only were several factors related to dropping out identified in the study overall but students typically reported that their reason for dropping out entailed multiple factors.

Dropping out due to scheduling and time constraints was consistent with previous findings and contentions that time-management and study skills are important for online learning (Barbour & Reeves, 2009; Oblender, 2002; Wang & Newlin, 2000) and that rural youth are less prepared in their study skills (Irvin, Meece, Byun, Farmer, & Hutchins, 2011). Dropping out because of the academic rigor of the class was consistent with research indicating that previous achievement is related to course completion (Dupin-Bryant, 2004; Lim, 2001; Morris et al., 2005; Osborn, 2001) and that rural youth may be less prepared in their academic background than their computer skills (Irvin et al., 2011). The related issue of motivation also reflects research supporting and views highlighting the importance of students' motivation in online courses (Artino, 2008; Cavanaugh, 2007; Chen & Jang, 2010; Huett, Kalinowski, Moller, & Huett, 2008; Keller, 1999; Roblyer, Davis, Mills, Marshall, & Pape, 2008; Roblyer & Marshall, 2002) as well as others' perspective that motivation may be particularly salient for rural students (D'Amico et al., 1996; Irvin et al., 2009). The problems with the online medium and lack of teacher immediacy underscore the importance of the interactivity between online teachers and students that has been noted by many researchers (Abdous & Yen, 2010; Arbaugh, 2001; Davis & Roblyer, 2005; Gilbert & Moore, 1998; Hara & Kling, 1999; Hobbs, 2004; Roach & Lemasters, 2006; Susman, 1998; Thurmond et al., 2002).

The third research question guiding this study focused on whether students' reasons for dropping out were similar to or different from the reasons on-site facilitators reported for the student dropping out. In general, dropout reasons given by students and facilitators referenced similar themes. When a student's reasons for dropping out were different than the reasons given by that student's facilitator, it is possible that the difference was simply a matter of perspective. For example, a student perceived to be lazy or immature by the facilitator, may have stated that they dropped the course because they wanted to enjoy their senior year rather than have a demanding workload or schedule.

The fourth research question focused on whether the factors involved were ones that students, online teachers, on-site facilitators, and/or others could address in order to reduce dropout. Results indicate that most of the factors purportedly involved in students dropping out from the advanced online course were malleable. Potential factors on which to focus in dropout prevention programs included scheduling and time constraints, academic rigor and pace of class, students, motivation, technology problems, and problems with the online medium and teacher immediacy. Furthermore, each of these factors could be addressed by students, online teachers, on-site facilitators, and/or others (e.g., parents and course providers). However, it is likely that dropout prevention efforts which utilize all of these individuals will be more successful as it may create a system of support.

### ***Implications***

The finding that each student reported that his/her own reason for dropping out of the online course usually involved multiple factors has rather broad implications. Therefore, these implications are discussed first. Specifically, as students reportedly drop out because of multiple factors then course providers, online instructors, on-site facilitators, and students should be cognizant of and, when feasible, attend to those multiple factors. If several factors are operant but some of these factors are ignored, then it is likely that a student may still drop out of an online course. Efforts to stem

dropout may also need to be more targeted and individualized because the specific set of multiple factors involved for a particular student is likely to vary.

Our findings indicate that important steps should occur to prepare and advise students and their families before an online course begins. Students could participate in an orientation that provides an introduction to and an overview of the demands, expectations, background, and prerequisites needed for online courses, including homework requirements and online grading practices. Rural students often have close, long-term relationships with their teachers who know their students, and often students' families, very well, (Burney & Cross, 2006; de la Varre, Keane, Irvin, & Hannum, 2009; Herzog & Pittman, 1995). Teachers are therefore well positioned to advise their students about whether to enroll for an online course based on preferred instructional approaches and student characteristics like the ability to self-regulate and manage their time, level of motivation, and extracurricular obligations. Course providers could also assess students' strengths and weaknesses as learners through pretests. Such advising or counseling prior to the course beginning could potentially ameliorate dropout because of problems with scheduling and time constraints, the online format, academic rigor of the course, and motivation.

As noted earlier, students in small rural schools may have to enrol in advanced online courses in order to access particular classes (Hannum et al., 2009). Therefore, schools offering such courses should be prepared to provide additional local support to their online learners. For those who do participate in online courses, helping students with effective time-management skills and maintaining motivation may be beneficial (D'Amico et al., 1996; Haughey & Muirhead, 1999; Irvin et al., 2009; Land, Nwadei, Stufflebeam, & Olaka, 2003; Parker, 1999). Schools themselves should ensure that students enrolled in online courses are adequately provided with a suitable learning environment—a quiet classroom with a dedicated computer and class period (not a spot at the back of the library or classroom while another class is being taught).

In addition, students should have realistic expectations for student-teacher engagement and responsiveness. It is improbable that an online instructor could have a personal relationship with every student in an online course when they often teach multiple course sections with as many as 100 students or more (Hannum & McCombs, 2008). So online instructors are less likely to be familiar with their students and unable to provide the level of individualized support, interactivity, and the "family-like atmosphere" to which rural students may be accustomed (Burney & Cross, 2006; Irvin et al., 2009). Instructors should, however, be aware of the specific challenges of teaching online learners in rural settings.

A systemic attempt to address multiple dropout factors for online students at the local school level should also include parent education, so that parents have the information necessary to more fully understand the nature and requirements of the online course. This information should include access to the reading list or curriculum content, to prevent dropout due to issues such as conflict with parental or family values, as at least one of our schools experienced. Suggestions for ways for parents to support their child during enrollment in online courses may also be beneficial, as well as awareness of the time demands such courses may require of their child beyond the school environment, and watching for signs of stress and being overwhelmed.

Finally, facilitators should be adequately trained in how to support students, made aware of the demands of online courses, and proactive in offering motivation

and study strategies to help students cope with the rigors of advanced online coursework. Facilitators should be present during the class if possible, or at least readily accessible and on hand to troubleshoot technology if needed.

### ***Strengths and limitations***

This study had several strengths but also some limitations that should be considered. A key strength was the use of qualitative data. Specifically, students' self-reported reasons for dropping out allowed for the identification of reasons that may be obscured in quantitative studies because quantitative studies typically measure a narrow set of constructs with less depth. The use of qualitative data and reporting students' perceptions were strengths in identifying the finding that multiple factors were likely involved in dropout from online courses; an important point in our view. That is, each individual student's reasons for dropping out typically contained multiple factors and reflected several of the themes that emerged in the data. However, the use of a qualitative approach was also a limitation in some respects. For one, causality could not be definitively determined with a qualitative approach. Thus, reasons that students claimed led them to drop out may not have been the actual cause. In addition, students' self-reported reasons for dropping out may be prone to social desirability, and other factors may also have biased their perceptions.

Little previous research on dropout from online courses has involved K–12 students attending rural schools. Thus, the sample and setting are strengths of this study. The use of qualitative data is also an appropriate initial step toward increasing our understanding of dropout in this setting and among online learners in rural schools. Nonetheless, the rural US setting means that the findings from this study may also have limited generalizability, as results may be specific to this population and context only. Also, because the online course was a single subject and used an asynchronous delivery format, our results may not generalize to different subjects and delivery formats.

The inclusion and comparison of the on-site facilitators' reasons for dropout with students' own reasons for dropout was an additional strength of this study. Though facilitator reports are also subject to the same limitations outlined in regard to student reports, as facilitators' reasons were largely similar to students the facilitator data provided some corroborating evidence. This congruence was also important as it indicated that students and facilitators have similar views of the factors involved in dropout. Thus, our results support the position of other researchers of the centrality of on-site facilitators in reducing dropout in online courses, because our findings indicated that on-site facilitators may be aware of relevant factors (Barbour & Mulcahy, 2008; Charania et al., 2008; Hannum & McCombs, 2008; Irvin et al., 2009; Roblyer, 2003; Roblyer et al., 2007).

### **Conclusion**

Cavanaugh et al. (2004) included a caveat in their meta-analysis that “K–12 distance education is fundamentally unique” (p. 77). In the words of one student in our study who dropped out, “I am getting the impression that you do not fully understand the complications and differing schedules of a high school junior. It is not at all the same as being a freshman in college.” Our study begins to address these points by clarifying some of the factors involved in dropping out of advanced online courses

among youth in rural US high schools. Future research may build upon our study by more directly investigating and testing whether these factors are distinct from those involved in dropping out from online courses in other samples (e.g., youth in urban high schools, other countries, and college students). The use of quantitative studies and experimental or strong quasi-experimental designs may also help provide more large-scale corroboration of our findings as well as robust tests of whether the implications derived from such results are in fact part of causal processes.

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### References

- Abdous, M., & Yen, C.-J. (2010). A predictive study of learner satisfaction and outcomes in face-to-face, satellite broadcast, and live video-streaming learning environments. *The Internet and Higher Education, 13*, 248–257. doi:10.1016/j.iheduc.2010.04.005
- Arbaugh, J. B. (2000). How classroom environment and student engagement affect learning in Internet-based MBA courses. *Business Communication Quarterly, 63*, 9–26. doi:10.1177/108056990006300402
- Arbaugh, J. B. (2001). How instructor immediacy behaviors affect student satisfaction and learning in web-based courses. *Business Communication Quarterly, 64*, 42–54. doi:10.1177/108056990106400405
- Artino, A. R. (2008). Motivational beliefs and perceptions of instructional quality: Predicting satisfaction with online training. *Journal of Computer Assisted Learning, 24*, 260–270. doi:10.1111/j.1365-2729.2007.00258.x
- Aud, S., Wilkinson-Flicker, S., Kristapovich, P., Rathbun, A., Wang, X., & Zhang, J. (2013). *The condition of education 2013 (NCES 2013-037)*. Washington, DC: National Center



- for Educational Statistics, US Department of Education. Retrieved from <http://nces.ed.gov/pubs2013/2013037.pdf>
- Barbour, M. K. (2007a). Portrait of rural virtual schooling. *Canadian Journal of Educational Administration and Policy*, 59(1), 1–21. Retrieved from <http://www.umanitoba.ca/publications/cjeap/>
- Barbour, M. K. (2007b). Principles of effective web-based content for secondary school students: Teacher and developer perceptions. *The Journal of Distance Education/Revue de l'Éducation à Distance*, 21, 93–114. Retrieved from <http://www.ijede.ca/index.php/jde/index>
- Barbour, M., & Mulcahy, D. (2006). An inquiry into retention and achievement differences in campus based and web based AP courses. *Rural Educator*, 27, 8–12. Retrieved from <http://www.ruraleducator.net/index.htm>
- Barbour, M. K., & Mulcahy, D. (2008). How are they doing? Examining student achievement in virtual schooling. *Education in Rural Australia*, 18, 63–74. Retrieved from <http://search.informit.com.au/browseJournalTitle;res=IELHSS;issn=1036-0026>
- Barbour, M. K., & Mulcahy, D. (2009). Student performance in virtual schooling: Looking beyond the numbers. *ERS Spectrum*, 27, 23–30. Retrieved from <http://www.editlib.org/j/ISSN-0740-7874/>
- Barbour, M. K., & Reeves, T. C. (2009). The reality of virtual schools: A review of the literature. *Computers & Education*, 52, 402–416. doi:10.1016/j.compedu.2008.09.009
- Barley, Z., & Brigham, N. (2008). *Preparing teachers to teach in rural schools* (Issues & answers report, REL 2008–No. 045). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Central.
- Beeson, E., & Strange, M. (2000). Why rural matters: The need for every state to take action on rural education. *Journal of Research in Rural Education*, 16, 63–140. Retrieved from <http://jrre.vmhost.psu.edu/>
- Bernard, R. M., Abrami, P. C., Lou, Y., Borokhovski, E., Wade, A., Wozney, L., ... Huang, B. (2004). How does distance education compare with classroom instruction? A meta-analysis of the empirical literature. *Review of Educational Research*, 74, 379–439. doi:10.3102/00346543074003379
- Burney, V. H., & Cross, T. L. (2006). Impoverished students with academic promise in rural settings: 10 lessons from Project Aspire. *Gifted Child Today*, 29, 14–21. Retrieved from <http://gct.sagepub.com/>
- Carr, S. (2000). As distance education comes of age, the challenge is keeping the students. *Chronicle of Higher Education*, 46, A39–A41. Retrieved from <http://chronicle.com/section/Home/5/?eio=34361>
- Cavanaugh, C. (2007). Effectiveness of K-12 online learning. In M. G. Moore (Ed.), *Handbook of distance education* (2nd ed., pp. 157–168). Mahwah, NJ: Lawrence Erlbaum.
- Cavanaugh, C., Gillan, K. J., Kromrey, J., Hess, M., & Blomeyer, R. (2004). *The effects of distance education on K-12 student outcomes: A meta-analysis*. Naperville, IL: Learning Point Associates.
- Charania, A., Davis, N., Wortmann, K., Schoeny, Z., Cohen, S., & Alexander, C. (2008). Assessing preservice teachers' competence as a Virtual Schooling site facilitator. In K. McFerrin, R. Weber, R. Carlsen, & D. A. Willis (Eds.), *Proceedings of SITE 2008 – Society for Information Technology & Teacher Education International Conference* (pp. 267–272). Chesapeake, VA: AACE.
- Chen, K. C., & Jang, S. J. (2010). Motivation in online learning: Testing a model of self-determination theory. *Computers in Human Behavior*, 26, 741–752. doi:10.1016/j.chb.2010.01.011
- Choy, S., McNickle, C., & Clayton, B. (2002). *Learner expectations and experiences: An examination of student views of support in online learning*. Adelaide: National Centre for Vocational Education Research.
- Clark, T. (2008). Online learning: Pure potential. *Educational Leadership*, 65(8), 1–6. Retrieved from <http://www.ascd.org>
- Coccea, M., & Weibelzahl, S. (2006). Motivation – Included or excluded from e-learning. In Kinshuk D. G. Sampson, J. M. Spector, & P. Isaias (Eds.), *International Conference on*

- Cognition and Exploratory Learning in Digital Age. CELDA 2006* (pp. 435–437). Lisbon: IADIS.
- Coppola, N. W., Hiltz, S. R., & Rotter, N. G. (2004). Building trust in virtual teams. *IEEE Transactions on Professional Communication*, 47, 95–104. doi:10.1109/TPC.2004.828203
- D'Amico, J. J., Matthes, W., Sankar, A., Merchant, B., & Zurita, M. (1996). Young voices from the rural Midwest. *Journal of Research in Rural Education*, 12, 142–149. Retrieved from <http://jrre.vhost.psu.edu/>
- Davis, N. E., & Roblyer, M. D. (2005). Preparing teachers for the “schools that technology built”: Evaluation of a program to train teachers for virtual schooling. *Journal of Research on Technology in Education*, 37, 399–409. doi:10.1080/15391523.2005.10782445
- Davis, N., Roblyer, M. D., Charania, A., Ferdig, R., Harms, C., Compton, L. K. L., & Cho, M. O. (2007). Illustrating the “virtual” in virtual schooling: Challenges and strategies for creating real tools to prepare virtual teachers. *The Internet and Higher Education*, 10, 27–39. doi:10.1016/j.iheduc.2006.11.001
- de la Varre, C., Keane, J., & Irvin, M. J. (2010). Enhancing online distance education in small rural US schools: A hybrid, learner-centred model. *ALT-J*, 18, 193–205. doi:10.1080/09687769.2010.529109
- de la Varre, C., Keane, J., & Irvin, M. J. (2011). Dual perspectives on the contribution of on-site facilitators to teaching presence in a blended learning environment. *The Journal of Distance Education/Revue de l'Éducation à Distance*, 25(3). Retrieved from <http://www.ijede.ca/index.php/jde>
- de la Varre, C., Keane, J., Irvin, M. J., & Hannum, W. H. (2009). Social support for online learning. In B. Whitworth & A. de Moor (Eds.), *Handbook of research on socio-technical design and social networking systems* (pp. 574–587). Hershey, PA: IGI Global.
- DiPietro, M., Ferdig, R. E., Black, E. W., & Preston, M. (2008). Best practices in teaching K–12 online: Lessons learned from Michigan virtual school teachers. *Journal of Interactive Online Learning*, 7, 10–35. Retrieved from <http://www.ncolr.org/>
- Dupin-Bryant, P. A. (2004). Pre-entry variables related to retention in online distance education. *American Journal of Distance Education*, 18, 199–206. doi:10.1207/s15389286ajde1804\_2
- Gibson, C. C. (1996). Toward an understanding of academic self-concept in distance education. *American Journal of Distance Education*, 10, 23–36. doi:10.1080/08923649609526907
- Gilbert, L., & Moore, D. R. (1998). Building interactivity into web courses: Tools for social and instructional interaction. *Educational Technology*, 38, 29–35. Retrieved from <http://asianvu.com/bookstoread/etp/>
- Glass, G. V., & Welner, K. G. (2011). *Online K–12 schooling in the US: Uncertain private ventures in need of regulation*. Boulder, CO: National Education Policy Center.
- Hannum, W. H., Irvin, M. J., Banks, J. B., & Farmer, T. W. (2009). Distance education use in rural schools. *Journal of Research in Rural Education*, 24(3), 1–15. Retrieved from <http://jrre.vhost.psu.edu/>
- Hannum, W. H., & McCombs, B. L. (2008). Enhancing distance learning for today's youth with learner-centered principles. *Educational Technology*, 48, 11–21. Retrieved from <http://asianvu.com/bookstoread/etp/>
- Hara, N., & Kling, R. (1999). Student's frustrations with a Web-based distance education course. *First Monday*, 4(12). Retrieved from <http://www.firstmonday.org>
- Harms, C. M., Niederhauser, D. S., Davis, N. E., Roblyer, M. D., & Gilbert, S. B. (2006). Educating educators for virtual schooling: Communicating roles and responsibilities. *Electronic Journal of Communication*, 16(1–2). Retrieved from <http://www.cios.org/www/ejcmmain.htm>
- Haughey, M., & Muirhead, W. (1999). *On-line learning: Best practices for Alberta school jurisdictions*. Edmonton: Government of Alberta.
- Herzog, M. J., & Pittman, R. B. (1995). Home, family, and community: Ingredients in the rural education equation. *Phi Delta Kappan*, 77, 113–118. Retrieved from <http://www.pdkintl.org/kappan/kappan.htm>

- Hobbs, V. (2004). *The promise and the power of online learning in rural education*. Arlington, VA: Rural School and Community Trust.
- Huett, J. B., Kalinowski, K. E., Moller, L., & Huett, K. C. (2008). Improving the motivation and retention of online students through the use of ARCS-based e-mails. *American Journal of Distance Education*, 22, 159–176. doi:10.1080/08923640802224451
- Irvin, M. J., Hannum, W. H., Farmer, T. W., de la Varre, C., & Keane, J. (2009). Supporting online learning for advanced placement students in small rural schools: Conceptual foundations and intervention components of the facilitator preparation program. *The Rural Educator*, 31, 29–36. Retrieved from <http://www.ruraleducator.net>
- Irvin, M., Meece, J., Byun, S., Farmer, T., & Hutchins, B. (2011). Relationship of school context to rural youth's educational achievement and aspirations. *Journal of Youth and Adolescence*, 40, 1225–1242. doi:10.1007/s10964-011-9628-8
- Jennings, N., Swidler, S., & Koliba, C. (2005). Place-based education in the standards-based reform era—Conflict or complement? *American Journal of Education*, 112, 44–65. doi:10.1086/444522
- Jimerson, L. (2006). *Breaking the fall: Cushioning the impact of rural declining enrollment*. Arlington, VA: The Rural School and Community Trust.
- Keller, J. M. (1999). Using the ARCS motivational process in computer-based instruction and distance education. *New Directions for Teaching and Learning: Motivation from within: Approaches for Encouraging Faculty and Students to Excel*, 78, 39–47.
- Krippendorff, K. (2004). *Content analysis* (2nd ed.). Thousand Oaks, CA: Sage.
- Land, D., Nwadei, A., Stufflebeam, S., & Olaka, C. (2003). Socio-technical system advancements: Making distance learning changes that count. *USDLA Journal*, 17, 28–37. Retrieved from [http://www.usdla.org/USDLA\\_Online\\_Journal\\_1999\\_2003\\_s/1907.htm](http://www.usdla.org/USDLA_Online_Journal_1999_2003_s/1907.htm)
- Levy, Y. (2007). Comparing dropouts and persistence in e-learning courses. *Computers & Education*, 48, 185–204. doi:10.1016/j.compedu.2004.12.004
- Lim, C. K. (2001). Computer self-efficacy, academic self-concept, and other predictors of satisfaction and future participation of adult distance learners. *American Journal of Distance Education*, 15, 41–51. doi:10.1080/08923640109527083
- Lin, Y. M., Lin, G. Y., & Laffey, J. M. (2008). Building a social and motivational framework for understanding satisfaction in online learning. *Journal of Educational Computing Research*, 38(1), 1–27. doi:10.2190/EC.38.1.a
- Lyson, T. A. (2002). What does a school mean to a community? Assessing the social and economic benefits of schools to rural villages in New York. *Journal of Research in Rural Education*, 17, 131–137. Retrieved from <http://jrre.vmhost.psu.edu>
- Monk, D. H. (2007). Recruiting and retaining high-quality teachers in rural areas. *The Future of Children*, 17, 155–174. Retrieved from <http://futureofchildren.org/futureofchildren/publications/journals/>
- Moore, M. G. (1993). Theory of transactional distance. In D. Keegan (Ed.), *Theoretical principles of distance education* (pp. 22–38). New York, NY: Routledge.
- Moore, M. G., & Kearsley, G. (1996). *Distance education: A systems view*. Belmont, CA: Wadsworth.
- Morris, L. V., Wu, S. S., & Finnegan, C. L. (2005). Predicting retention in online general education courses. *American Journal of Distance Education*, 19, 23–36. doi:10.1207/s15389286ajde1901\_3
- Nash, R. D. (2005). Course completion rates among distance learners: Identifying possible methods to improve retention. *Online Journal of Distance Learning Administration*, 8(4). Retrieved from <http://www.westga.edu/~distance/ojdla>
- Oblender, T. E. (2002). A hybrid course model. *Learning & leading with technology*, 29, 42. Retrieved from <http://www.learningandleading-digital.com/learningandleading>
- Osborn, V. (2001). Identifying at-risk students in videoconferencing and web-based distance education. *American Journal of Distance Education*, 15, 41–54. doi:10.1080/08923640109527073
- Parker, A. (1999). A study of variables that predict dropout from distance education. *International Journal of Educational Technology*, 1(2), 1–10. Retrieved from <http://education.illinois.edu/ijet/>
- Patton, M. Q. (2002). *Qualitative research and evaluation methods*. Thousand Oaks, CA: Sage.

- Rice, K. L. (2006). A comprehensive look at distance education in the K–12 context. *Journal of Research on Technology in Education*, 38, 425–448.
- Roach, V., & Lemasters, L. (2006). Satisfaction with online learning: A comparative descriptive study. *Journal of Interactive Online Learning*, 5, 317–332.
- Roblyer, M. D. (2003). Virtual high schools in the United States: Current views, future visions. In J. Bradley (Ed.), *The open classroom: Distance learning in and out of schools* (pp. 159–170). London: Kogan Page.
- Roblyer, M. D. (2006). Virtually successful: Defeating the dropout problem through online school programs. *Phi Delta Kappan*, 88, 31–36. Retrieved from <http://www.pdkintl.org/kappan/kappan.htm>
- Roblyer, M. D., Davis, L., Mills, S., Marshall, J., & Pape, L. (2008). Toward practical procedures for predicting and promoting success in virtual school students. *American Journal of Distance Education*, 22, 90–109. doi:10.1080/08923640802039040
- Roblyer, M. D., Freeman, J., Stabler, M., & Schneidmiller, J. (2007). *External evaluation of the Alabama ACCESS Initiative: Phase 3 report*. Eugene, OR: International Society for Technology in Education.
- Roblyer, M. D., & Marshall, J. C. (2002). Predicting success of virtual high school distance learners: Preliminary results from an educational success prediction instrument (ESPRI). *Journal of Research on Technology in Education*, 35, 241–255. doi:10.1080/15391523.2002.10782384
- Rourke, L., Anderson, T., Garrison, D. R., & Archer, W. (1999). Assessing social presence in asynchronous text-based computer conferencing. *Journal of Distance Education*, 14, 50–71. Retrieved from <http://www.ijede.ca/index.php/jde>
- Rovai, A. P. (2000). Building and sustaining community in asynchronous learning networks. *The Internet and Higher Education*, 3, 285–297. doi:10.1016/S1096-7516(01)00037-9
- Rovai, A. P. (2002). Sense of community, perceived cognitive learning, and persistence in asynchronous learning networks. *The Internet and Higher Education*, 5, 319–332. doi:10.1016/S1096-7516(02)00130-6
- Schafft, K. A., Alter, T. R., & Bridger, J. C. (2006). Bringing the community along: A case study of a school district's information technology rural development initiative. *Journal of Research in Rural Education*, 21(8), 1–10. Retrieved from <http://jrre.vhost.psu.edu>
- Schrire, S. (2006). Knowledge building in asynchronous discussion groups: Going beyond quantitative analysis. *Computers & Education*, 46, 49–70. doi:10.1016/j.compedu.2005.04.006
- Seal, K. R., & Harmon, H. L. (1995). Realities of Rural School Reform. *Phi Delta Kappan*, 77, 119–124. Retrieved from <http://www.pdkintl.org/kappan/kappan.htm>
- Setzer, J. C., & Lewis, L. (2005). *Distance education courses for public elementary and secondary school students: 2002–2003 (NCES 2005-010)*. Washington, DC: National Center for Educational Statistics, US Department of Education.
- Shea, P. (2006). A study of students' sense of learning community in online environments. *Journal of Asynchronous Learning Networks*, 10, 35–44. Retrieved from <http://jaln.sloanconsortium.org/index.php/jaln>
- Simpson, O. (2004). The impact on retention of interventions to support distance learning students. *Open Learning*, 19, 79–95. doi:10.1080/0268051042000177863
- Smith, R., Clark, T., & Blomeyer, R. L. (2005). *A synthesis of new research on K–12 online learning*. Naperville, IL: Learning Point Associates.
- Stacey, E., & Gerbic, P. (2008). Success factors for blended learning. In *Proceedings ascilite Melbourne 2008* (pp. 964–968). Retrieved from <http://www.ascilite.org.au/conferences/melbourne08/procs/stacey.pdf>
- Stover, C. (2005). Measuring-and understanding-student retention. *Distance Education Report*, 9(16), 1–7. Retrieved from <http://www.magnapubs.com/catalog/distance-education-report-newsletter/>
- Susman, E. B. (1998). Cooperative learning: A review of factors that increase the effectiveness of cooperative computer-based instruction. *Journal of Educational Computing Research*, 18, 303–322. doi:10.2190/2MMX-R2R9-KMCT-NCR3
- Tallent-Runnels, M. K., Thomas, J. A., Lan, W. Y., Cooper, S., Ahern, T. C., Shaw, S. M., & Liu, X. (2006). Teaching courses online: A review of the research. *Review of Educational Research*, 76, 93–135. doi:10.3102/00346543076001093

- Thurmond, V. A., Wambach, K., Connors, H. R., & Frey, B. B. (2002). Evaluation of student satisfaction: Determining the impact of a web-based environment by controlling for student characteristics. *American Journal of Distance Education, 16*, 169–190. doi:10.1207/S15389286AJDE1603\_4
- U.S. Department of Education. (2007). *Innovations in education: Connecting students to advanced courses online*. Washington, DC: Author. Retrieved from <http://www2.ed.gov/admins/lead/academic/advanced/index.html>
- Wang, A. Y., & Newlin, M. H. (2000). Characteristics of students who enroll and succeed in psychology Web-based classes. *Journal of Educational Psychology, 92*, 137. doi:10.1037/0022-0663.92.1.137
- Watson, J., & Ryan, J. (2007). *Keeping pace with online learning 2007*. Evergreen, CO: Evergreen Consulting Associates.
- Wojciechowski, A., & Palmer, L. B. (2005). Individual student characteristics: Can any be predictors of success in online classes? *Online Journal of Distance Learning Administration, 8*(2). Retrieved from <http://www.westga.edu/~distance/ojdla/>