PAPER 4

Learner-centered social support: enhancing online distance education for underserved rural high school students in the United States

Authors
Julie Keane, MA
Claire de la Varre, MSIS
Matthew J. Irvin, PhD
Wallace Hannum, PhD

Address for correspondence
National Research Center on Rural Education Support
University of North Carolina at Chapel Hill
Carr Mill Mall, Suite C-4
North Carolina 27599-1136
jkeane@email.unc.edu
claire_delavarre@unc.edu
mirvin@email.unc.edu
hannum@unc.edu

Abstract

Over the past decade, federal programs in the United States have largely addressed the well-documented problem of differences in basic access to technology between rural schools and their suburban and urban counterparts. Consequently, rural schools are better able to prepare their students for post-secondary education and the workplace where digital literacy is essential. As technology access improves, online distance education (ODE) is seen as a solution to significant challenges faced by rural schools, including a lack of highly-qualified teachers and declining population. However, ODE has high attrition rates, partly because participants' social needs are often neglected. Additionally, students' success depends on their abilities to engage in self-regulated learning, effective time-management and self-reflection, skills that many high school students are still developing. This paper describes an experimental research study funded by the U.S. Department of Education, currently underway in rural high schools across the U.S. The research adds to a growing body of work that attempts to expand understanding of the digital divide. Increasingly, schools realise that this is no longer an issue of mere access to equipment; education technology projects should incorporate strategies that ensure the success of previously marginalised communities. Our intervention, based on the APA's Learner-Centered Principles, involves training on-site facilitators to provide social support for students involved in ODE. Preliminary findings indicate that the intervention group has a significantly lower dropout rate.

Introduction

Rural schools make up 30% of all schools in the United States and educate approximately one in five of all school-aged children (National Center for Education Statistics, 2007). Frequently, rural secondary schools are small, with over 50% enrolling fewer than 400 students (Hobbs, 2004). Many of these schools face challenges resulting from their size and geographic isolation including a lack of highly-qualified teachers, limited curriculum offerings, reduced funding and threats of consolidation. These challenges are compounded by dramatic economic changes facing the rural communities in which they are located,

resulting in shrinking populations due to the loss of economic opportunity (Schaft, Alther & Bridger, 2006). Rural high schools play a vital part in their communities. Thus, rural communities are reluctant to endorse school consolidation as a response to these educational challenges.

Until recently, the digital divide described disparities in access to equipment between rural schools and their suburban and urban counterparts, with lack of infrastructure being a serious impediment to the use of technology. Over the past decade, federal programs such as the E-Rate[1] have largely addressed differences in basic access to technology (Hobbs, 2004) and increasingly, rural schools are embracing the Internet and other emerging technologies. However, in order to adequately bridge the digital divide it is also important to address how underserved communities can make the most effective use of these technologies.

Online distance education (ODE)[2] is a medium through which rural students can interact with master teachers, and access specialised courses and comprehensive, flexible learning opportunities that may not be otherwise available (Simonson, Smaldino, Albright, & Zvacek, 2006). Because ODE in rural schools is seen as a vehicle to address a lack of educational opportunity, it is important to support all types of learners. Given the number of students who are educated in rural communities and the increasing use of ODE, more attention needs to be focused on ways to enhance the effectiveness of ODE in rural schools and improve academic outcomes. Our research attempts to broaden the understanding of the digital divide beyond simple access to technology to include strategies that can ensure the success of previously marginalised communities (Nudell, Ba, Tally & Culp, 2005).

This paper describes the rationale behind the design and implementation of an intervention currently underway in rural high schools as part of a national research study funded by the U.S. Department of Education. The intervention provides this underserved population with the social support necessary for success in an online course, essentially enhancing the online component with a local, blended learning environment. This paper details the three key components of our intervention, including the role of the on-site facilitator and the nature and importance of the student-facilitator relationship, the creation of a virtual community of facilitators, and the provision of social support for students. Facilitators were instructed in ways to create a collaborative learning environment in the physical classroom in which interpersonal interactions were encouraged. This environment supports students as they develop and use a range of cognitive and metacognitive practices and strategies that will benefit them in both virtual and face-to-face learning experiences. Our research aims to determine the ways in which facilitator practices affect student success in the ODE environment.

Background

Even before No Child Left Behind (NCLB) was enacted in 2001, many rural schools were struggling to staff courses. With NCLB, schools faced increased requirements to attract and retain highly qualified teachers. Numerous rural schools reported difficulty recruiting and retaining teachers, due to a combination of low salaries, high turnover rates, low student achievement, and the isolated location of rural school districts (Schwartzbeck, Prince, Redfield, Morris, & Hammer, 2003). These threats to teacher retention restrict the type, number, and quality of courses that can be offered, particularly Advanced Placement (AP) and enrichment courses. Circumstances are particularly difficult for small rural schools,

[1] E-Rate is a federal program that has been funding under-resourced American schools since 1996.

[2] Not all online learning is at a distance, and not all distance education occurs online (Rice, 2006). Throughout, we refer specifically to online distance education (ODE): online learning for students who are geographically dispersed.

which rely on teachers with multiple assignments who do not necessarily have specific content certification (Schwartzbeck et al., 2003).

Two solutions have been proposed to help address these challenges: school consolidation and ODE (Jimerson, 2006; Schwartzbeck, et al., 2003). Consolidation proponents advocate combining rural schools to form large regional schools (Belcastro, 2002; Loveless, 2003). These larger schools could offer more classes and opportunities for students. However, several studies have documented negative consequences of consolidation including students being forced to travel long distances, a decline in sense of community, a lack of connection to consolidated schools, and schools not aligning with local community values (Tompkins, 2003). School closures can also have a negative impact on local economies and can accelerate depopulation. To address these challenges to providing student access to highly qualified teachers, rural schools have turned to ODE for courses that would otherwise not be available. In 2005, the National Research Center on Rural Education Support (NRCRES) conducted the first national survey of ODE to focus exclusively on rural school districts (Hannum, 2006). The majority of the participating districts (85%) had used online learning at some point, and 69% of districts were using ODE at the time of the survey. Barriers to ODE included lack of instructional support, problems finding courses, implementation difficulties, lack of strategic planning, and lack of trained personnel.

An additional consideration for rural schools is that ODE courses are not necessarily cognisant of the local environment of the individual schools (Dingle, Napp, Gooch, & Kelly, 2000). Therefore, to ensure that students persist and succeed in ODE courses, support strategies employed in rural schools should be informed by the local factors that affect student learning and the contexts within which the students interact. Many virtual high schools rely on the teacher-facilitator model that assigns an on-site facilitator to operate equipment, distribute instructional materials, and answer questions. The role of the on-site facilitator in some of these high schools is also to help students develop competence in the domains that will be important for future success. The professional background of facilitators varies from one school to another. Kirby and Driscoll (1997) found that the facilitator was the person the students went to for help or guidance, and to keep them focused and on task, regardless of whether the facilitator had expertise in the content. Other studies found that student participation was increased by the involvement of the on-site facilitator: when facilitators were not present, students participated less and had higher rates of attrition (Frid, 2001, cited in Rice, 2006).

Literature review

Hundreds of media comparison studies report similar findings indicating that the differences between face-to-face courses and ODE courses are small or negligible (Bernard, Abrami, Lou, Borokhovski, Wade, Wozney, et al., 2004). However, incidents of student isolation and higher dropout rates in ODE courses are frequent. Students in ODE need to be self-regulated, to work independently, and to use effective time management strategies as well as high levels of self-direction and intrinsic motivation (Parker, 2003). Research suggests that successful online learning experiences and increasing familiarity with ODE can facilitate the development of internality (Liu, Lavelle, and Andris, 2002). Participants who succeed in postsecondary online courses are better than average at time-management and balancing school and personal commitments, have higher rates of intrinsic motivation, and are experienced in writing and information searching (Land, D., Nwadei, A., Stufflebeam, S., & Olaka, C., 2003). In high school, however, many students are still learning, or are struggling with, such skills. Students in rural communities are more accustomed to intimate educational settings and may require more social supports than their urban and suburban counterparts when taking ODE courses (Hobbs, 2004). The lack of visual cues between students and teacher, and the often asynchronous nature of classes, may lead to students' perceptions of isolation and lack of support.

The predominant focus of ODE research continues to be at the university level and typically neglects the impact of different geographic regions (urban, suburban, or rural) or populations. While ODE research in K-12 schools is increasing, less research conducted on this age group means that less is known about the effectiveness of ODE in high schools and the variables that influence it. When research is conducted on K-12 online learning, it often does not examine the local social context in which the learning happens. Social support for online learning may be more important for younger adolescent students, who are most vulnerable to isolation and lack of social interaction. These factors are considered to be the cause of the high drop-out rate in ODE courses, which is close to 50% in some instances (Simpson, 2004; Zweig, 2003; cited in Rice, 2006). Thus, we decided to develop an intervention designed to address the social issues around ODE, using a robust theoretical framework.

Theoretical framework

In 1997, the American Psychological Association (APA) developed a set of 14 learner-centered principles (LCPs) intended to guide educational reform at all levels and informed by different research perspectives (APA Work Group of the Board of Education Affairs, 1997). The evidence on the effectiveness of these learner-centered principles in classrooms has been widely documented (McCombs & Miller, 2007). This theoretical framework has recently been applied to distance education approaches to learning (McCombs & Vakili, 2005). LCPs indicate that learning is social in nature and that social interactions are a key element in learning. LCPs also outline other factors critical for learning, focusing on four research-validated domains, which can be summarised as follows:

1 The *cognitive and metacognitive domain* refers to thought processes involved in learning, including self-reflection.
2 The *motivational and affective domain* refers to effort and engagement while learning, affective and emotional factors, and the beliefs and interests that directly influence learning.
3 The *developmental and social domain* refers to the previous experiences of students and their learning readiness (i.e., developmental factors) as well as interpersonal relations between and among students and teachers (i.e., social factors) that affect current learning.
4 The *individual differences domain* refers to the differences between and within students that influence learning. Students have different strategies and skills for learning based on their backgrounds and prior learning experiences.

While much research focuses on motivation or individual characteristics as the factors that are most important for student success, McCombs' and other researchers have determined that it is the interpersonal connections and group dynamics that will foster success in a face-to-face environment. They suggest that this is also true for online environments (McCombs & Vakili, 2005). These findings confirm extensive educational research that points to the centrality of the student-teacher relationship (Deci & Ryan, 1991; Pianta and Stuhlman, 2004, cited in McCombs, 2007). Creating an environment that supports both the online and offline interaction is seen as a vital contributor to success: "focusing on building collaboration and group interaction may be more important than focusing on individual participation" (Simonson, 2006: cited in Rice, pg. 440). Thus we believe that an approach that incorporates LCPs and blends the social and the technological, is likely to improve student outcomes in ODE courses and allow rural students to succeed in the ODE environment.

Method

Pilot study

A pilot study in 2006/2007, with 40 rural high schools, qualitatively confirmed the importance of the facilitator role as being critical in supporting students, particularly when online instructors were unavailable to students, or in some cases insensitive to their needs. Facilitators were crucial in preventing drop-out, student frustration and failure. Successful online learning experiences were often due to the facilitators' abilities to establish good relationships with their students. Additionally, the pilot was instructive about the unique contextual factors in rural schools that have to be addressed such as school closings for reasons ranging from the potato harvest, to extreme weather and technology failure. Due to their size and relative isolation, small rural schools are typically located in and an integral part of tight-knit communities. Facilitators not only knew the students very well but their families too, so the strategies that these facilitators used with their students informed our expanded intervention design. Through recruitment for the pilot, we realised that schools with fewer than 50 students did not have the demand for AP courses while large rural schools, such as those in the south-eastern US, with more than 600 students, had the staff and resources to provide such courses themselves, or had existing arrangements with local colleges.

Study design

Based on our experiences with the pilot, a larger study funded by the U.S. Department of Education, is being implemented over a two-year period, with 112 schools and over 500 students participating. This is a randomised, controlled, cluster design with two cohorts, 2007/2008 and 2008/2009. Students in small, rural schools geographically dispersed across the United States are taking a year-long online class in AP English Composition and Literature. This is a chance for students to be exposed to college-level curriculum and earn college credit while still in high school. Due to the rigorous content of AP classes, our recruitment guidelines were that students selected for the course should be college-bound, and probably the most academically-capable students in the school. Final recruitment decisions rested with school administrators who, in some cases, recommended students who were juniors (they have still one more year of high school after this year). The unit of analysis is the individual school, and therefore participating schools were randomly assigned to either the intervention or control group, with the intervention group facilitators being trained in LCPs. After assignment, sections of the online course were created to include up to four schools, with a total of 20–25 students per section from several geographically-dispersed schools. Each course section forms a discrete, virtual classroom (see *Figure 1*). There are two online instructors, each teaching a number of sections. Schools within each treatment group are randomly distributed across instructors, with instructors blind to the assignment of schools. To prevent contamination, each section is either all-control students or all-intervention students and peer interactions are limited to students within the same section. While students are assigned a specific class period each day where they collectively complete that day's assignment, the class is asynchronous because the online instructor may respond to students, via the online course interface, anytime within a 24-hour period.

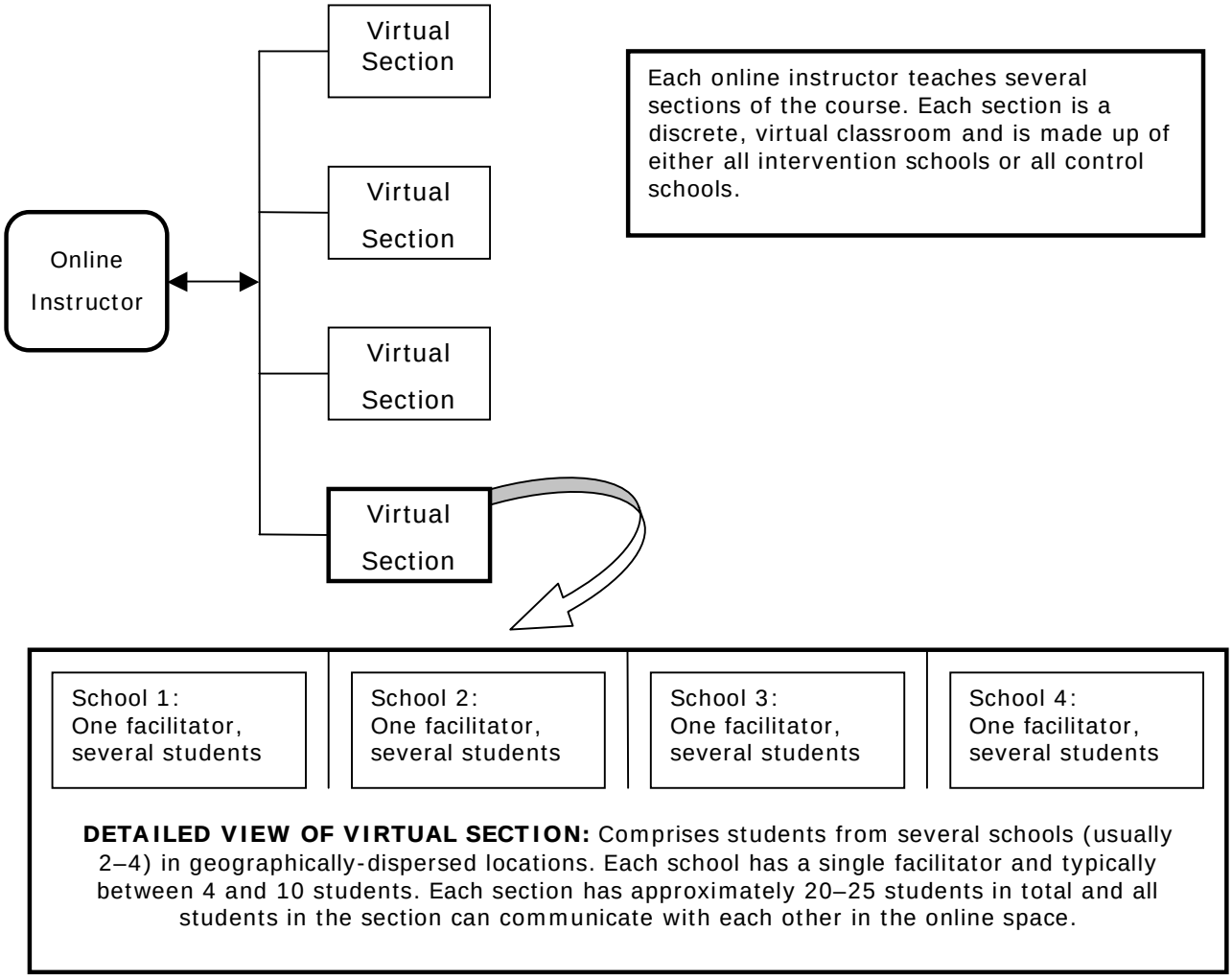

Figure 1 Organisation of course sections and detailed view of section.

Our course is provided by LearnNC, a North Carolina-based organisation that offers instructional technology resources for teachers. LearnNC uses an off-the-shelf content management system to deliver course content, host discussion forums and support administrative functions. LearnNC developed the teacher-facilitator model delivery model that we employ in this study, which is complex and includes multiple layers of interaction, both on and offline. These include interactions between students in both physical and virtual classrooms, between facilitators and their students, among facilitators in their online community, and between facilitators and the online instructor.

Key components of the intervention

A key component of our intervention is the role of the on-site facilitator. There is one facilitator and one class of students per school. The facilitator is present when the students take the class each day. The facilitator supports the students in their online interactions with peers and the online instructor as well as with peers in the physical environment. Our facilitators play a role that is separate but complementary to that of the online course instructor although the aim is still to help students progress from dependence to independence (Land et al., 2003). In this study, the facilitators do not deliver or teach the content, and aside from encouraging students to interact with their online peers, they do not attend to online interactions that are part of the course. Instead, the facilitator's role is to support learners by addressing their immediate needs in the physical environment. They

encourage interaction, face-to-face discussion, and self-reflection within the group. The theoretical and practical knowledge-base for this support is provided by LCPs.

Creation of an online community of facilitators

The facilitator role was new to the majority of study participants, so it was vital to aid them in familiarising themselves with the requirements of that position. Drawing from LCPs, we treated the intervention group facilitators as another group of new online learners and designed an online training module that emphasised the creation of a community of facilitators. This allowed facilitators to become familiar with the online environment and the technology that their students would be using, and to enable them to get to know the other facilitators around the country. This was meant to counteract any feelings of isolation, as well as giving facilitators a resource for the exchange of advice, strategies and information.

Facilitator discussion

The facilitators used their online community to discuss what they had learned about LCPs and their application via several online discussion boards. They were encouraged to share anecdotes from their own teaching or other school-related experiences with their fellow facilitators. Almost all facilitators responded to the first few scenarios, typically posting a single comment. With the later scenarios, participation rates dropped to approximately 50%, a core community of facilitators, who repeatedly posted back-and-forth to each other. As the academic year progressed, participation by most facilitators was only occasional.

Student learning experiences

Both intervention and control students are required to engage in interactions with other students in their section and the online instructor through instructors' assignments and the design of the online course. The also have the opportunity to engage in social exchanges online via discussion boards and email. Complementing these online interactions are the interactions in the physical classroom. Students spend a class period each day with their facilitator and peers in the school. Intervention facilitators have been trained to create a positive, interpersonal climate and have been given materials with numerous strategies to support student learning, including collaborative exercises and encouraging students to engage in discussion offline as well.

Intervention content

Our intervention was designed to train facilitators to become learner-centered in their perspectives and the practices they use to support their students as they complete the online course. We sought to enhance the close existing relationships that were already in place between school facilitators and students while addressing the complicated interactions in this blended learning environment. Each facilitator was given access to an online discussion forum through which they were presented with a number of scenarios illustrating issues that their students might face. The scenarios featured four typical high school students and their on-site facilitator, Pat. Beth, the high-achieving student, is highly motivated to take the online course, is college bound and is one of the top students in her school. Curtis is smart but a procrastinator who expends the minimum amount of effort he needs to succeed in class. Linda is a reluctant class participant who is capable but has low self-efficacy, and was volunteered for the class by the principal. Finally, Daniel is a student who moved to the small rural school from Chicago, has unrealistically high expectations about himself and believes he is academically superior.

The facilitators in the intervention group were first given some online ice-breaking activities to encourage them to post personal information and get to know their fellow facilitators. Next, online scenarios were provided to them over a period of several weeks and were

delivered in a multiple media format that included text, audio clips, images and suggestions for in-class activities. Each scenario featured one or more students with a problem to which the model facilitator, Pat, responded with appropriate and exemplary responses that incorporated LCPs. The facilitators were encouraged to discuss each scenario, offer examples from their own experiences and make suggestions as to what they might have done differently. The intervention aimed to encourage the formation on an online learning community of facilitators, where each member could go for advice and support and in turn advise and support their peers. Our control facilitators were provided with an online discussion forum, but no scenarios or information about LCPs.

Evaluation

Our research is a large national study spanning two academic years. It employs a rigorous, randomised, controlled experimental design. We are looking at various outcomes that include both formative and summative assessments: grades, AP exams, attendance, online participation and engagement, and retention. Dropout is defined as any student that dropped the course after it began. Through periodic surveys we measured latent concepts such as student self-efficacy, effort avoidance strategies, active learning strategies, curiosity in learning situations, task mastery goals, performance oriented and work avoidance goals. Facilitators report on their own learner-centered practices twice during the academic year. Students also give their perceptions of their facilitator's classroom practices. The facilitator self-assessments are then compared to the assessments from their students. These findings are shared with facilitators through telephone interviews with project staff. This feedback is intended to help facilitators identify the areas where their students might be struggling and become more self-reflective practitioners. Facilitators are encouraged to revisit their materials on LCPs and learning strategies in order to address any issues that have arisen. The feedback from students has been aggregated and compared to the facilitator's own perceptions. All surveys have been implemented and data analysis is currently underway; findings will be presented at the conference.

Contribution

This study makes a much-needed contribution to the field by experimenting with applying the LCPs, which are research-validated in traditional classrooms, to the unique context of ODE for populations that are woefully under-researched. The study involves over 100 schools in multiple states and encompasses diverse geographic and a sample that is representative of rural populations around the U.S.

Conclusion

Preliminary findings suggest a higher student retention rate in the treatment group. At the mid-year point of the first year, control-group schools have dropped out at a greater rate (44%) than intervention-group schools (11%) while the dropout rate for individual students in the control group (57%) is almost twice that of the intervention group (33%). This suggests that when control-group students drop out it is more frequently in the context of the whole school dropping out, whereas when intervention-group students drop it is more likely that at least some of their peers will continue with the course. In addition, the majority of students in the control group dropped in the first month of the course, which indicates that the facilitator training scenarios that encourage the development of a supportive community right at the beginning of the school year might increase student persistence. There may also be differences *within* treatment groups that are related to participation in the online community, engagement with students, and how much they have incorporated the LCP training into their facilitation practices, but this level of analysis will only be possible with the completion of the two-year study.

The main issues that have arisen thus far are the rigorous content and high standards associated with Advanced Placement courses. Students in small rural schools generally are not used to working at this level and typically have not taken ODE courses before. Additionally, facilitators are trying to support students who expect to receive high grades and are accustomed to being the best students in their school. Facilitators need strategies that enhance their students' self-regulated learning abilities and foster an intrinsic orientation in their students. Such skills are essential in preparing students for post-secondary education, particularly for our sample of rural students who live in small communities and are educated in intimate settings. Often, the important findings from research looking at social support for learning fail to be applied in the real world; it is even more difficult to integrate such findings into ODE practices because of the lack of consideration of the social context in which students are embedded. Too often, the design of ODE courses is all about the technology, and does not consider the needs of the learner. Our training scenarios attempted to provide an effective method for facilitators to incorporate and apply LCPs in this complex, learning environment that blends both the social and technological aspects of learning. By expanding and enhancing the teacher-facilitator model we are attending to the interpersonal relationships and providing the learning strategies that can be most effective in promoting student success. The student and school dropout pattern indicates that focusing on social factors in the physical classroom, supporting online interaction and participation, and sharing strategies that foster internality may contribute to rural students' persistence and success in ODE. Access to technology is only the first step in bridging the digital divide. It is equally important to support marginalised communities in their use of technology to further their economic and educational opportunities.

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