INCORPORATING LEARNING COMMUNITIES INTO HYBRID DEVELOPMENTAL MATH COURSES AT TECHNICAL COLLEGES

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Abstract

INCORPORATING LEARNING COMMUNITIES
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This research examined hybrid courses and learning communities within the context of adult developmental math courses. As community colleges integrated technology into learning and communication systems more frequently, students experienced a reduction in face-to-face time with faculty and classmates. Feeling part of a community for academic and moral support remained a vital need for adult developmental math students.

Using the review of literature as a guide, recommendations were developed to aid in the merging of face-to-face and online community support. At the time of this study at Madison Area Technical College, the developmental math faculty was considering options for redesigning the program. A hybrid format was one consideration, although there was concern about loss of personal contact. The ideas presented would be considered in the redesign plan.

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Chapter One: Introduction

Imagine entering community college very motivated with the goal of earning a degree for a more fulfilling and financially supportive career. After completing an assessment at orientation, the student's math placement is into a developmental course. The path to being prepared for a college-level math course will be a year or longer, so the two years slated to earn a degree is now three years or more. For many students placing at the developmental level was a mortifying and overwhelming experience. They felt as though they were alone in their struggle with math.

Developmental math students often felt discouraged and apprehensive, so creating a learning environment where students felt comfortable with the instructor and their classmates was vital. In the experience of the researcher, when individuals discovered that they were not alone, that within the developmental math class many others were "in the same boat," they realized that this class was a positive place and students supported each other. A learning community was born.

With the evolution to incorporate more technology into all levels of education and reduce the time spent in traditional face-to-face classes, this challenge was identified. How could the sense of community be built and maintained for an optimal learning environment? Such an environment would be one in which students could ask questions, hear questions of others, and benefit from classmates' explanations in addition to the instructor's teaching of the content. The learning community just described would be accepting and supportive to all.

Students in a hybrid course would have a much different experience. At the time of this study, hybrid courses were delivered using a method that combined traditional face-to-face teaching with innovative online learning methods. The ratio of traditional classroom instruction

to online instructional methods varied among hybrid courses. Hybrid learning communities had a traditional component and an online component.

Online learning communities existed for almost any professional or personal interest an individual might have. They were "places" where members gathered, met with others with similar interests or issues, were able to ask and answer questions, learned new concepts in a variety of formats, shared knowledge, and had some fun. One of the unique features of online learning communities was the complete flexibility as to when, where, and how the learner would engage and participate within the community.

A hybrid learning community would take advantage of the traditional classroom time to initially build the community in a face-to-face setting, but it would be essential that it have a strong online component as well. Even though the students were not physically together for as much time, the opportunity to be engaged in the hybrid learning community of the developmental class at any time would allow for more freedom and access. It could be a very important strategy to increase student success at a time that promoted less face-to-face contact and more use of technology.

Statement of the Problem

Students in hybrid developmental math courses had less face-to-face time with the instructor and classmates, so they would need other avenues to build and maintain important cooperative learning relationships. How could learning communities be incorporated into hybrid developmental math courses to increase a sense of community and success in the course?

Delimitations of Research

The references used for the review of literature were collected over a period of 60 days using the resources of the Karmann Library at the University of Wisconsin–Platteville. Primary searches were conducted via the Internet through EBSCO host with ERIC and Academic Search Elite as the primary sources. Key search terms included "adult education," "learning communities," "blended learning," "developmental," and "remedial."

Method of Approach

A brief overview of literature on developmental mathematics education and the characteristics and needs of adult learners was conducted. A brief overview of literature relating to research, studies and anecdotal evidence of learning communities, and blended learning was part of this study. The findings have been summarized and synthesized, and recommendations made.

Chapter Two: Review of Related Literature

Characteristics and Needs of Adult Developmental Math Students

In the early 2000s, adult learners in developmental math classes were a diverse group spanning generations and socioeconomic classes with a wide variety of life experiences. One of the key characteristics of adult students was the multiple roles they played in their lives in addition to being a student. Adult students were often workers, spouses/partners, parents, caregivers, and community members. Life experiences gained in these roles were valuable resources in education. These multiple roles and experiences could be assets to learning, but they could also cause challenges or become barriers (Ross-Gordon, 2011). The many responsibilities in these roles could limit the amount of time students had to dedicate to academic efforts and limited time on campus with other students.

Another characteristic of adult learners is that they were often at a transitional point in their lives. Young adult students, ages 18-22, were transitioning from adolescence to adulthood. Adult students, ages 35-45, might be reevaluating life and career choices (Polson, 1993). Often, motivation for adults to continue their education came from life-changing events. During the late 20th century and early 21st century, there were an increasing number of new adult students at community colleges coming from three groups: workers who had lost jobs in the recent economic downturn, veterans who had returned from Afghanistan and Iraq, and adults pursuing higher education after earning a high school credential by completing a GED (Kenner & Weinerman, 2011).

Many adult students in developmental math classes had little or no experience with higher education, and the educational system might have been overwhelming to navigate. They often experienced self-doubt in their ability to succeed, possibly due to negative educational

experiences in their past or fear of the unknown. However, they were usually enrolled because they had specific educational and career goals. In addition, the financial burden of further education often rested on their shoulders. This made adult students motivated and dedicated to reaching their goals (Polson, 1993).

Malcolm Knowles proposed a learning environment that was geared specifically toward the adult learner. Andragogy, a theoretical model focusing on the teaching and learning of adults, challenged traditional instruction and the principles of pedagogy, which focused on children. Knowles' popular model was based on six assumptions about the adult learner:

- The need to know (Adults needed to know the reason for learning something, resisting information arbitrarily imposed.)
- Self-concept (Adults were transitioning from having a dependent personality to being more self-directed learners.)
- Experience (Adults had many life experiences that were valuable resources when learning new concepts.)
- Readiness to learn (Adults wanted and needed to learn relevant content, they usually came voluntarily and were likely to engage, they attended for a specific goal.)
- Learning orientation (Adults were transitioning from content/task-centered learning to problem-solving-centered learning.)
- Motivation (Adults tended to be more intrinsically motivated).

These six assumptions about the adult learner and awareness of the learners' characteristics guided the instructional approaches that were selected to meet the needs of the adult learner (Knowles, Holton, & Swanson, 2005).

Since adult students had other important roles in their lives, they needed to have flexibility in time and locations for their courses and programs. Two adult learning practices that addressed this need were distance learning and accelerated learning formats (Ross-Gordon, 2011). Distance learning was mostly offered via online courses and hybrid courses. According to Boud and Prosser (2002), as cited by Simms and Knowlton (2005), integrating computers into learning experiences provided strong opportunities for meeting the needs of adult learners due to efficiency and flexibility. Accelerated learning formats combined a variety of holistic techniques for speeding and enhancing the design process and the learning process. This kind of learning involved following curiosity, having fun, interacting with others, and learning with all senses. It was motivating, meaningful, and efficient (Meier, 2000).

Adult students entered developmental math courses with a wide variety of experiences, and they needed to utilize this asset. The learning experience could provide the opportunity to embrace experience and wisdom (Kenner & Weinerman, 2011). Students provided the context for learning a math skill like percentages. New ideas were integrated into what they already knew and real-life problem solving made learning relevant to their lives (Snyder, 2006)

Lack of confidence was a common characteristic of returning adult students at the developmental level. Many math students were affected by math anxiety as well. According to research by Marikyan (2009), 55% of students in the study suffered from math anxiety and only 36% liked math. On the first day of class, 73% of the students initially felt uncomfortable sharing their knowledge level, because they thought that others knew more. Marikyan also found that 100% of the students surveyed believed group discussions would be helpful and 100% expected to learn from their classmates. Students need to be supported and encouraged in a non-threatening learning environment. Feeling a part of a community of learners within their class,

providing support and encouragement (as well as receiving it), and working together with classmates all led to more positive learning experiences (Polson, 1993).

Elements of a Hybrid Developmental Math Course

At the time of this study at Madison Area Technical College, the hybrid format of course delivery combined face-to-face class meetings with innovative online learning methods. Students were expected to attend scheduled face-to-face class sessions, but the number and/or length of classroom time would vary depending on the nature of the course and the instructor. A portion of the traditional classroom instruction was replaced with online instructional methods. This portion could vary greatly, from one-third to three-fourths. The online instruction component promoted student engagement through enhanced interaction with course material (http://madisoncollege.edu/hybrid-learning).

In a hybrid developmental math course, the face-to-face class sessions were a vital component. Adult learners needed to make connections with their instructor and classmates in order to feel a sense of community. Time in the classroom gave the instructor the opportunity to provide a non-threatening environment for students to ask questions and foster future communications (Polson, 1993). Adult students usually preferred clear expectations presented at the beginning of a course along with structured learning experiences (Ross-Gordon, 2011). The blend of face-to-face and online learning allowed for a gradual transition toward self-directed learning.

Another element of the face-to-face sessions was the guided learning experience in which students became familiar with the technology used in the online portion of the course. Face- to-face instruction and learning activities could introduce: course expectations, course management

software, access to course documents, use of various links to online resources, computer-mediated communication tools, and the homework platform. This hands-on guided experience built student confidence using technology and led to more engagement in the learning process (Martyn, 2003).

Although technology support continued after the initial introduction, face-to-face class sessions were primarily comprised of direct instruction, content support, and collaborative learning activities. Research conducted by Jeffries and Hyde (2010) studied student reflections of lifelong e-learning; they found that students did not express any interest in giving up the face-to-face teaching portion of the blended learning environment. Students preferred to have both face-to-face and online portions in a class, not just one or the other.

The online portion of a hybrid developmental math course added flexibility for the student and depth to the content. Since most students were using the Internet in their daily lives, this became a convenient tool for coursework and communication. An online Learning Management System (LMS), such as Blackboard or D2L, was a key element to a hybrid course and became an expectation rather than an addition (Jeffries & Hyde, 2010). The LMS was a reliable and accessible portal to all online resources and could be personalized for the developmental math class. It was a "place" where students could go to connect to the class.

Components of the online portion of the hybrid class included: all course documentation, announcements, homework platform, grades, discussion boards, e-mail, links to video lessons and additional practice activities, practice quizzes and tests, and actual assessments. The usual course documents could be available (syllabus, schedules, assignments, etc.), but also face-to-face class notes with audio or video were available, as possible (Fox, 2010).

The use of technology added another level of learning when combined with a textbook (hard copy or e-copy) and class presentation. It offered the adult developmental math student alternative deliveries of the content with video and guided lessons. Technology provided practice in a non-threatening, repetitive format. With the online activities, students could repeat processes to reach mastery. In quality mathematics learning software, the problems were created algorithmically, so there were new numbers for each attempt. Because it was online, there was an increased level of privacy. Developmental students were more sensitive to revealing their levels of knowledge or lack of knowledge. Using an online learning environment, the instructor was the only other person who needed to know how long or how many attempts were necessary to learn the skills (Marikyan, 2009).

Another advantageous aspect that the online learning portion of the hybrid class offered was the students' ability to communicate with the instructor and other students outside of class using discussion boards, e-mail, and even video conferencing. Both asynchronous and synchronous communication allowed for students to feel connected. If it was in the evening and the students had a question on a particular homework problem, they could post that question to the class. The students would probably receive a response sooner than the next class period, and would feel supported by their peers. Often, students could be frustrated learning a new skill and want to give up. They could post this frustration on a discussion board and receive moral support. It did not only benefit the student needing the support, but also the student who was providing the support. The sense of community was very powerful (Smith, 2010). Instructors could also have virtual office hours, during which video conferencing or live chat rooms could be utilized to better meet student needs (Hege, 2011).

Different Types of Learning Communities

Learning communities identified in the research varied in organization and approach to meet different student needs. Furthermore, the importance of being part of a community could not be underestimated. "Inclusion in a learning community is as vital to the individual in class as it is in a local community. Feeling included in a group is an important factor for encouraging the true potential of learning to take place" (Skinner, 2009). Two main types of learning communities (LC) common in community colleges were curricular LC and online LC.

Curricular learning communities were created when a small cohort of students took two or more linked classes together (Smith, 2010). The two courses might both be developmental courses, a credit course paired with a developmental course, or a student success course paired with a developmental course. In these cases, the LC was an intervention to improve outcomes in the developmental courses (Visher, Weiss, Weissman, Rudd, & Wathington, 2012). Instructors in these paired courses ideally communicated closely to align syllabi, integrate curriculum, and develop complimentary assignments.

Another type of curricular LC was designed for students with a declared major that were usually in or beyond their second semester of classes. At Kingsborough Community College in New York, student cohorts that were enrolled in three courses comprised the LC; and there was a heavy emphasis on shared Problem Based Learning assignments. Although positive impacts of these career-focused LCs were moderate, they were successful for students to learn more about their fields of study and were more likely to continue in their programs than other continuing students (Visher, Teres, and Richman, 2011).

Online learning communities were part of distance education. Online and hybrid courses created much flexibility for students. These delivery formats gave options as to when and where

students could learn: classrooms, home, libraries, and the workplace were all learning environments (Kahn, 2007). The models also provided different options for accessing content and approaches to communication. Students could receive content via the written word (hard copy or online), through audio and video sources, and from communication with their instructor and classmates. They could communicate in an online LC using several tools such as discussion boards, blogs, wikis, e-mail, chat rooms, and video conferencing (Snyder, 2009).

Six essential elements were critical to success in distance learning according to Palloff & Pratt, authors of the book *Building Online Learning Communities.* Those were honesty, responsiveness, relevance, respect, openness, and empowerment. The LC had to be a safe learning environment where there was trust established through honesty among members so that there was open and meaningful communication. The LC could only survive if members responded to each other. Learning only happened if there was active interaction. The online LC provided an opportunity for adult students to share their experiences and relate the subject matter to real-life contexts. When all students shared, the learning became much more meaningful and relevant. Feeling respected as individuals allowed members of the LC to communicate with the knowledge that responses and feedback received would be appropriate and constructive. An open atmosphere in the LC allowed students to share openly without fear of retribution. A sense of empowerment was a part of and also an outcome of the LC. Students became more independent learners in this environment and were encouraged to be active in their pursuit of knowledge (Palloff & Pratt, 2007).

For some adult students, positive outcomes came from online communication versus classroom communication. Computer savvy students and "millennials"—those born in the last two decades of the 20th century—were well-suited to online LCs because of their ability to

express themselves, sometimes more comfortably, by computer-mediated tools. While they might have remained distant and isolated in a traditional classroom, they were able to establish close relationships online. Some adult students were weak in the affective skill domain and could be more easily engaged with the instructor and other students online, instead of feeling the need to withdraw in person (Farnsworth & Brawner Bevis, 2006).

In summary, the research showed adult learners to have common characteristics with a wide variety of needs that had to be considered when determining instructional methods and delivery models. The hybrid delivery option contained elements that met the needs of adult students. Belonging to a learning community was shown to have positive effects on the learner's experience. Learning communities could be organized and incorporated in two ways: curricular LCs that contained cohorts of students in linked classes and online LCs that were often part of distance education. Online LCs could be incorporated into hybrid courses to build the sense of community needed for student learning. Chapter Three follows with conclusions and recommendations.

C**hapter Three: Conclusions and Recommendations**

From the review of literature, evidence supported incorporating a learning community into a hybrid developmental math course. The characteristics and needs of adult learners along with the nature and elements of a hybrid delivery format make learning communities a logical component to integrate into this type of course.

Adult students have many roles and responsibilities in life. This makes their time for academics limited and their availability fluctuate, and that makes building relationships on campus challenging. They need to have coursework and communication tools available wherever and whenever they have time to work on their academic requirements. This may be late at night after the kids are in bed or early morning before work or on alternating Wednesday and Friday afternoons. Flexibility is critical.

Many developmental math students are new to the arena of higher education. The campus is new, the Learning Management System software is new, and being a student in this technology-rich educational setting may also be new. This makes developmental classes an ideal place to introduce and practice some of the computer-mediated tools for learning. Introductory classes provide an opportune time to guide the community building process that will be replicated in most of the students' future college-level courses.

Adult learners often enter college with a wide variety of life experiences. These students have so much to offer to the developmental math class. Their stories from working, shopping, managing a household, acquiring/paying loans, etc., give relevance and context to the fundamental math concepts being learned. The challenge for the instructor is often how to work this wealth of information into limited class time.

Developmental math students lack confidence in their abilities. They often feel alone and don't feel comfortable sharing their levels of knowledge and skills in math. The study by Marikyan showed this to be true, but also indicated that students thought group discussions would be helpful and expected to learn from their classmates. A time and place to have these discussions in face-to-face class would be helpful, but quite time consuming. In a hybrid format, group discussions could begin in class and continue online. Marikyan suggested that the repeated practice that is necessary for mastery was something students did not wish to share and an online learning environment for privacy would be valuable. Both components of the hybrid class have such value.

A learning community would be a highly beneficial and useful component to a hybrid developmental math class. The LC would incorporate both the face-to-face and online portions of the course. Students could meet classmates and begin to develop relationships through activities in person and then continue to build community with classmates online. The communication tools available would provide a place for students to discuss their feelings/fears about math and share their life experiences that are directly applicable to the content. These online tools would allow for the time flexibility that adult students so desperately need.

Some of the face-to-face time in the class could be utilized for instruction and practice using the Learning Management System and the course software used for homework. Hands-on guided practice and activities would increase the students' comfort levels so that they will be more likely to have a positive experience with the online tools at home or off campus. The practice and activities will also give them the communication tools to ask for help.

In conclusion, the review of literature reinforced the need for community in adult developmental education. The literature on effective practices in online and hybrid instruction

indicated that a learning community is necessary for these delivery formats. The incorporation of a learning community that leverages both the face-to-face and online components is recommended.

References

Farnsworth, K. & Brawner Bevis, T. (2006). *A fieldbook for community college online instructors*. (1st ed.). Washington, DC: Community College Press.

Fox, S. (2010). Teaching matters: Rethinking the hybrid course. *Chronicle of Higher Education, 56*(21), A38-A38.

Hege, B. A. R. (2011). The online theology classroom: Strategies for engaging a community of distance learners in a hybrid model of online education. *Teaching Theology & Religion, 14*(1), 13-20.

Jefferies, A. & Hyde, R. (2010). Building the future students' blended learning experiences from current research findings. *Electronic Journal of e-Learning, 8*(2), 133-140.

Khan, B. (2007). *Flexible learning in an information society* . (1st ed.). Hershey, PA: Information Science Publishing.

Kenner, C. & Weinerman, J. (2011). Adult learning theory: Applications to non-traditional college students. *Journal of College Reading and Learning, 41*(2), 87-96.

Knowles, M. S., Holton, E. F., & Swanson, R. A. (2005). *The adult learner, the definitive classic in adult education and human resource development*. (6 ed.). San Diego, CA: Butterworth-Heinemann.

Marikyan, G. (2009). Notes on math anxiety among students: Cause-and-effect, pro-and-con. *International Journal of Learning, 16*(1), 211-221.

Martyn, M. (2003). The hybrid online model: Good practice. *Educause Quarterly, 26*(1), 18-23.

Meir, D. (2000). *The accelerated learning handbook*. New York, NY: The McGraw-Hill Companies, Inc.

Palloff, R. M. & Pratt, K. (2008). *Building online learning communities: Effective strategies for the virtual classroom*. (2nd ed.). San Francisco: Jossey-Bass Inc Pub.

Polson, C. J. Kansas State University, Manhattan Center for Faculty Evaluation & Development. (1993). *Teaching adult students.*

Ross-Gordon, J. (2011). Research on adult learners: Supporting the needs of a student population that is no longer nontraditional. *Peer Review, 13*(1), 26-29.

Simms, J. & Knowlton, D. S. (2008). Ideas in practice: Instructional design and delivery for adult learners. *Journal of Developmental Education, 32*(1), 20-30.

Skinner, E. (2009). Using community development theory to improve student engagement in online discussion: a case study. *ALT-J, Research in Learning Technology, 17*(2), 89-100.

Smith, R. A. (2010). Feeling supported: Curricular learning communities for basic skills courses and students who speak English as a second language. *Community College Review, 37*(3), 261-284.

Snyder, M. M. (2009). Instructional-design theory to guide the creation of online learning communities for adults. *TechTrends: Linking Research & Practice to Improve Learning, 53*(1), 48-56.

Visher, M., Teres, J., & Richman, P. Columbia University, Teachers College. (2011). *Breaking new ground: An impact study of career-focused learning communities at Kingsborough Community College*. New York, NY: National Center for Postsecondary Research.

Visher, M., Weiss, M., Weissman, E., Rudd, T., & Wathington, H. Columbia University, Teachers College. (2012). *The effects of learning communities for students in developmental education*. New York, NY: National Center for Postsecondary Research.