Research Related to Online Learning and the Use of CompassLearning Odyssey to Increase Student Achievement and Engagement

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Introduction

Utilizing technology, such as online learning, as an instructional tool is increasingly common in schools today. For example, during the 2007–2008 school year, it is estimated that more than a million K–12 students took online courses (Piccano and Seaman, 2008). It is important to consider student perceptions about their use of technology in schools to ensure that new technologies are being used to their full potential. For example, according to NetDay's third annual "Speak Up" survey (2005) that included over 185,000 student respondents from all 50 states, students consistently use the internet as a resource. Additionally, their biggest frustration in school is not being able to use technology how, when, and where they would like to in their classes. This survey also found that students believe in the power of technology to enrich their learning experience *(http://www.netday.org/speakup_2005.htm).*

The ways that computers and learning technologies are used in schools should be studied, for, as some have noted, "Although computers are pervasive in schools, they tend to be used more like electronic textbooks — high-tech tools in a nineteenth century system" (Wise and Rothman, 2010, p. 53). Teachers can and should learn to utilize technology, particularly online learning, in ways that can further enhance the learning experiences of students. According to a recent report from researchers at Northwestern University, children and adolescents between the ages of 8 and 18 spend an average of between 9 and 13 hours per day using technology, including computers, television, and other forms of electronic equipment (Rideout, Lauricella, and Wartella, 2011). With children devoting this much time to technology use, research about how technology is being used in schools is even more essential.

CompassLearning Odyssey Goals

CompassLearning Odyssey® enables teachers to assess students and identify their academic areas of strength and weakness. The management system uses assessment data to create a personalized learning path of engaging activities for each student. This learning path addresses the specific skills or concepts that the student has not mastered. CompassLearning Odyssey seeks to take full advantage of the capacity of online, interactive learning by linking differentiated instruction and personalized learning with pre-assessments that determine when and where

each student should begin on the learning path, based on his or her level of competency, within all subjects. CompassLearning helps teachers meet the diverse needs of all students through differentiated content and instruction, a process to address the variation of learners in the classroom through multiple approaches that modify instruction and curriculum to meet students' individual needs. CompassLearning Odyssey also helps teachers provide opportunities for appropriate differentiation activities for students of all achievement and ability levels.

Research on Technology and Student Learning

Current research demonstrates the power of technology and its influence on student learning (Bain and Ross, 1999; Cradler and Cradler, 1999). Several meta-analyses of research studies have confirmed that there is a clear indication that distance education (whether it is Web-based or not) works as well as or better than face-to-face instruction in terms of student achievement (Bernard et al., 2004; Cavanaugh, 2001; Cavanaugh, 2004). Allen et al. (2004) found that students in distance-learning environments slightly outperformed students in traditional classrooms on exams and course grades. Cavanaugh (1999) confirmed this finding, focusing on studies that were conducted exclusively in K–12 settings. Means et al. (2009) demonstrated that the achievement outcomes using Web-based distance education are equivalent to those in traditional face-to-face instruction in a variety of settings, including those focusing on K–12 schools.

In one eight-year, longitudinal study, Bain and Ross (1999) found that careful alignment between content-area learning standards and carefully selected technology use results in significantly higher student-achievement test scores. Cradler and Cradler (1999) found that teachers observed significant and positive changes in their students' skills and knowledge acquisition upon completion of their first multi-media project. In a follow-up study, teachers reported increased student knowledge in areas such as research skills, ability to apply learning to real-world situations, organizational skills, and interest in content (Cradler, McNabb, Freeman, and Burchett, 2002).

Jennings and Lucca (2005) examined the effects of using electronic field trips (also known as virtual field trips) on reading comprehension skills and content knowledge with 375 students in experimental and control groups at two Maryland middle schools. Statistically significant differences were found in scores of treatment and control groups among students of poverty (i.e., students who receive free and reduced meals). Jennings and Lucca (2005) found improvement in treatment-group students when compared to control-group students on reading comprehension skills, measured by a standardized reading test.

Azzam (2006) found that, when low-income children are able to access technology, they use it in ways that enhance their educational opportunities. Coiro (2003) investigated the use of internet and Web-based learning environments, finding that they could promote higher levels of engagement and personal knowledge gains, as well as more diverse knowledge gains in terms of potential opportunities for students. After completing a three-year longitudinal study with a consortium representing five New York counties that spent $14.1 million on computer technology and training resulting in a 7:1 student-computer ratio, Mann and Shafer (1997) concluded, "increased technology supports, facilitates, and encourages student achievement" (p. 2). In a study comparing students enrolled in Web-based Algebra I courses and students in traditional face-to-face Algebra I courses, Hughes et al. (2007) found that the online students outperformed traditional students on the Assessment of Algebraic Understanding (AAU). This study confirmed the findings of a similar study comparing the Louisiana online Algebra I course with traditional instruction (O'Dwyer, Carey, Kleiman, 2007), documenting that online learning is at least as effective as, and, in some cases, is more effective than traditional face-to-face instruction.

CompassLearning Odyssey: Evidence-Based Practice

Data-based studies also have been conducted that specifically support the use of CompassLearning Odyssey as an evidence-based program in schools. CompassLearning Odyssey has been used both as an enhancement and replacement for face-to-face instruction. It also has been used as a way to augment school curriculum and support the implementation of the response to intervention (RtI) framework and credit recovery in urban, suburban, and rural schools with widely varying student populations. Per research reviewed by the Department of Education's What Works Clearinghouse (WWC), CompassLearning Odyssey Math, a K–12 online learning solution, had one study that met WWC's stringent inclusion requirements (DiLeo, 2007). In this study, students who used CompassLearning Odyssey Math in addition to regular coursework scored an average of 103 points — or 17 percent — higher on the mathematics portion of Pennsylvania's standardized test than those students who did not use CompassLearning Odyssey Math.

General and targeted support

Other research details several positive outcomes in schools that use CompassLearning Odyssey programs. Burgess Elementary School in Myrtle Beach, SC, used CompassLearning Odyssey and overall students' NWEA Measures of Academic Progress® (MAP) scores rose — 23 points for second-grade students, 20 points for third-grade students, 12 points for fourth-grade students, and 19 points for fifth-grade students. During the two years that Burgess has used CompassLearning Odyssey, the school report card has improved from "Average" to "Good" to "Excellent."

Other schools have utilized CompassLearning Odyssey to target specific improvements in groups of students who need additional instructional support. Avon Grove Intermediate School, located in rural West Grove, PA, uses CompassLearning Odyssey to provide support for striving students in grades 3 through 6 to enable them to improve their math skills. After only three months of using CompassLearning Odyssey, a quarter of the original target group of 121 students reached state levels of proficiency according to their MAP scores.

In a second-grade English language learner class at Lewis and Clark Elementary School in South Sioux City, NE, MAP scores increased by 9–24 points in eight weeks (when 2–4 points of growth would be typical for this period of time).

Cliffside Elementary School in Rutherfordton, NC, implemented CompassLearning Odyssey to provide targeted support for a group of economically disadvantaged students whose performance on state assessments was preventing the school from making average yearly progress (AYP). The students were identified using MAP data and placed in a tutoring program using CompassLearning Odyssey four days a week, for 30 minutes after school. Within 18 months of adopting CompassLearning Odyssey, Cliffside not only made AYP, they've become the highest performing school in their district. Test results showed strong gains, and the percentage of targeted students reaching proficiency on state assessments increased from 56 percent to 86 percent after CompassLearning Odyssey was implemented.

CompassLearning Odyssey also is being used to challenge high-achieving eighth-grade students in Aurora, OH, enabling them to participate in an online physical science course to prepare them for Honors Biology as high school freshmen. The vast majority of students who took the course, 51 of the 56, were able to meet the criteria in physical science, and 35 of these students earned A's in Honors Biology.

In Beaufort, SC, CompassLearning Odyssey was used as a virtual summer school program. Sixth-grade students who participated in the summer program demonstrated a four-fold increase on their MAP math scores during the summer as compared to non-participating students. Non-participating fourth-grade students' math scores declined four percent over the summer while participants' scores rose 10 percent.

Response to Intervention

Research and results show the effectiveness of CompassLearning in RtI efforts. Students at General Mitchell Elementary School in West Allis, Milwaukee, WI, for example, had a 20-point increase on fall-to-winter scores on the MAP assessment test when the school used CompassLearning Odyssey in its RtI initiatives.

Other schools have had similar results with schoolwide CompassLearning Odyssey implementations to support the RtI framework. At Gillett Elementary School in Gillett, WI, only 66.7 percent of third graders reached proficiency on state reading assessments before implementing CompassLearning Odyssey. After using CompassLearning Odyssey, 85 percent of those students were able to reach proficiency in the following year, during fourth grade. Continued use of CompassLearning Odyssey resulted in the same students maintaining the same level of success in the fifth grade, when 85 percent of them reached reading proficiency as well.

Credit recovery

Other schools have had similar successes utilizing CompassLearning Odyssey as a credit-recovery program for high school students. At B. F. Terry High School in Rosenberg, TX, 78 students used CompassLearning Odyssey, and, within a semester, 25 of those students were able to increase their accumulated credits and return to their original cohort of students. Students in Stillwater, NY, schools also used CompassLearning Odyssey for three years in a credit recovery program, which helped reduce the dropout rate from 14 percent to one percent.

Conclusion

CompassLearning Odyssey has been used in a number of research-based contexts to meet the personalized learning needs of students of all achievement levels — resulting in increased engagement and achievement in school. This review of research strongly suggests that CompassLearning Odyssey is an evidence-based solution that can be utilized in many different types of schools to address varying differentiated student needs with beneficial results. In the years to come, other data-based studies will continue to garner additional evidence about the use of CompassLearning Odyssey across many different learning conditions to both engage students and increase their achievement.

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About CompassLearning

CompassLearning is leading the transformation of education in America with curriculum and assessment solutions that motivate today's students to engage, think & learn. K–12 schools use our Odyssey system to personalize instruction, improve test scores, and increase graduation rates. Odyssey influences student success because it is based on current and confirmed research on the way 21st century students acquire knowledge. In 2010, CompassLearning acquired Renzulli Learning, a leader in practical classroom differentiation and high levels of student engagement. Through our CompassLearning Impact Teacher Academy™, educators benefit from our comprehensive in-person and online planning, instruction, monitoring, and evaluation — with the ultimate goal of improved student achievement.