EFFECTS OF PACING OPTIONS ON FINAL GRADES OF STUDENTS WITH DISABILITIES IN VIRTUAL HIGH SCHOOL

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The number of students with disabilities completing virtual coursework is increasing. The present study focused on students with disabilities enrolled in a virtual high school that allows students to select their anticipated pace of instruction (i.e., traditional, extended or accelerated). Pace requests and length of time used to complete courses were analyzed to determine differences in final course grades between students with and without IEPs. The effects of pace requests on final course grades were also analyzed. Results suggest that students with and without disabilities make similar pace requests and complete courses in the same amount of time. Findings also suggest that extended time completing a course correlated to lower final grades.

INTRODUCTION

Students with disabilities struggle to match the academic performance of their same-age, nondisabled peers and typically perform below grade level (Cullinan, Evans, Epstein, & Ryser, 2003; Fuchs, Fuchs, Mathes, & Lipsey, 2000; Lane, Carter, Pierson, & Glaeser, 2006; Mattison, Hooper, & Glassberg, 2002; Reid, Gonzalez, Nordness, Trout, & Epstein, 2004). These struggles have led to a high dropout rate for these students (Bellis, 2003) and a high school completion rate of less than 75% (National Longitudinal Transition Study 2, 2005). The cause of these struggles may be linked to characteristics that many students with disabilities display, including slower learning rates, extended time requirements for

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learning to mastery, and differentiated learning strategies (Raymond, 2008). When students with disabilities display these characteristics, they often lack the ability to respond quickly and accurately when pressured for responses. In traditional school settings, students are placed under pressure to perform (e.g., orally answering questions and reading aloud). Often, when faced with these pressures, students with disabilities display disruptive or escaping behaviors to avoid embarrassment (Nelson & Roberts, 2000); therefore, behavior challenges become an additional struggle faced by students with disabilities.

Knowledge and utilization of research-validated practices shown to be effective for students with disabilities can help reduce these struggles. There are specific course and lesson characteristics that can maximize learning and academic performance of students with disabilities. For instance, research has suggested that students with disabilities benefit from opportunities to respond (Barbetta, Heron, & Heward, 1993; Sterling, Barbetta, Heward, & Heron, 1997; Sutherland, Alder, & Gunter, 2003), brisk lesson pace (Adams & Engelmann, 1996; Raymond, 2008), specific and immediate correction procedures (Carnine, 1997) and high reinforcement rates (Shores, Gunter, & Jack, 1993). These lesson characteristics are inter-connected in that providing opportunities to respond with specific correction procedures can help in maintaining an appropriate lesson pace. Students can become frustrated and content mastery impeded when lesson pacing does not meet student needs; therefore, it is important lessons are paced to maximize learning.

Three primary challenges arise in maximizing learning for students with disabilities in traditional classrooms. First, lessons are delivered at a pace often determined by teacher preparedness, content difficulty, student ability, and student behavior. An additional challenge with traditional schools is that lesson pacing is directly linked to a school's schedule. Courses are completed in a prescribed manner (e.g., 60-90 minute periods over the course of a 16 week semester) that affects the amount of time a teacher can spend on specific lessons. For example, teachers must complete course objectives prior to statewide assessments. If students do not understand a specific concept, teachers cannot spend excessive time re-teaching the concept because of the need for meeting all course content objectives. Finally, time constraints and large numbers of students prevent traditional school settings from being able to offer students with disabilities time they need to master course content. For this reason, it is important to determine how students with disabilities perform when given the opportunity to self-select instructional pace. Traditional schooling cannot offer this option; however, virtual schools provide a setting in which students can self-select their pace for course completion.

VIRTUAL SCHOOLS

Enrollment of students with disabilities in virtual school courses is increasing (Meyen et al., 2002); however, research literature on students with disabilities and virtual schools is scarce (Keeler, Richter, Anderson-Inman, Horney, & Ditson, 2007; Kim-Rupnow, Dowrick, & Burke, 2001; Means, Toyama, Murphy, Bakia, & Jones, 2009; Muller, 2009; Muller, 2010; Repetto, Cavanaugh, Wayer, & Liu, 2010; Rhim & Kowal, 2008). Despite limited research, virtual school courses utilize strategies shown to be effective for students with mild disabilities. Opportunities to respond, brisk pacing, corrective feedback (Mackey & Horn, 2009; Muller, 2010), and high levels of reinforcement are implemented in virtual school courses. For example, in traditional settings, students must compete with other students for an opportunity to respond to inquiries; however, in virtual courses, students respond to every inquiry.

Pace requests are features of virtual schools that allow students to take courses at self-selected paces. The flexible pacing in virtual school courses permits students to work at pre-

ferred times, allows as much time as needed to complete lessons and assignments, and allows for as many breaks as necessary. In other words, virtual school environments allow students to choose the type of environment where they work best. For example, students who prefer to work alone or late at night are allowed to do so in a virtual school setting. The lack of time constraints in virtual school programs appear to cater to the time and pace needs of students with disabilities.

PURPOSE OF THE STUDY

Extended time is often a needed accommodation included in a student's individualized education program (IEP) and has shown to improve performance (Alster, 1997; Elliott, & Marquart, 2004; Marcotte & Hansen, 2010; Marcotte & Hemelt, 2008; Rocha, 2007; Runyan, 1991; Sireci, Scarpati, & Shuhong, 2005; Zuriff, 2000). Extended time in traditional school settings often refers to giving students additional time to complete a test, assignment, or activity. This type of accommodation is naturally built into the setup of virtual courses. Students in virtual courses are permitted to listen to and engage in lessons as many times as desired, whereas students in traditional settings are not afforded the luxury to complete lessons at their own pace as each lesson occurs once and activities are shared among classmates. Extended time in virtual courses allows additional days or weeks to complete a course rather than extra minutes to complete individual tasks (e.g., tests, activities, or assignments). Due to the setup of virtual courses, it is important to determine if students with disabilities have extended time needs in virtual school settings and how the time needs of students with disabilities differ from students without disabilities.

This study was based on four research questions to determine how students with disabilities used various pacing options offered by virtual schools and how their use of extended time compared to students without disabilities. Research questions also focus on the academic achievement (i.e., final course grades) of students with disabilities based on selected course pace.

1. Are there statistically and clinically significant differences in pace requests (i.e., traditional, extended or accelerated) between students with and without IEPs?
2. Are there statistically and clinically significant differences in the number of weeks active in a virtual course for students with and without IEPs?
3. Does pace request significantly impact final grades and number of weeks active in a course for students with IEPs?
4. Are there statistically and clinically significant correlations between number of weeks active in a course and final course grade for students with IEPs?

METHODS

Participants

High school students (i.e., grades 9 through 12) enrolled in a state-supported public virtual high school (PVHS) courses between the 2003-04 and 2009-10 fiscal years were participants in the study. A total of 345,422 participants, all residents of one southeastern state were enrolled in 934,080 courses over the 7 years. Specific demographic data are presented in Table 1. Of the sample participants, 9.2% (31,778) reported having an individualized education program (IEP). Currently, presence of an IEP is self-reported by PVHS students and includes students with disabilities and students identified as gifted and talented (GT).

Procedures

Extant data from the 2003-04 to 2009-10 fiscal years were examined following approvals by a university Institutional Review Board and PVHS research compliance committee. Electronic data, in the form of spreadsheets,

TABLE
Participant Demographics (by percentage)

Participant Demographics	*IEP*	*No IEP*	*Total*
Race:			
White Nonhispanic	5.8	50.2	56.0
African American	1.2	14.3	15.6
Asian	0.2	2.7	2.9
Hispanic	1.4	17.3	18.7
Native American	0.1	0.4	.5
Multiethnic	0.4	3.6	4.0
Not Listed	0.2	2.2	2.4
Gender:			
Male	4.8	37.1	41.8
Female	4.4	53.7	58.1
School Type:			
Public School	8.1	77.6	85.6
Home School	0.7	6.9	7.6
Private School	0.3	4.4	4.7
Charter School	0.2	1.9	2.1

were provided to the primary author. These data were transformed into SPSS for statistical analyses and, when needed, variables were recoded to allow for statistical analyses. For example, string and categorical variables were recoded into numerical variables.

Gifted and talented students. The state where PVHS is located provides students identified as GT with individual education programs (IEP). PVHS does not currently differentiate between exceptionality labels; therefore, it was important to filter students with GT to determine how students with disabilities performed in the virtual courses. Filtering students with GT was based the following two criteria: (a) reason for taking the course and (b) types of courses taken.

Students indicate their reason for taking a course when they request to enroll. These reasons include one or more of the following: (a) personal preference, (b) course not available, (c) needs for acceleration, (d) senior needs to graduate, (e) grade forgiveness, (f) seventh period course credit, and (g) other. It was hypothesized that students with IEPs who took courses for "needs for acceleration" may indicate a student with GT. Acceleration allows students to move through curriculum at faster rates than average performing students (Piirto, 2007). The purpose of acceleration is to increase the amount of academic content students can complete in a given amount of time. Often students with disabilities struggle to keep pace with their nondisabled peers (Raymond, 2008); therefore, it was hypothesized that students with disabilities would be less likely to take a course for "needs for acceleration." This reason for taking a course was selected by 1.3% of students with an IEP and 14.5% of students without an IEP.

Enrolling in advanced placement courses (AP) was the second criterion for attempting to identify students with GT. AP courses typically provide a more rigorous learning environment meant to prepare students for postsecondary coursework (National Governor's Association, 2009). Many students with disabilities struggle with general education

courses; therefore, it was hypothesized that students with IEPs who enrolled in AP courses were students with GT.

Although these hypotheses seem logical, it is uncertain if students with IEP's enrolled for "needs for acceleration" and enrolled in AP courses were GT rather than had a disability.

Once students who had "needs for acceleration" and those enrolled in AP courses were filtered, the remaining students with IEPs were thought to have disabilities. A new dichotomous variable was created to filter potential students with GT from the remaining students with IEP. Statistical analyses were conducted with and without filters removing potential students with GT (n = 5,852 students; n = 16,901 courses) based on the previously discussed criteria. For the purpose of discussing the results of the study, "students with IEPs" refers to *all* students who identified themselves as having in IEP when enrolling in PVHS courses. "Students with disabilities" refers to students believed to have disabilities.

Data Analyses

Data were analyzed using SPSS with significance determined at $p = .05$ levels. Effect size estimates were based on Cohen's d for small (0.2 to 0.3), medium (0.5), and large ($\geq$ 0.8) effect sizes (Cohen, 1992). Power analyses were utilized post hoc to determine likelihood of Type II errors. Although there is no formal standard for power, Cohen (1988) considers 0.80 as an adequate power coefficient.

Course pace requests. When students enroll in PVHS, they indicate the pace they *anticipate* following to complete the course (see Table 2). Although students indicate anticipated pace, they are permitted to take as much time as needed to complete courses. Pace request data were examined, using a cross-tabulation analysis with a chi-square test of independence, to determine if significant differences exist between the pace requests of students with and without IEPs. For statistically significant findings, standardized residuals were examined to determine which variable cell influenced the statistical significance. Critical values were set at -1.96 to 1.96 based on a $p < .05$ level of significance for the standardized residuals.

Pace requests were further analyzed to determine if anticipated pace requests affected final grades. An ANOVA was performed to determine the impact of pace requests on final grades. A follow-up post hoc test was conducted to determine which pace request accounted for significant findings.

Active time in courses. Although PVHS students can request the amount of time they *anticipate* being engaged in a course, it is important to determine the *actual* time students took to complete a course. This would provide insight in determining if extended time needs for students with disabilities exist in virtual high school courses. Specifically, analyses will reveal if students with IEPs actually take longer to complete courses and how their final course grade relates to the number of weeks active in a course.

An independent samples t-test was performed to identify significant statistical differences in the number of weeks students with IEPs were active in a course compared to students without an IEP. A Pearson product-moment correlation was conducted to determine if a significant correlation exists between the number of weeks that students with IEPs were active in a course and their final course grade.

RESULTS

Results of data analyses are presented by research question.

Are there statistically significant differences in pace requests (i.e., traditional, extended or accelerated) between students with IEPs and students without IEPs?

Results of a cross-tabulation analysis with a chi-square test of independence determined significant statistical differences exist between the pace requests of students with and without IEPs [$X^2(2, N = 934{,}080) = 560.27, p < .001$].

TABLE 2
Pacing Options for PVHS Courses

Pace	*Time to Complete Course*
Traditional	16 weeks
Accelerated	<16 weeks
Extended	>16 weeks

Percentages in Table 3 show no practical significance in pace requests between groups. Examining standardized residuals suggest that extended pace requests impact the chi-square statistic for students with and without IEPs. Results indicate students with and without IEPs select similar pace requests.

Students identified as GT were filtered and a second cross-tabulation analysis with a chi-square test of independence was conducted. This analysis determined significant statistical differences exist between the pace requests of students with and without disabilities. Results show that students presumed to have disabilities select similar pace requests to students without disabilities [$X^2(2, N = 917{,}179) = 487.19, p < .001$]. Table 3 shows percentages of pace requests for filtered analysis.

Based on standardized residuals presented in Table 3, it is evident that extended ($z > 20$) and accelerated ($z = -3.9$) pace requests by students with IEPs accounted for a large portion of the differences in the chi-square statistic, in the unfiltered and filtered analyses. Extended pace requests by students without IEPs impacted the chi-square statistic in both data sets. Clinical interpretation indicates that minimal differences exist in pace requests. Additionally, results show that students with IEPs selected a traditional pace more frequently than extended.

Does pace request significantly impact final course grades and number of weeks active in a course for students with IEPs?

Students select the pace they *anticipate* following to complete a course (i.e., traditional, accelerated, or extended). Means and standard deviations were compared to determine if the self-selected pace prior to course activation reflected the *actual* number of weeks students were engaged in a course. Table 4 presents means and standard deviations for *actual* time used to complete courses based on pace requests. Analysis of Table 4 indicates that students with IEPs followed anticipated pace for course completion.

An ANOVA was conducted to examine effects of pace requests on final course grades for students with IEPs. Results show significant effects for pace request [$F(2, 55525) = 11.78, p < .001, \eta^2 = .00$, power = .995]. These results should be interpreted with caution because Levene's test was violated [$F(2, 55525) = 15.67; p < .001$]. Effect size estimates imply pace requests explain insignificant amounts variance in final course grades. Table 5 presents means and standard deviations for final course grades.

A Dunnett T3 post hoc analysis was conducted because of the violation of Levene's test. Results of the Dunnett T3 post hoc are presented in Table 6 and show significant differences between traditional pace requests scoring significantly lower than accelerated pace requests ($p < .05$), while scoring significantly higher than extended pace requests ($p < .01$). Students who anticipated an extended pace scored significantly lower ($p < .001$) than students who chose an accelerated pace. Results indicate that extended time may hinder success in virtual courses. Students who request to take a course at traditional or accelerated rates have higher grades than students who request to take courses at an extended pace. This finding appears contrary to the pace and time needs students with IEPs experience in traditional school settings.

TABLE 3
Percentage of Pace Requests for Students With and Without IEPs

	Nonfiltered		*Filtered*	
Pace	*IEP*	*No IEP*	*IEP*	*No IEP*
Traditional	99.0	99.2	99.0	99.2
Std. Residuals	–0.6	0.2	–0.5	0.1
Accelerated	0.5	0.7	0.5	0.7
Std. Residuals	–3.9*	1.2	–3.9*	1.1
Extended	0.4	0.1	0.4	0.1
Std. Residuals	22.2*	–7.1*	20.8*	–6.0*

*Standardized residual exceeds critical value.

TABLE 4
Means and Standard Deviations for
Number of Weeks Active in Courses Based on Pace Request

	Number of Weeks Active	
Pace Requests	*Unfiltered*	*Filtered*
Traditional	15.10 (11.59)	15.13 (11.53)
Accelerated	13.24 (9.15)	13.02 (9.35)
Extended	29.06 (17.53)	29.60 (11.46)

TABLE 5
Means and Standard Deviations for Final Course
Grades for Students With IEPs

Pace Requests	*Unfiltered IEP*	*Filtered IEP*
Traditional	85.47 (12.08)	85.32 (12.09)
Accelerated	87.08 (10.96)	86.94 (10.81)
Extended	82.36 (15.14)	81.94 (15.53)

Students presumed to be GT were removed from the data set and an ANOVA was conducted. Significant effects were found for pace requests [$F(2, 44905) = 10.78$, $p < .001$, $\eta^2 = .00$, power = .99]. Again, Levene's test for homogeneity of variance was violated, which encourages a conservative interpretation of results. Dunnett's T3 post hoc analysis returned similar results as the nonfiltered analysis (see Table 6).

Are there statistically significant differences in the number of weeks that students with IEPs were active in a course compared to students without IEPs?

An independent samples *t*-test was conducted to determine if the number of weeks active in a course varied significantly between students with and without IEPs. Number of weeks active was calculated by taking the difference between the date of course activation and date of course completion. Students with IEPs were active in courses an average of 15.15 (*SD* = 11.65) weeks, while students without IEPs were active an average of 15.02

TABLE 6
Dunnett T3 Comparison for Pace Requests of Students With IEPs

				95% CI	
Sample	*Comparisons*	*Mean Grade Difference*	*Std. Error*	*Lower Bound*	*Upper Bound*
Unfiltered	Traditional vs. Accelerated	−1.61*	.60	−3.04	−.17
	Traditional vs. Extended	3.11**	.93	.87	5.35
	Accelerated vs. Extended	4.72***	1.10	2.07	7.36
Filtered	Traditional vs. Accelerated	−1.62*	.66	−3.22	−.03
	Traditional vs. Extended	3.38**	1.06	.82	5.93
	Accelerated vs. Extended	5.00***	1.25	2.01	7.99

*$p < .05$
** $p < .01$
*** $p < .001$

(*SD* = 11.44) weeks. Significant differences were found [$t(104675) = 3.21$, $p = .001$, $d = .01$]. Levene's test for equality of variance was violated ($F = 20.29$, $p < .001$); however, this violation may be the result of a large sample due to standard deviations varying by less than .3 points. Degrees of freedom were adjusted from 934,078 to 104,675 to account for unequal variances.

Potential students identified as GT were removed from students with IEPs. Results show that students with disabilities were active in courses a mean of 15.18 (*SD* = 11.53) weeks. Significance was found at $t(917177) = 3.66$, $p = .001$, $d = .01$] and Levene's test was not violated. This showed minimal difference from nonfiltered results.

Clinically, results suggest that students with and without IEPs take the same amount of time to complete courses. Additionally, students with and without IEPs completed their courses in less than 16 weeks (i.e., the traditional pace). Filtered results did not change the clinical interpretation, but do indicate that students presumed to have a disability take the same amount of time to complete courses as student without disabilities.

Are there statistically significant correlations between number of weeks active in a course and final course grade for students with IEPs?

Results from a Pearson product-moment correlation show a negative correlation of $r(55,528) = -.29$, $p < .001$. This finding signifies that as the number of weeks in a course decrease, final course grades increase. Although statistical significance was attained, effect size estimates implied a minimal effect size ($r^2 = .08$). Essentially, results indicated that additional weeks to complete courses do not improve grades of students with IEPs in virtual courses.

This statistical analysis was conducted with GT filters and also returned a significant negative correlation of $r(44,908) = -.29$, $p < .001$. Effect size estimates were minimal ($r^2 = .08$). Again, additional weeks to complete courses

did not improve the academic success of students presumed to have disabilities.

DISCUSSION

The present study examined the differences in pace requests and final course grades of high school students with and without IEPs in a state-supported public virtual high school (PVHS). Findings of the current study indicated that students with and without IEPs have minimal clinical difference in their pace requests and time required to complete courses. Additionally, final course grades were impacted by course request and by amount of time needed to complete course. These findings suggest that students with IEPs in virtual school courses appear to learn and achieve at similar rates as their nondisabled peers. There are a number of potential explanations for these findings.

Flexibility

Flexibility of virtual schools allows students to learn at their own pace. Students are not rushed or held back by the pace of a traditional class schedule, curricula, peers, or teacher. Self-pacing allows students to take as many breaks as needed and for as long as needed. Students are permitted to listen to and engage in lessons and activities as many times as needed. Additionally, PVHS and other virtual schools do not follow a traditional school calendar, leaving students the option to take courses 365 days a year to accommodate their scheduling needs. For example, a student may wish to take a course during a holiday or over summer break, which is not available in traditional school programs. It is possible that the flexibility features of virtual schools may contribute to the success of students with IEPs in virtual courses.

Instruction

Opportunities to respond coupled with immediate corrective feedback and positive reinforcement may also attribute to the success of students with IEPs in PVHS courses. Students are given opportunities to respond in each lesson and activity, and are given correct responses immediately or within 24 hours for assignments that require teacher grading (Mackey & Horn, 2009; Muller, 2010). As previously mentioned, students compete with each other for opportunities to respond in traditional classes. Alternately, in virtual courses, students get high rates of responding, which has shown to benefit students with disabilities (Barbetta, Heron, & Heward, 1993; Sterling, Barbetta, Heward, & Heron, 1997; Sutherland, Alder, & Gunter, 2003). PVHS allows students the option to retake quizzes, tests, and other assignments as many times as needed, giving students ample opportunities to respond (Mackey & Horn, 2009).

Early studies suggested that self-pacing, immediate feedback, and individualization available in virtual environments might contribute to the success of students with disabilities (Anderson-Inman, 1999; Horton, Lovitt, Givens, & Nelson, 1989). Results of the current study support previous findings in that students with IEPs were successful within the virtual environment.

Pace Requests

Most students with IEPs in PVHS did not request extended time to complete courses and completed courses at the same pace as student without IEPs. This contradicts extended time requests and outcomes of students with IEPs in traditional schools (Alster, 1997; Elliott, & Marquart, 2004; Marcotte & Hansen, 2010; Marcotte & Hemelt, 2008; Rocha, 2007; Runyan, 1991; Sireci, Scarpati, & Shuhong, 2005; Zuriff, 2000). It is difficult to compare extended time requests in traditional and virtual settings; however, results of the current study suggest that students with IEPs perform clinically similar to their nondisabled peers. A possible explanation for this reversal of need may be attributed to the time and pacing flexibilities offered by PVHS in addition to oppor-

tunities to respond and immediate corrective feedback. When pressure from peers and teachers are removed and students are given the opportunity to learn at an effective time and comfortable pace, perhaps they retain information at the same rate as other students. The features of virtual courses may negate the extended time needs created by the features and set-up of traditional schools.

When students identified as GT were filtered, results were similar to initial nonfiltered analyses. This suggests that students with disabilities have potential to complete courses successfully in a virtual learning environment and that it may be an option worth consideration by IEP teams. Virtual courses should be a consideration when IEP teams determine the least restrictive environment (LRE) for students with IEPs.

Limitations

As with all research, there are limitations to the current study. First, some of the data are student reported (i.e., presence of an IEP, reason for taking a course), which forced us to assume students correctly reported these data. Second, PVHS employees entered the data, as opposed to the authors. This limitation requires the assumption that PVHS employees correctly entered data, as the authors did not have access to the primary source data. Third, data were collected on students who were residents of one southeastern state, which may impede generalization of results.

A fourth limitation of the study is the incomplete information on disability that led to IEP development. The presence of an IEP is the only disability related data collected. Reason for IEP (i.e., gifted and talented or disability) has to be determined deductively. As previously discussed, the hypotheses for identifying students with GT has its limitations. The lack of data on disability type may present the most significant limitation to the present study. Findings using filtered and nonfiltered data did not present large clinical changes to analyses; therefore, removing students with GT may be a moot point.

Future Research Needs

Follow-up studies should attempt to collect disability specific data (Repetto, Cavanaugh, Wayer, & Liu, 2010; Rhim & Kowal, 2008). Currently, research possibilities are limited because of the lack of disability specific data collected by virtual schools. Lacking these data hinders in-depth, disability specific research that could help professionals better serve students with disabilities in virtual settings. Research is needed to compare student performance according to disability type, as students may perform differently in virtual courses depending on their disability.

Further research should attempt to compare outcomes between students with disabilities in traditional and virtual schools. Specifically, comparisons of opportunities to respond in each setting could be conducted. Additionally, frequency and specificity of feedback provided for correct and incorrect responses would grant insight into effectiveness of each setting. Finally, focusing on extended time requests by students in traditional schools can offer data on usefulness of the accommodation in academic success.

Summary

The purpose of this study was to examine the pace requests and length of time students with disabilities took to complete virtual courses. The poor performances of students with disabilities are well documented in traditional school settings (Benz, Lindstrom, & Yovanoff, 2000; Osgood, Foster, Flanagan, & Ruth, 2007; Reschly & Christenson, 2006). Results indicated that students with disabilities complete courses at essentially the same rate and with the same final course grades as students without disabilities. Summations of study findings indicate that students with IEPs can be successful in virtual courses and education professionals should consider virtual courses as an option for students with IEPs.

REFERENCES

Adams, G., & Engelmann, S. (1996). *Research on direct instruction: 25 years beyond DISTAR*. Seattle, WA: Educational Achievement Systems.

Alster, E. (1997). The effects of extended time on algebra tests scores for college students with and without learning disabilities. *Journal of Learning Disabilities, 30,* 222-227.

Anderson-Inman, L. (1999). Computer-based solutions for secondary students with learning disabilities: Emerging issues. *Reading & Writing Quarterly, 15,* 239-249.

Barbetta, P., Heron, T., & Heward, T. (1993). Effects of active student response during error correction on the acquisition, maintenance, and generalization of sight words by students with developmental disabilities. *Journal of Applied Behavior Analysis, 26*, 111-119.

Bellis, D. (2003). *Special education: Federal actions can assist states in improving postsecondary outcomes for youth.* Washington, DC: U.S. General Accounting Office.

Benz, M., Lindstrom, L., & Yovanoff, P. (2000). Improving graduation and employment outcomes of students with disabilities: Predictive factors and student perspectives. *Exceptional Children, 66*(4), 509-530.

Carnine, D. (1997). *Direct Instruction Reading*. (3rd ed.). Des Moines, IA: Prentice-Hall.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112,* 155-159.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Erlbaum.

Cullinan, D., Evans, C., Epstein, M., & Ryser, G. (2003). Characteristics of emotional disturbance of elementary school students. *Behavioral Disorders, 28,* 94-110.

Elliott, S., & Marquart, A. (2004). Extended time as a testing accommodation: Its effects and perceived consequences. *Exceptional Children, 70,* 349-367.

Fuchs, D., Fuchs, L., Mathes, P., & Lipsey, M. (2000). Reading differences between low-achieving students with and without learning disabilities: A meta-analysis. In R. Gersten, E. Schiller, & S. Vaughn (Eds.). *Contemporary special education research: Syntheses of the knowledge base on critical instructional issues* (pp. 81-104). Mahwah, NJ: Erlbaum.

Horton, S.V., Lovitt, T.C., Givens, A., & Nelson, R. (1989). Teaching social studies to high school students with academic handicaps in a mainstreamed setting: Effects of computerized study guides. *Journal of Learning Disabilities, 22,* 102–107.

Keeler, C., Richter, J., Anderson-Inman, L., Horney, M., & Ditson, M. (2007). Exceptional learners: Differentiated instruction online. In C. Cavanaugh & R. Blomeyer (Eds.). *What works in K-12 online learning.* Eugene, OR: International Society for Teaching in Education.

Kim-Rupnow, W., Dowrick, P., & Burke, L. (2001). Implications for improving access and outcomes for individuals with disabilities in postsecondary distance education. *The American Journal of Distance Education, 15*(1), 25-40.

Lane, K., Carter, E., Pierson, M., & Glaeser, B. (2006). Academic, social, and behavioral characteristics of high school students with emotional disturbances or learning disabilities. *Journal of Emotional and Behavioral Disorders, 14,* 108-117.

Mackey, K., & Horn, M. (2009). Florida Virtual School: Building the first statewide, Internet-based public high school (Report No. E-CS-002). Retrieved from Innosight Institute website: http://www.innosightinstitute.org/media-room/publications/education-publications/florida-virtual-school/

Marcotte, D. & Hansen, B. (2010). Time for school? *Education Next, 10*(1), 52-59.

Marcotte, D. & Hemelt, S. (2008). Unscheduled closings and student performance. *Education Finance and Policy, 3*(3), 316-338.

Mattison, R., Hooper, S., & Glassberg, L. (2002). Three-year course of learning disorders in special education students classified as behavioral disorder. *Journal of American Academy of Child Adolescent Psychiatry, 41*(12), 1454-1461.

Means, B., Toyama, Y., Murphy. R., Bakia, M. & Jones, K. (2009). *Evaluation of evidence-based practices in online learning: A meta-analysis and review of online-learning studies.* Washington, DC: U.S. Department of Education.

Meyen, E., Aust, R., Gauch, J., Hinton, H., Isaacson, R., Smith, S., & Tee, M. (2002). E-learning: A programmatic research construct for the future. *Journal of Special Education Technology, 17*(3), 37-46.

Muller, E. (2009). *Serving students with disabilities in state-level virtual K-12 public school programs*. Alexandria, VA: Project Forum at the

National Association of State Directors of Special Education.

Muller, E. (2010). *Virtual K-12 public school programs and students with disabilities: Issues and recommendations.* Alexandria, VA: Project Forum at the National Association of State Directors.

National Governor's Association. (2009). *Raising rigor, getting results: Lessons learned from AP expansion.* Washington, DC: Author.

National Longitudinal Transition Study 2. (2005). *Facts from NLTS2@: High school completion by youth with disabilities.* Menlo Park, CA: SRI International. Retrieved from www.nlts2.org/fact_sheet_2005_11.pdf

Nelson, J. & Roberts, M. (2000). Ongoing reciprocal teacher-student interactions involving disruptive behaviors in general education classrooms. *Journal of Emotional & Behavioral Disorders, 8,* 27-38.

Osgood, D., Foster, E., Flanagan, C., & Ruth, G. (2007). *On your own without a net: The transition to adulthood for vulnerable populations*. Chicago, IL: University of Chicago Press.

Piirto, J. (2007). *Talented children and adults: Their development and education.* (3rd ed.). Waco, TX: Prufrock Press.

Raymond, E. (2008). *Learners with Mild Disabilities: A Characteristics Approach* (3rd ed.). Upper Saddle River, NJ: Pearson.

Reid, R., Gonzalez, J., Nordness, P., Trout, A., & Epstein, M. (2004). A meta-analysis of the academic status of students with emotional/behavioral disturbance. *The Journal of Special Education, 38*(3), 130-144.

Repetto, J., Cavanaugh, C., Wayer, N., & Liu, F. (2010). Virtual high schools: Improving outcomes for students with disabilities. *Quarterly Review of Distance Education, 11*(2), 91-104.

Reschly, A., & Christenson, S. (2006). Prediction of dropout among students with mild disabilities: A case for the inclusion of student engagement variables. *Remedial and Special Education, 27*(5), 276-292.

Rhim, L., & Kowal, J. (2008). *Demystifying special education in virtual charter schools.* Alexandria, VA: National Association of State Directors of Special Education. Retrieved September 1, 2010 from www.uscharterschools.org/specialedprimers

Rocha, E. (2007). *Choosing more time for students: The what, why, and how of expanded learning.* Washington, DC: Center for American Progress.

Runyan, M. (1991). The effect of extra time on reading comprehension scores for university students with and without learning disabilities. *Journal of Learning Disabilities, 24*, 104-108.

Shores, R., Gunter, P., & Jack, S. (1993). Classroom management strategies: Are they setting events for coercion? *Behavioral Disorders, 18,* 92-102.

Sireci, S., Scarpati, S., & Shuhong, L. (2005). Test accommodations for students with disabilities: An analysis of the interaction hypothesis. *Review of Educational Research, 75,* 457-490.

Sterling, R., Barbetta, P., Heward, W., & Heron, T. (1997). A comparison of active student response and on-task instruction on the acquisition and maintenance of health facts by fourth grade special education students. *Journal of Behavioral Education, 7*, 151-165.

Sutherland, K., Alder, N., & Gunter, P. (2003). The effect of varying rates of opportunities to respond to academic requests on the classroom behavior of students with EBD. *Journal of Emotional and Behavioral Disorders, 11*, 239-248.

Zuriff, G. (2000). Extra examination time for students with learning disabilities: An examination of the maximum potential thesis. *Applied Measurement in Education, 13*(1), 99-117.