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Active Learning in Higher Education 2011 12: 133
DOI: 10.1177/1469787411402483

The online version of this article can be found at:
http://alh.sagepub.com/content/12/2/133
The relative benefits found for students with and without learning disabilities taking a first-year university preparation course

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Abstract
Positive outcomes have been reported for university preparation courses for students without disabilities. Little is known about whether these courses can offer the same benefit to students with learning disabilities and whether the inclusion of psychosocial factors, in addition to academic skills, would benefit both groups. First-level students with and without learning disabilities were tested on variables known to influence academic performance at the beginning and end of a university preparation course. Results revealed that students entering university with and without learning disabilities have similar challenges. Both groups showed increases in attentiveness, and academic and general resourcefulness after the course. Students with learning disabilities experienced greater gains in academic self-efficacy in comparison to their non-disabled peers. The study showed benefits in including psychosocial measures in a university preparation course, and that integrating students with learning disabilities into the course could help to alleviate the limited resources of disabilities programs.

Keywords
academic self-efficacy, explanatory style, learning disabilities, learned resourcefulness, post-secondary success course

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Outcomes for university preparation courses

The primary objective of university preparation courses is to help students manage their higher education (Kinder et al., 2002; Merchant and Gajar, 1997; Stupka, 1993; University of South Carolina: National Resource Center for The Freshman Year Experience, 2006); with the majority of these courses focusing on academic skills and critical thinking (Barefoot, 2006). University preparation courses are especially important for students transitioning into higher education. For example, Gross (2004) found that most of these students have difficulty evaluating their own skill levels. Reed et al. (2007) showed that without explicit instruction and feedback students fail to recognize the academic errors they make. Further, Seon and King (1997) estimated that 70% of first-year college/university students require some remediation.

Positive outcomes have been reported for university preparation courses in terms of grades and retention (Kinder et al., 2002). However, these courses might also have psychosocial benefits to students. Pancer et al. (2004), for example, showed that first-year students completing an academic skills course scored better on university adjustment questionnaires and had a lower drop-out rate than a matched group of students who did not take the course. In addition, Bailey and Karp (2003) showed that students who were entered into a course that focused on university social and academic integration attained higher grades and were more satisfied with their university experience than a group of matched students that did not take the course.

It is evident from other research that individuals possessing a large general repertoire of learned resourcefulness skills (the basic self-regulatory skills needed to handle everyday life stress) make use of positive self-instructions, delay gratification, apply problem-solving methods and employ other self-control strategies when distressed or challenged (Rosenbaum, 1990, 2000), and are advantaged academically (Kennett and Keefer, 2006). In addition, students possessing either a high or a low level of learned resourcefulness skills experience similar stress levels (Akgun and Ciarrochi, 2003; Kennett and Pettis, 2001); yet the lower resourceful students are less able to control stress (Kennett and Pettis, 2001) leading to poorer university adjustment (Kennett and Pettis, 2001) and lower grades (Akgun and Ciarrochi, 2003). Clearly, interventions that improve resourcefulness skills may advantage first-year students.

Kennett (1994), for example, offered an academic self-management program designed to increase the quality of study habits and grades in university students who had been identified as at risk of suspension owing to failing academic grades. Students completing Kennett’s program had gains in academic self-efficacy, academic resourcefulness and year-end grades, and these students became more generally resourceful as well. In addition, Kennett and Reed (2009) found similar gains in a first-year undergraduate population. These findings suggest that courses reporting academic improvements may actually be improving general and academic resourcefulness skills as well as other personal attributes, which, in turn, leads to improved grades and retention.

One group of students that is particularly disadvantaged in higher education is those with learning disabilities (Reed et al., 2003, 2006). Higher education is particularly important for these students, with the Ontario Human Rights Commission’s (2002) review revealing that access to higher education improves employment opportunities for individuals with disabilities. Many barriers to higher education exist for students with learning disabilities (Reed et al., 2003, 2006). One such barrier is self-perception; many of these students feel unprepared for the higher education environment (Hadley, 2007; Reed et al., 2006). In addition, studies show that higher education students with learning disabilities often believe that they are not academically capable, they lack the ability to manage the demands of the academic environment and they are pessimistic about their academic future (Murray and Wren, 2003; Reed et al., 2006; Ruban et al., 2003; Saracoglo et al., 1989).
Fuller et al. (2004) found that these students still had academic disadvantages related to their disability even after accommodations were identified.

One way to address some academic and non-academic issues for students with learning disabilities is to integrate them into a university preparation course offered to the general student population. Students with disabilities show improvements in resourcefulness and academic skills following a university preparation course, which are similar to or better than improvements seen with one-on-one sessions with a learning disabilities specialist, and better than improvements seen with those who opt out of interventions (Reed et al., 2009). While students with learning disabilities experience many of the same types of academic/non-academic stress as students without learning disabilities, there is limited research comparing the benefits of university preparation courses for students with and without learning disabilities.

The purpose of this study was to determine whether students with and without learning disabilities would benefit equally from a university preparation course that focuses not only on the acquisition of basic academic skills but also on the acquisition of both general and academic resourcefulness skills, self-efficacy and a positive explanatory style, as well as on dealing with anxiety and problem behaviors known to hinder academic performance and retention.

**Methodology**

**Participants**

Forty-one students (mean age 18 years), in their first term of higher education studies, volunteered to participate in this study. These students agreed to participate in the pre-testing, in the first two weeks of class, and post-testing, at the end of the second university term of their first academic year. Of the 41 participating students, eight were students with learning disabilities who had learned of the for-credit university preparation course in the social sciences area through disability services. Even though these eight students were encouraged to access disability services available at the university, only two students in our study did so on a regular basis. To protect student confidentiality, data on the students’ specific learning disability were not collected. However, at the time of this study, disability services report that, for students with learning disabilities, approximately 38% have auditory/language disabilities, 28% have visually based learning disabilities, 27% have organizational disabilities and the remaining have non-verbal or motor-based learning disabilities (based on the Learning Opportunities Task Force Appendix A categories; see Nicols et al., 2002).

**Course design**

The course included lectures, demonstrations, hands-on activities, and smaller group discussions and readings. The course content was academic, but also included was content related to coping with the everyday-life demands that interfere with one’s academic studies, and the use of general resourcefulness such as positive self-instruction, problem solving and the recognition that change requires a lot of effort (Hadad and Reed, 2007; Reed et al., 2009). Lecture topics included library research, critical evaluation of literature, citing, information literacy, learning theory, essay planning, university-level writing, learning and memory theory applications to the university environment, academic reading, understanding research articles, understanding statistics within research articles, academic integrity, motivation, group dynamics, stress and coping, and presentation skills. Demonstrations, activities and discussions included hands-on library skills workshops, study skills workshops, time management, test-taking skills, and an editing workshop where, with the assistance of faculty and strategists, students edited their own essays. Students were evaluated
by means of tests and written work. Tests focused on student knowledge of lecture topics, and written work focused on essay planning, academic research, library research skills, writing, editing and academic integrity.

**Measures**

Rosenbaum’s (1980) Self-Control Schedule (SCS) is a reliable and validated scale (Rosenbaum, 2000), and is widely used to assess general learned resourcefulness skills. It consists of 36 items, which are rated on a six-point Likert scale ranging from –3 (very uncharacteristic of me) to +3 (very characteristic of me). In the management of their everyday life, individuals are asked to what extent they rely on problem solving strategies (for example, ‘When I am faced with a difficult problem, I approach it in a systematic way’), use positive self-statements to cope with stressful situations (for example, ‘When an unpleasant thought is bothering me, I think about something pleasant’), are able to delay gratification (for example, ‘I prefer to finish a job that I have to do before I start doing things I really like’), and recognize that self-change requires a lot of effort. Scores can range from –108 to 108, with mean scores for student populations typically around 23 and a standard deviation of 25 (Kennett, 1994; Rosenbaum, 1980). A higher score reflects a greater level of general learned resourcefulness skills.

The Explanatory Style for Failure Questionnaire asks students to think of a time when they were disappointed with their academic performance. With this event in mind, they are given 18 explanatory statements (for example, ‘My disappointing performance here reflects a tough professor/ marker’), and they rate these statements using a seven-point Likert scale of 1 (strongly disagree) to 7 (strongly agree). Factor analysis (Kennett and van Gulick, 2001) shows four explanatory themes: task difficulty (5 items), bad luck (3 items), effort (6 items) and ability (3 items). Higher scores on these subscales reflect attributing failure to task difficulty, bad luck, lack of effort, and not lack of ability. Mean scores and standard deviations (SD) of these attributes for undergraduates are: effort, 23.08 (7.79); task difficulty, 18.75 (6.53); [not] lack of ability, 15.34 (4.11); and bad luck 10.73 (3.91) (Kennett and Keefer, 2006; Kennett and van Gulick, 2001).

The Academic Resourcefulness Inventory measures students’ use of positive self-statements to manage academic setbacks, use of problem-solving strategies to cope with academic demands and success in meeting academic deadlines. Students rate, on a seven-point Likert scale, their ability/ inability to meet various academic demands. Scores on this inventory range from 23 to 161 with higher scores reflecting greater academic resourcefulness. Scores for higher education student populations are normally distributed with a mean score of 108 and a standard deviation of 17 (Kennett, 1994; Kennett and Keefer, 2006; Kennett and van Gulick, 2001).

The Academic Self-Efficacy Scale explores student beliefs about their academic abilities. This scale contains nine items where students rate, on a six-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree), how well each statement describes them (for example, ‘I know that I will be able to learn new material’). Scores range from 9 to 54, with a higher score reflecting greater academic self-efficacy. Means for higher education populations are around 38 with a standard deviation of 7 (Kennett and Keefer, 2006; Kennett and van Gulick, 2001).

The Self-Evaluation Questionnaire measures current (state) and general levels (trait) of anxiety. It consists of two validated scales (one for state and one for trait) with 20 items on each scale. Students rate on a four-point Likert scale how much each statement (for example, ‘I feel calm’) applies to them currently and then generally. Typical mean and standard deviation (SD) scores differ for male and female college-level students (state male: 36.47 (10.02), state female: 38.76
(11.95); trait male: 38.30 (9.18), trait female: 40.40 (10.15)), with slightly higher state and trait anxiety scores for females (Mind Garden, see Spielberger et al., 1983).

The College ADHD Response Evaluation (CARE) is used to evaluate Attention Deficit Hyperactivity Disorder (ADHD) in college/university-level students. The questionnaire consists of 59 statements, whereby students indicate whether they agree, disagree or are undecided as to whether a behavior is representative of them. Based on factor analysis, the CARE outcomes are divided into three distinct subscales: inattentiveness, hyperactivity and impulsivity. Students at high risk for ADHD have scores on these subscales of 22 and above for inattentiveness, 19 and above for hyperactivity, and 15 and above for impulsivity (Glutting et al., 2002).

Student grade point average (GPA) was collected at the end of the second term of study. Reliability statistics for all measures have been previously reported in Kennett and Reed (2009) and Reed et al. (2009).

Procedure

After university ethics approval, students with learning disabilities were advised of the course. All students registering for the for-credit university preparation course were asked by a research assistant, at the first class, to volunteer to participate in this research study. Those interested provided their contact information to the research assistant. Once contacted, students learned more about the study from a research assistant or learning strategist who then scheduled a convenient time for them to complete the survey package. Pre-testing and post-testing were conducted in a quiet room, with a trained research assistant/learning strategist present to answer any questions participants might have about the questionnaires or study. Students were given unlimited time to complete the questionnaires, with most students needing 30–45 minutes. The pre-testing took place before the second week of the first university term, and post-testing occurred during the last half of the second term of school (the term following the course). The post-test was conducted well after the end of the course to give the students the opportunity to use the skills they had acquired. All research questionnaires were included in both pre- and post-testing sessions.

Results

Comparison of group differences

Table 1 provides the means and standard deviations of the pre- and post-test measures for students without and with learning disabilities. Univariate independent t-tests revealed that on average both students with and without learning disabilities had comparable scores at pre-test and post-test and attained similar course grades and second-term grades. The only exception observed was that, at post-test, students with learning disabilities were slightly but significantly more likely to attribute past academic disappointments to task difficulty than students without learning disabilities.

At pre-test, both groups of students scored similar to the normative mean (see measures) on measures assessing academic self-efficacy, state anxiety and explanatory style for failure. Although students did not appear to be at risk for ADHD as evaluated by the CARE, students with learning disabilities did have a borderline high-risk average inattentiveness score. Both groups of students also had substantially above-average trait anxiety scores and below-average general and academic resourcefulness scores in comparison to the norms. At post-test, students’ average scores were at or above the normative level for self-efficacy, and general and academic resourcefulness. Decreases were also observed for inattentiveness, placing students at a lower risk for this behavioral deficit.
A series of mixed design ANOVAs for the independent variables ‘group’ and ‘time’ revealed significant main effects of ‘time’ for the following dependent variables: inattentiveness, academic self-efficacy, academic resourcefulness and general resourcefulness. As shown in Table 2, students showed substantial improvements on these measures following the university preparation course.

Although the main effect of ‘group’ failed to reach significance for all the variables, there was a significant ‘group’ by ‘time’ interaction for the dependent variable ‘academic self-efficacy’ (F1, 39 = 9.18, p = 0.004). This analysis revealed that, although only small gains between pre- and post-testing were made for self-efficacy for students without disabilities, those with learning disabilities showed significantly larger gains.

**Discussion**

The results revealed that students entering university with learning disabilities have similar challenges to other students. Even though students with learning disabilities had at pre-test slightly
Table 2. Main effect of time

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pre-test mean (SD)</th>
<th>Post-test mean (SD)</th>
<th>F(1, 39)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inattentiveness</td>
<td>19.34 (8.37)</td>
<td>16.61 (8.71)</td>
<td>6.10, p = 0.02</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>36.64 (5.37)</td>
<td>40.74 (4.69)</td>
<td>20.14, p &lt; 0.001</td>
</tr>
<tr>
<td>Academic resourcefulness</td>
<td>103.03 (14.15)</td>
<td>108.47 (17.19)</td>
<td>7.34, p = 0.01</td>
</tr>
<tr>
<td>General resourcefulness</td>
<td>9.61 (25.53)</td>
<td>18.72 (31.09)</td>
<td>4.59, p = 0.04</td>
</tr>
</tbody>
</table>

higher scores on measures assessing inattentiveness, hyperactivity, impulsiveness and anxiety, and slightly lower scores on academic resourcefulness, general resourcefulness and self-efficacy, these differences were not significant. In addition, performance variability on measures was similar between the two groups (see Table 1). This result was surprising given that students who are identified as learning disabled often believe that they are not capable and are unprepared for academic rigor (Hadley, 2007; Murray and Wren, 2003; Reed et al., 2006; Ruban et al., 2003). The similarity between groups suggests that many first-year students without disabilities have the same beliefs and skill deficits as students with learning disabilities, and that these attributes come from a variety of sources. One source may be a lack of higher education preparation.

Two interesting differences, however, were found between students with and without learning disabilities. First, students with learning disabilities had higher gains in their academic self-efficacy than students without disabilities. Second, at post-test, students with learning disabilities attributed their past failures to task difficulty more than students without learning disabilities did. Taken together this suggests that students with learning disabilities increased their confidence in their own abilities and, thus, were less likely to attribute their own failures as personal. Recognizing that students often have difficulties in accurately evaluating their own skill level (Gross, 2004) and that high confidence with low skill levels is not a positive outcome, results from this study also showed that students with learning disabilities on average attained a second term GPA of 3.32 (B to B+), suggesting that these students’ increased confidence in their skills was well founded.

Many students (both those with and without learning disabilities) arrive at higher education institutions unprepared for the rigors of academia and have low resourcefulness skills. Kennett and Keefer (2006) showed that highly resourceful people were academically advantaged. Interestingly, many students in this study’s sample, at pre-test, showed large deficits in resourcefulness. However, one positive outcome following the completion of the course is that students with and without learning disabilities were able to decrease inattentiveness, increase academic and general resourcefulness and increase academic self-efficacy, with all of these abilities having links to academic success (Kennett and Keefer, 2006; Kennett and van Gulick, 2001; Kennett et al., 1996). Such findings might reflect the benefits of requiring university preparation courses for all students.

The literature review in this article indicated the possibility that the gain found in university preparation courses could be due to changes in resourcefulness rather than simple gains in academic skill. The current study supports this contention. And the outcomes suggest that the content of a university preparation course may also be a key factor in helping students with and without disabilities successfully transition to higher education institutions, since they often arrive with poor perception of their own abilities (Hadley, 2007). Content that emphasizes resourcefulness, self-efficacy, and an understanding that effort is needed to achieve success, in addition to
academic skills, may best benefit students. It is difficult, however, to generalize these findings to courses that do not include psychosocial content.

One issue that is highlighted in this article is that of testing students on psychosocial variables such as resourcefulness, prior to entry into preparation courses. Although grades are often published as the benefit of a university preparation course, this study shows that these courses offer benefits in psychosocial variables too. Knowing students’ levels of resourcefulness, academic self-efficacy, explanatory style and cognitive attention can help to target programming and curriculum development, especially for students who are at risk of failing.

It is recognized that the integrated group of students with learning disabilities is very small and this is a limitation of the study. However, even with the small sample, it was found that this course benefited these students and their peers, particularly in the areas of attentiveness, self-efficacy, and academic and general resourcefulness. In addition, most of these students achieved average to above-average second-term grades. Many factors beyond a single course affect student performance both academically and psychosocially. Thus, whether opportunities to increase academic performance and resourcefulness would have occurred without this course remains unknown. In this study we examined only students taking a university preparation course. Future work needs to compare the outcomes for students (with and without learning disabilities) choosing to take a university preparation course with those students who do not.

In conclusion, this article highlights three useful findings. First, both students with and without learning disabilities benefited equally in terms of grades and psychosocial variables from a university preparation course that emphasized both academic and general resourcefulness skills. Second, psychosocial tools used in this investigation helped to emulate the types of psychosocial deficits students have transitioning into university and the type of gains attained by these students via a university preparation course. The use of these and other psychosocial tools will help to further elucidate and identify student need. Finally, courses developed to prepare students for higher education should consider psychosocial as well as academic content. Such courses would benefit all first-level students.

Acknowledgements

The authors would like to acknowledge the Learning Opportunities Task Force Grant provided by the Government of Ontario for this project. In addition, we would like to acknowledge the Disabilities Services of Ryerson University and Trent University for their assistance with this project. Finally, we would like to acknowledge the Faculty of Arts at Ryerson University for allowing us to develop and conduct a preparation course aimed at increasing student success.

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