

Effective Advising: How Academic Advising Influences
Student Learning Outcomes in Different Institutional Contexts

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Paper presented at the annual meeting of the American Educational Research Association,
Washington, DC, April 8 2016.

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Abstract

Using survey data from 156 bachelor's-granting institutions, this study explored the relationship between academic advising services and senior's grades and self-perceived gains. We found advising experiences has a positive relationship with students' grades and self-perceived learning gains. Additionally, our results indicate that the institutional advising climate is positively correlated with perceived learning gains, but not grades. The results also showed that the relationships of advising and students' learning and development varied across institutions. Implications for policy and practice are discussed.

Keywords: academic advising, student learning outcomes

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Introduction

Educational achievement is a vital measure of global competitiveness. U.S. has a higher education system admired around the world, yet the progress of other countries poses threats to its economic vitality (Goldin & Katz, 2009; OECD, 2012). Improving America's educational attainment rate is a national priority and the improvements must primarily come from increasing baccalaureate degree production (Hauptman, 2011; Lumina Foundation for Education, 2009; White House Office of the Press Secretary, 2009). A report by National Center for Education Statistics revealed that the 6-year graduation rate of bachelor's-granting institutions was just 59% during the 2012-13 academic year (Kena et al., 2015). A complicating factor in improving the number of citizens with a bachelor's degree is a changing college student population and postsecondary environment. Colleges and universities have served an increasingly diverse population of students over time (Anderson, 2003). As these new student populations generally have been traditionally underserved by postsecondary institutions, these students typically possess less information on the college experience than their peers with a parent who completed college.

Entering college students, especially those traditionally underserved and academically unprepared, may not know where to look for or access the resources needed to thrive in college (Swecker, Fifolt, & Searby, 2013). Advising services can connect or direct students to various resources and opportunities designed to help students grow and develop. Traditionally, advising was the domain of faculty who mentored and guided students; however, advising has become increasingly professionalized in recent decades (Schulenberg & Lindhorst, 2010). This

professionalization has increased in parallel with an expanded definition of what services advising should provide. In particular, O'Banion (1972) and Crookston (1972) advocated that advising shall focus on improving students' cognitive, affective, and moral growth (Ender, Winston, & Miller, 1982). Today, the developmental model of advising serves guiding principle for many institutions (Heisserer & Parette, 2002).

Despite academic advising's theoretical and professional development, extant literature lacks convincing evidence that advising has an impact on students in practice (Hagen & Jordan, 2008). Previous studies have found a positive association between academic advising and student's retention and satisfaction (Kohle Paul & Fitzpatrick, 2015; Vianden & Barlow, 2015), yet little empirical research has examined the relationship of advising and other metrics of learning outcomes. Additionally, the existing literature focuses on a single institution or uses a small sample, which limits its generalizability throughout the field (Erlich & Russ-Eft, 2012; Metzner, 1989; Smith & Allen, 2014; Young-Jones, Burt, Dixon, & Hawthorne, 2013). To fill in this gap, we examined the association between academic advising services and senior students' grades and self-perceived gains using a large, multi-institutional sample. In particular, we investigated the relationship between individual academic advising experience and student's learning outcomes and how the relationship varies across institutions. Additionally, we explored whether the overall advising climate on a campus also affects student's learning.

Literature Review

Most empirical studies of academic advising have traditionally focused on the influence of academic advising on students' retention and satisfaction (e.g., Beal & Noel, 1980; Fielstein & Lammers, 1992; Metzner, 1989; Vianden & Barlow, 2015; Waggenspack & Hensley, 1992). For example, Metzner (1989) showed that academic advising services have both direct and indirect

effects on student retention. A more recent study by Vianden and Barlow (2015) revealed student's perception of quality advising has a positive association with student's loyalty, an indicator of retention. However, while student retention and satisfaction are important student outcomes, they cannot adequately measure students' learning and development.

More recently, a few studies begun to evaluate how academic advising influences student learning outcomes (Erlich & Russ-Eft, 2012, 2013; Smith & Allen, 2014; Young-Jones et al., 2013). Young-Jones and colleagues (2013) examined the association between academic advising and grade point average, but did not observe a statistically significant correlation. Erlich and Russ-Eft (2013) found academic advising interventions were correlated with an increase in students' academic planning. Smith and Allen (2014) tested students' immediate learning outcomes from advising programs and found that students who contacted advisors often have more clear educational plan and better known resources. Unfortunately, these studies relied upon a single institution or small samples with questionable generalizability to other institutional contexts.

As far back as 1991, Frost stated that little research had done on evaluating academic advising programs, yet the effectiveness of academic advising is still unclear. One reason is the frequency of using a single institution in a study which impedes comparison and generalizability. The research mentioned above on relationship between academic advising and student learning outcomes focuses on an institution's specific academic advising services, but not how advising influences students on a macro or policy level. Additionally, the decentralized nature of higher education has led to a variety of advising models, which makes comparison between institutions difficult. To demonstrate this variety, more than half institutions used shared model of academic advising, around a third utilized a centralized model, and the remaining institutions had a

decentralized advising structure (Pardee, 2004). Consequently, research is sorely lacking on how advising influences students on a more macro level.

Conceptual Framework

We were guided by Astin's (1991) Inputs-Environment-Outcomes (I-E-O) model in this analysis of the impact of academic advising on students' learning and development. According to I-E-O model, student outcomes are a product of student inputs (pre-college characteristics and experiences), the college environment, and the interactions between student inputs and the college environment. Advising is an environment in the I-E-O framework as it is a service provided by institutions. Astin (1991) distinguished between- and within- institution characteristics. Between-institution characteristics depict the institution as a whole. Within-institutional environmental characteristics identify sub-environments that only influence some students. He further defined two types of between-institutional environment measures. One type includes structural characteristics like institutional size, control, and selectivity. The other type of environment measures depicts an institution "in a more personal and sophisticated manner" (p. 86), such as the sense of community or types of advising services offered. Extant academic work showed evidence that both types of institutional environment characteristics are associated with student learning outcomes (Astin, 1977; Carini, Kuh, & Klein, 2006; Centra & Rock, 1971; Ewell, 1989; Hu & Kuh, 2002; Porter, 2006).

In the I-E-O model, a student's input measures, such as gender, racial/ethnic identity, social-economic status, personality, academic preparation, determine the students' attitudes towards advising and the types of services sought from advisors. Additionally, advising services mediate or moderate the relationship between students' inputs and learning outcomes, as

advising influences participation in educationally beneficial activities and helps students connect their classroom learning to the real world.

Research Purpose and Questions

Guided by Astin's (1991) I-E-O model, we used data from a large national student survey to offer deeper insights into how academic advising impacts student's learning outcomes. This study also aims to highlight the variability in advising across institutions. Specifically, we investigated the following research questions:

1. How do individual students' advising interactions influence their academic performance (self-reported gains and grades)?
2. How does institutional advising climate influence students' academic performance?
3. Do the impacts of academic advising differ across post-secondary institutions? If so, how do the impacts differ?

Methods

Data Sources

We utilized data from the National Student Survey of Engagement (NSSE) 2014 administration. NSSE is a student survey focusing on first-year and senior undergraduates' participation in educational beneficial activities and their perceptions of learning outcomes. Due to our focus on academic advising, we focused our analyses on senior students who also responded to the academic advising module, a set of questions institutions could choose to append to the core NSSE instrument, and met with an advisor at least once during the past academic year. We also excluded students attending special-focus institutions such as musical conservatories and divinity schools. Our final sample included 24,443 senior undergraduates

from 156 bachelor-granting colleges and universities. The overall response rate for the sample was 34%.

Our dependent variables were seniors' self-reported grades and self-perceived gains. Student-reported grades was an eight-point scale representing a student's most frequent letter grade at this institution. Self-perceived learning gains was a composite of ten items, covering student's cognitive and affective development (see Appendix A). The Cronbach's α for this scale was .90. We standardized both dependent variables with a mean of 0 and a standard deviation of 1.

The core independent variable is a composite measure of advising experiences. As the response options included a non-applicable option, the variable was scored using a graded response model, a form of item-response theory for ordinal variables, which can account for missing and non-applicable data and weight the scale's items differently. The graded response model has been used by other postsecondary researchers to create similar scales (e.g., Kim & Sax, 2014; Sharkness & DeAngelo, 2011). The items in the advising experiences variable included the following items that asked to what extent students' academic advisors have done the following:

- (1) being available when needed
- (2) listening closely to your concerns and questions
- (3) informed you of important deadlines
- (4) helped you understand academic rules and policies
- (5) informed you academic support options (tutoring, study groups, help with writing, etc.)
- (6) provided useful information about courses

- (7) helped you when you had academic difficulties
- (8) helped you get information on special opportunities (study abroad, internship, research projects, etc.)
- (9) discussed your career interests and post-graduation plans.

The marginal reliability for the advising experiences variable was .85. This variable was standardized with a mean of 0 and standard deviation of 1. We also derived an institutional average advising experience variable by aggregating the individual level advising variable up to the institutional level.

In our multivariate analyses, we used a variety of student and institutional characteristics that have been found correlated with student learning outcomes to serve as controls. Student characteristics included student's sex, race/ethnicity, parental educational level, international student status, educational expectation, student athlete status, Greek-life participants, veteran status, transfer status, distance learner, enrollment status, major field, and standardized test score (SAT or ACT equivalent score). Institutional characteristics included Carnegie classification (aggregated), Barron's selectivity index, enrollment size, and control (private vs. public). Table 1 presents descriptive statistics of these variables.

Analyses

For both dependent variables, we used multilevel modeling to separate the influences of variables at the individual and institutional levels. We began by estimating the intraclass correlation coefficient to examine the amount of variation between and within institutions. We then estimated two multilevel models to answer our research questions. Our first model included the two key advising variables discussed above, the control variables, and school-specific

random intercepts. In our subsequent model, we allowed the coefficient for individual level advising experience variable to vary across schools.

Limitations

This study has several notable limitations.. Our findings are limited to institutions that chose to participate in 2014 NSSE survey and the academic advising module and may have self-selected the module for biasing reasons unknown to the researchers. Although, we have a comprehensive sample, baccalaureate colleges and master's colleges and universities are overrepresented in our sample. Consequently, we are cautious to generalize results of the current study to all postsecondary institutions. Additionally, we lack data on how the institutions in our sample structure their advising services. While we attempt to measure and observe the variability in advising services in our analyses, one format may be more or less effective in promoting student learning outcomes. Consequently, our results should be viewed as a population average and not directly attributable to all institutions.

Results

Self-reported Gains

We began our analyses for self-reported gains by examining the extent of variation on this measure observed within and between institutions by calculating the intra-class correlation coefficient (ICC). The ICC shows the amount of correlation among students within institutions. The ICC for self-reported gains was .03 indicating that nearly all variation is attributable to student, not institutional differences.

Table 2 presents the results for our multivariate models. Model 1 shows the relationship between the independent variables and students' perceived gains with school-specific intercepts. The results show that both the individual and school average academic advising experience

variables had statistically significant effects on self-perceived gains. When students' academic advising experience increased one unit, our results indicate that students' self-reported gains would increase about .35 standard deviations, holding other factors constant. If an institution's average academic advising climate was raised one standard deviation, we estimate that a typical student from this institution will have .41 standard deviation increase in their self-reported gains, after accounting for other factors.

To answer our third research question, we allowed the estimate for student-level advising to vary by institution by adding a random effect to individual-level academic advising experience variable. Model 2 reveals that the random slope of individual level academic advising experience variable had a standard deviation of 0.05. Thus, the estimate relationship of advising interactions was between 0.30 and 0.40 at 95% confidence interval. While we observed some variability in the relationship between advising experiences and perceived gains, the relationship was relatively consistent across institutions.

In addition to the key advising variables, other control variables had significant relationships with perceived gains, when controlling for other factors. Female students reported statistically higher gains than their male peers. Transfer, veteran, and student athlete status was correlated with lower gains. Students' SAT (or ACT equivalent) score was negatively correlated with student's self-reported gains. Student's perception of their gains also varied among racial groups. Black and Hispanic/Latino students reported significant higher gains than their White peers. Compared with students whose parents had bachelor's degree, students with a parent who earned a graduate degree reported slightly but statistically significant lower gains. Students who expected to obtain a master's or doctoral degree had higher self-reported gains than students who only expected to earn bachelor's degree. Students' major also showed a significant connection to

self-reported gains. All major fields, except for the physical sciences, mathematics and computer sciences, were positively and significantly correlated with perceived gains compared to the arts and humanities. Institutional selectivity, as measured by Barron's rating, was positively associated with higher perceived gains. Additionally, students attending institutions with a basic Carnegie classification of bachelor's – arts & sciences on average perceived more gains than their peers attending doctoral universities, controlling for other factors.

Grades

Like our analyses for self-perceived gains, we began by calculating the ICC. The ICC was .05, indicating most of the variance on this measure occurs within, not between institutions. As shown in Table 2, we found a significant and positive correlation between students' advising experiences and grades, after controlling for other factors. For every unit increase of individual-level academic advising experience, we estimate that a student's grades would increase by 0.08 standard deviation. However, we did not observe a significant relationship for our campus level measure of advising experiences. In Model 2, individual level academic advising experience was allowed to vary between institutions to answer our third research question. The random slope of individual level academic advising experience had standard deviation of 0.03. Therefore, we estimate that the true relationship is between 0.02 and 0.15 at 95% confident level.

In addition to the advising relationship, we also found significant correlations between grades and some of our control variables after controlling for other factors. Males and Greek-life participants on average reported significant lower grades than females and non-Greek members. Distance learners, transfer students, on-campus residents, international, and full-time students all on average had statistically significant higher grades than their respective reference groups. Additionally, SAT/ACT score was positively associated with seniors' grades. Compared to

White students, Asian, Black, Hispanic/Latino, Pacific Islander, multiracial, and preferred not to respond students all reported having lower grades, after holding constant other factors. Students with a parental education level of associate's or some college on average had lower grades than their peers whose parents had a bachelor's degree. Students expecting to obtain a master or doctoral degree had significant higher grades than those who expected to only a bachelor's degree. The results also represented that major was an significant factor that affects student's grades, as most major fields had lower grades than the arts and humanities. At institutional level, institutional selectivity as measured by Barron's rating was negatively correlated with grades.

Discussion

Improving America's educational attainment will be key to the nation's success and productivity in the 21st century (Goldin & Katz, 2009). The wide disparities in college completion between students from different racial/ethnic and socio-economic backgrounds demonstrates that the U.S. has ample ability to improve its level of educational attainment (Kena et al., 2015). As higher education has historically not served all segments of the population equally, students from traditionally underserved backgrounds are frequently not aware of how to navigate college bureaucracies and access support services and special opportunities. Advising is one pathway for postsecondary institutions to improve students' college knowledge and increase students' learning and development. However, the relationship of advising to students' learning outcomes is currently unknown.

Consequently, we utilized data on the college experiences of approximately 25,000 senior undergraduates from 156 bachelor's-granting U.S. higher education institutions. We found that, holding other factors constant, the utilization of advising services has a significant and positive association with students' self-reported gains and grades. This finding comports with previous

studies on the effect of advising that focused on a single institution or used small samples (Beal & Noel, 1980; Erlich & Russ-Eft, 2012; Metzner, 1989; Smith & Allen, 2014). We also found that individual student's academic advising experiences has a stronger relationship with self-reported gains than grades. These findings support current notions of advising services that individual students' interactions with advisors are crucial for learning outcomes.

Additionally, we found that an institution's overall academic advising climate has a significant influence on students' perceived gains, but not grades. We suspect that advising's focus on developing multiple aspects of students' learning and development (e.g., emotional development, practical/career skills, and academic knowledge) is responsible for this differential relationship. Our self-reported gains measure reflects students' evaluation of their overall cognitive and non-cognitive development, while grades a measure of student's academic performance in various academic courses. These results support the notions of developmental advising service on student learning, implying that academic advising is not only for diagnosis and intervention of academic difficulties, but also for students' holistic development.

We also investigated how the relationship between individual advising experiences and our outcome variables varied between institutions. We found individual academic advising experiences relationship to students' grades and perceived gains varied between institutions. While we did not observe any negative correlation between advising experiences and our outcomes, advising appears to have a stronger relationship to students' learning and development at some institutions and a negligible relationship at others. This finding is not particularly surprising given the variety of advising models institutions employed by institutions.

Implications for research

Academic research on the relationship between academic advising and student learning outcomes is surprisingly limited (Smith & Allen, 2014). While our research answers some crucial questions on the relationship between advising and student learning outcomes, the study raises some important new questions. First, our finding that the effectiveness between advising services and student learning outcomes varies between institutions indicates that some institutions may not be practicing the most effective form of advising possible. Consequently, future research should focus on the qualitative differences between advising services and their relationship to student outcomes. Additionally, future research should look at if advising has differential effects on students according to their characteristics. For example, advising may have a stronger effect on first-generation students than students with a parent who completed college. If the effects vary, the answers could help optimize the provisioning of advising services. The nature of advising is also changing due to technology. Therefore, future research should examine the effectiveness of these new forms of advising.

Implications for practice

The current study also has a practical implication for advisors and institutions. Our finding that advising services positively and significantly impact students' learning and development indicates that administrators should seek to maintain advising services, even in an era of scarce resources and increasing concerns over college costs. However, we found that advising is more effective at some institutions than others. This finding calls upon advising administrators and other institutional leaders to critically evaluate if their advising services are optimal for the students served and the nature of the institution. We also found a stronger relationship for advising experiences on perceived gains than for grades. This suggests that there

may be room for improvement on how advising can improve academic outcomes. In particular, administrators should examine the relationship between advisors and faculty, as these groups can collaboratively work to improve the student experience.

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Table 1.
Descriptive Statistics of the Sample (N=24,443)

	Percent
Male	36.49
Distance learner	1.9
Transfer student	19.58
Greek-life participant	14.38
Student living on campus	27.98
Student athlete	8.63
Veteran	1.83
Fulltime student	93.04
International student	2.79
Race/ethnicity	
White	72.51
American Indian or Alaska Native	.38
Asian	4.91
Black or African American	5.1
Hispanic or Latino	5.59
Native Hawaiian or Other Pacific Islander	.18
Other race or ethnicity	1.07
Multiracial	6.24
Prefer not to respond racial/ethnic identity	4.03
Parental education	
High school or less	16
Associate's/Some college	19.74
Bachelor	30.82
Master's or higher	33.45
Educational expectations	
Some college	1.77
Bachelor's	25.64
Master's	45.07
Doctoral or professional	27.52
Major field	
Arts & Humanities	13.01
Biological Sciences, Agriculture, & Natural Resources	12.39
Business	13.4
Communications, Media & Public Relations	4.99
Education	8.31
Engineering	6.89
Health Professions	12.56
All Other majors	4.59
Physical Sciences, Mathematics, & Computer Science	5.8
Social Service Professions	3.61
Social Sciences	14.36
Undecided majors	.1

Table 1.
Continued.

	Percent			
Barron's selectivity rating				
Noncompetitive				3.21
Less competitive				10.9
Competitive				40.38
Very competitive				28.21
Highly competitive				10.9
Most competitive				6.41
Control				
Public				47.44
Private				52.56
2010 Basic Carnegie Classification				
Baccalaureate – Arts & Sciences				18.59
Baccalaureate – Diverse Fields				16.03
Master's (aggregated)				48.72
Doctorate-granting (aggregated)				16.67
	Mean	SD	Min.	Max.
Self-perceived gains (z-scored)	.00	1.00	-3.14	1.58
Grades (z-scored)	.00	1.00	-3.53	1.18
SAT/ACT (z-scored)	.00	1.00	-3.56	2.56
School-average-centered advising	.00	.98	-2.87	1.91
School average advising	.00	0.20	-0.57	0.56
Institutional size	3.91	1.21	1.00	5.00

Table 2.
Multilevel Models of Self- Gains and Grades

	Self- Gains				Grades			
	Model 1		Model 2		Model 1		Model 2	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
<i>Fixed Effects</i>								
Intercept	-.65***	.10	-.63***	.10	.39**	.13	.40**	.13
Male	-.04**	.01	-.04**	.01	-.17***	.01	-.17***	.01
Distance learner	.03	.04	.03	.04	.14**	.04	.13**	.04
Transfer	-.15***	.02	-.15***	.02	.09***	.02	.09***	.02
Greek life	.09***	.02	.09***	.02	-.10***	.02	-.10***	.02
On-campus resident	.02	.02	.02	.02	.05**	.01	.05***	.01
Athlete	-.08***	.02	-.08***	.02	-.01	.02	-.01	.02
Veteran	-.26***	.04	-.26***	.04	.00	.04	.00	.04
Full-time	.09***	.02	.09***	.02	.10***	.02	.10***	.02
International student	.05	.04	.05	.04	.29***	.04	.29***	.04
SAT/ACT (z-scored)	-.09***	.01	-.09***	.01	.38***	.01	.38***	.01
Race/ethnicity (Reference = White)								
American Indian	.06	.10	.06	.10	-.14	.09	-.14	.09
Asian	-.02	.03	-.02	.03	-.18***	.03	-.18***	.03
Black	.10**	.03	.10**	.03	-.43***	.03	-.43**	.03
Hispanic	.07*	.03	.08**	.03	-.19***	.03	-.19***	.03
Hawaiian/Pac. Islander	-.04	.14	-.03	.14	-.44**	.14	-.43**	.14
Other race	-.14*	.06	-.14*	.06	-.09	.06	-.09	.06
Multiracial	-.11***	.02	-.11***	.02	-.20***	.02	-.20***	.02
Prefer not to respond	-.17***	.03	-.17***	.03	-.09**	.03	-.09**	.03
Parent's education (Reference = Bachelor)								
High school	.04*	.02	.04	.02	.00	.02	.00	.02
Some college	.03	.02	.02	.02	-.05***	.02	-.05**	.02
Master's or higher	-.04*	.01	-.04*	.01	.01	.01	.01	.01
Educational expectations (Reference = Bachelor's)								
Doctoral	.20***	.02	.20***	.02	.46***	.02	.46***	.02
Master's	.16***	.01	.16***	.01	.23***	.01	.23***	.01
Some college	.01	.05	.01	.05	.04	.04	.04	.04
Major field (Reference = Arts & Humanities)								
Biological Sciences	.08**	.02	.07**	.02	-.29***	.02	-.29***	.02
Business	.30***	.02	.30***	.02	-.11***	.02	-.11***	.02
Communications	.27***	.03	.27***	.03	.01	.03	.01	.03
Education	.19***	.03	.19***	.03	.22***	.03	.22***	.03
Engineering	.30***	.03	.30***	.03	-.27***	.03	-.27***	.03
Health Professions	.24***	.02	.24***	.02	-.09***	.02	-.09***	.02
Other majors	.02	.03	.02	.03	-.28***	.03	-.28***	.03
Physical Science	.32***	.04	.32***	.04	.04	.03	.04	.03
Social Service prof.	.19***	.02	.19***	.02	-.12***	.02	-.12***	.02
Social Sciences	.09**	.03	.09**	.03	-.11***	.03	-.11***	.03
Undecided majors	-.36*	.18	-.36	.18	-.33	.18	-.32	.18

Table 2.
Continued

	Self-Reported Gains				Grades			
	Model 1		Model 2		Model 1		Model 2	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Carnegie Classification (Reference = Doctoral)								
Bac- Arts & Sciences	.12*	.05	.12*	.05	-.06	.08	-.07	.08
Bac – Diverse Fields	.04	.06	.03	.06	-.01	.08	-.02	.08
Master's	.04	.04	.04	.03	.06	.05	.05	.05
Institutional size	.02	.02	.02	.02	-.02	.02	-.02	.02
Barron's selectivity	.04**	.01	.04**	.01	-.13***	.02	-.12***	.02
Private	.05	.03	.05	.03	.06	.05	.07	.05
Student advising exp.	.35***	.01	.35***	.01	.08***	.01	.08***	.01
School avg. advising exp.	.41***	.06	.43***	.06	-.01	.09	.00	.09
<i>Random Effects</i>								
	SD/Cor.		SD/Cor.		SD/Cor.		SD/Cor.	
Intercept	.113		.114		.183		.183	
Intercept*Student advising experiences			-.385				.162	
Student advising exp.			.049				.033	
<i>N</i>	24178		24178		24250		24250	

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

Appendix A

Self-perceived gains items

How much has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? (1 = very little; 2 = some; 3 = quite a bit; 4 = very much)

- (1) Writing clearly and effectively
- (2) Speaking clearly and effectively
- (3) Thinking critically and analytically
- (4) Analyzing numerical and statistical information
- (5) Acquiring job- or work-related knowledge and skills
- (6) Working effectively with others
- (7) Developing or clarifying a personal code of values and ethics
- (8) Understanding people of other backgrounds (economic, racial/ethnic, political, religious, nationality, etc.)
- (9) Solving complex real-world problems
- (10) Being an informed and active citizen