

ADDING VALUE: Learning Communities and Student Engagement

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This study examines the relationships between participating in learning communities and student engagement in a range of educationally purposeful activities of first-year and senior students from 365 4-year institutions. The findings indicate that participating in a learning community is positively linked to engagement as well as student self-reported outcomes and overall satisfaction with college.
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KEY WORDS: learning communities; college students; student development; student engagement; effective educational practices; integrative learning.

INTRODUCTION

“I hear and I forget, I see and I remember, I do and I understand.” (Confucius, 551 B.C.)

Learning communities are receiving considerable attention by higher education scholars and practitioners. The concept is not new, however. The forerunner of the learning community dates back to the 1920s and the short-lived “experimental college” program at the University of Wisconsin introduced by Alexander Meiklejohn (Smith, 2001). A variation of this idea emerged once again in the 1960s with efforts to humanize the learning environment. A contemporary version of the learning community surfaced in the late 1980s, supported by the growing recognition that student engagement in educationally purposeful activities inside and outside of the classroom is a precursor to high levels of student learning and personal development as well as an indicator of educational effectiveness (American College Personnel Association [ACPA], 1994; Kuh, 1996, 2003; MacGregor, 1991; Study Group on the Conditions of Excellence in American Higher Education [Study Group], 1984).

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Though many forms and definitions of learning communities exist, they have some common academic and social features, such as the same groups of students taking two or more classes together (Brower and Dettinger, 1998). Co-enrolling students in two or more courses ensures that students see one another frequently and spend a substantial amount of time engaged in common intellectual activities. The experience is even more powerful in terms of learning outcomes when faculty members teaching the common courses structure assignments that require students to apply what they are studying in one course to other courses and assignments. Taken together, these features strengthen the social and intellectual connections between students, which, in turn, help build a sense of community among participants (Gabelnick, MacGregor, Matthews, and Smith, 1990).

According to Lenning and Ebbers (1999), learning communities take four generic forms:

1. Curricular learning communities are made up of students co-enrolled in two or more courses (often from different disciplines) that are linked by a common theme;
2. Classroom learning communities treat the classroom as the locus of community-building by featuring cooperative learning techniques and group process learning activities as integrating pedagogical approaches;
3. Residential learning communities organize on-campus living arrangements so that students taking two or more common courses live in close physical proximity, which increases the opportunities for out-of-class interactions and supplementary learning opportunities; and
4. Student-type learning communities are specially designed for targeted groups, such as academically underprepared students, historically underrepresented students, honors students, students with disabilities, or students with similar academic interests, such as women in math, science, and engineering.

Most learning communities incorporate active and collaborative learning activities and promote involvement in complementary academic and social activities that extend beyond the classroom. Such approaches are linked with such positive behaviors as increased academic effort and outcomes such as promoting openness to diversity, social tolerance, and personal and interpersonal development (Cabrera, Nora, Bernal, Terenzini, and Pascarella, 1998; Johnson and Johnson, 1994; Pascarella, Edison, Nora, Hagedorn, and Terenzini, 1996; Slavin, 1983; Vogt, 1997; Whitt, Edison, Pascarella, Terenzini, and Nora, 2001). In addition, students who actively participate in various out-of-class activities are more likely to connect with an affinity group of peers, which is important for student retention, success, and personal development (Astin, 1984; Pascarella and Terenzini, 1991; Rendon, 1994; Tinto, 1993).

Integrating these diverse academic and social activities into a meaningful

whole is also required to convert the experiences into authentic learning (Chickering, 1974; Newell, 1999). In this way, learning communities operationalize a constructivist approach to knowledge (Cross, 1998), whereby knowledge is not simply “discovered” but is socially constructed. As a result, rather than an authority (instructor) transmitting information, students actively construct and assimilate knowledge through a reciprocal process (Bruffee, 1995; Schon, 1995; Whipple, 1987). As a result, learning is deeper, more personally relevant, and becomes a part of who the student is, not just something the student has.

Learning communities are intentionally structured to help students make two types of connections consistent with this theoretical orientation. The first is encouraging students to connect ideas from different disciplines, which is aided by being co-enrolled in two or more courses (Klein, 2000; MacGregor, 1991). The second connection is the linking of students through ongoing social interactions afforded by being with the same students for an extended period of time. As a result, students become members of a community focused on academic content, which allows them to further develop their identity and discover their voice as well as to integrate what they are learning into their worldview and other academic and social experiences.

Theoretically and conceptually, the learning community appears to be a potentially powerful educational practice. How strong is the evidence for such claims?

PREVIOUS RESEARCH ON EFFECTIVENESS OF LEARNING COMMUNITIES

Three strands of research support the use of learning communities (Cross, 1998): (a) developmental research (Baxter-Magolda, 1992; Chickering and Reisser, 1993; King and Kitchener, 1994; Piaget, 1964; Perry, 1970), (b) cognitive science (Bransford, Brown, and Cocking, 2000), and (c) learning outcomes (Matthews, 1994; Pike, 1999; Tinto and Russo, 1994).

The developmental theory literature encourages educators to design learning environments that both challenge and support students to move to higher levels of intellectual and psychological development. Development is conceptualized as a process whereby students grow and change in response to dealing with novel situations that create a mismatch (Baxter-Magolda, 1992; King and Kitchener, 1994; Perry, 1970) or induce disequilibrium (Piaget, 1964) into their routine ways of responding. Environments that provide a combination of challenge and support (Chickering and Reisser, 1993; Sanford, 1962) tailored to students' level of development are recommended to assist students in adapting appropriately to the challenges they encounter (Newman and Newman, 1998). Interaction with peers from different cultural and disciplinary backgrounds is one way

to introduce disequilibrium, thus setting the stage for students to think in different, more complex ways about their experiences.

Done well, the interdisciplinary and interactive nature of learning communities introduces students to complex, diverse perspectives, as contrasted with expecting students to come up with the “right” answer, which is characteristic of traditional pedagogical approaches such as the large lecture class. The structure of learning communities also promotes critical thinking and contextual learning, skills that are increasingly important in an era of information overload (Bredemeier, 1998; MacGregor, 1991; Shenk, 1997).

Emerging research in cognitive science also stresses the importance of the learning context and developing schema that permit new learning through making connections with what was previously determined to be valid under specific conditions and contexts. The increased opportunities afforded by learning communities for peer learning and interaction allow for the development of richer, complex ways of thinking and knowing so that students learn at a deeper level (Bransford et al., 2000).

Several studies show that participating in learning communities is linked to a variety of desired outcomes of college (Matthews, 1994; McGuen et al., 1996; Pike, 1999; Tinto, 1998; Tinto and Love, 1995). Tinto and Goodsell (1993) found that first-year students at a large public research university who participated in Freshmen Interest Groups (FIGs) made up of linked courses had higher grades and were more likely to persist when compared with peers who did not experience a FIG. Similarly, Shapiro and Levine (1999) reported that students participating in learning communities were more engaged overall, had higher persistence rates, and evidenced greater gains in intellectual and social development compared with peers who did not participate in learning communities. Tinto and Russo (1994) also documented the following benefits of learning communities at 2-year colleges: students create their own supportive peer groups that extend beyond the classroom, students become more involved in both in-class and out-of-class activities, students spend more time and effort on academic and other educationally purposeful activities, and students become more actively involved and take more responsibility for their own learning instead of being a passive receiver of information.

Residential learning communities can be especially influential as they tend to be associated with greater social interaction with peers and extracurricular involvement, higher persistence and graduation rates, and greater gains in critical thinking and reading comprehension (Blimling, 1993; Pascarella, Terenzini, & Blimling, 1994). These effects may be indirect, as suggested by Pike, Schroeder, and Berry (1997) who concluded that membership in residential learning communities enhances overall involvement in educationally purposeful activities, which in turn directly and positively affects indicators of student success (e.g., persistence).

The theoretical and empirical works supporting the efficacy of learning com-

munities are promising. At the same time, much of the published research on learning communities is based on anecdotal evidence or program evaluations (MacGregor, 1991; Matthews, 1994) or from single institutions (MacGregor, personal communication, May 13, 2003; McGuen et al., 1996; Pike, 1999). Though dozens of studies have been conducted at 4-year colleges and universities, few are published and, therefore, readily available (MacGregor, personal communication, May 13, 2003). Most of the handful of multiple-institution studies that have been reported are from the 2-year college sector (Tinto and Love, 1995) or focused on students in specific disciplines such as engineering.

PURPOSE

This study seeks to discover whether participation in a learning community is linked with student success, broadly defined as student engagement in educationally purposeful activities, self-reported gains in a variety of desired outcomes of college, and overall satisfaction with their college experience. We define a learning community simply as a formal program where groups of students take two or more classes together, and may or may not have a residential component. Five research questions guide the study:

1. What is the relationship between participating in a learning community and students' academic performance?
2. What is the relationship between participating in a learning community and student engagement in a range of educationally productive activities, including academic effort (study time), academic integration, active and collaborative learning, interaction with faculty members, diversity-related activities, and the extent to which classes emphasize higher order thinking?
3. What is the relationship between participating in a learning community and students' perceptions of the degree to which their campus supports their academic and social needs, the quality of academic advising, and satisfaction with their college experience?
4. What is the relationship between participating in a learning community and students' self-reported gains in personal and social development, practical competence, and general education?
5. What types of students are more and less likely to participate in a learning community?

METHODS

Data Source and Instrument

The data source for this study is the National Survey of Student Engagement (NSSE), an annual survey of first-year and senior students. The NSSE instrument measures the degree to which students participate in educational practices

that prior research shows are linked to valued outcomes of college (Chickering and Gamson, 1987; Kuh, 2001, 2003). Specifically, NSSE assesses student experiences in the following areas: (a) involvement in a range of educationally purposeful in-class and out-of-class activities; (b) amount of reading and writing; (c) participation in selected educational programs, such as study abroad, internships senior capstone courses, as well as learning communities; (d) perceptions of the campus environment including the quality of students' relationships with peers, faculty members, and administrators; and (e) student satisfaction with academic advising and their overall collegiate experience. In addition, students estimate their educational, personal, and social growth and development in selected areas since starting college and provide background information, such as their sex, age, race/ethnicity, enrollment status, living arrangements, and major field. The psychometric properties of the survey instrument are well established (Kuh et al., 2001).

The sample is comprised of 80,479 randomly selected first-year and senior students from 365 4-year colleges and universities who completed the NSSE survey in the spring of 2002. The average institutional response rate was 41%. Table 1 shows the characteristics of students who say they have, or plan to, participate in a learning community. For example, more first-year students (30%) than seniors (23%), more full-time students (27%) than part-time students (18%), and more students of color (35% Black, 30% Native American, 32% Asian, 33% Latino) than White students (24%) are involved in learning communities. Table 2 indicates that students at private and public institutions are about equally likely to participate.

Using 47 items from the NSSE, we constructed six scales to represent dimensions of student engagement, three measures to gauge quality of campus environment, and three scales to measure student self-reported learning outcomes (Fig. 1). The appendix includes more information about the items contributing to these measures as well as internal scale consistencies (Cronbach's alpha).

Data Analysis

The analysis was conducted in three steps. First, to answer the first research question we conducted *t* tests to compare the entering SAT or ACT scores and self-reported grades of students who participated in the leaning communities with those who did not. It is possible that students who choose to join a learning community are more academically able as reflected by measures of ability, which could account for differences in outcomes that might be associated with learning communities and not necessarily the experience itself. Because grades are highly correlated with academic ability (SAT/ACT scores), we used multivariate ordinary least squares (OLS) regressions to control for the influence of

TABLE 1. Characteristics of Students in Learning Communities^a

Student Characteristics	Learning Communities: Yes		Learning Communities: No		Learning Communities: Undecided	
	N	%	N	%	N	%
Class						
First-year students	11489	29.6	10797	27.9	16473	42.5
Seniors	9210	22.7	26691	65.9	4610	11.4
Gender						
Male	6617	24.4	13407	49.5	7059	26.1
Female	14077	27.0	24077	46.1	14020	26.9
Race/Ethnicity						
White	15028	24.4	30681	49.8	15869	25.8
Black	1501	34.5	1614	37.1	1232	28.3
Native American	122	29.5	182	44.0	110	26.6
Asian	1445	32.0	1649	36.6	1416	31.4
Latino	1198	33.3	1337	37.2	1063	29.5
Age						
19 or younger	10254	29.7	9413	27.3	14811	43.0
20–23	7019	24.2	18527	64.0	3418	11.8
24–29	1485	21.7	4217	61.6	1139	16.6
30–39	886	20.9	2579	60.8	780	18.4
40–55	725	21.2	2102	61.6	586	17.2
Over 55	72	25.3	161	56.5	52	18.2
Parent Education						
None of the parents graduates from college	8614	26.5	15259	46.9	8686	26.7
One parent graduates from college	5039	25.5	9530	48.3	5158	26.1
Both parents graduate from college	6659	26.2	12097	47.6	6680	26.3
International Students						
International students	1176	30.1	1492	38.2	1237	31.7
American students	19333	25.9	35689	47.8	19612	26.3
Transfer Students						
Transfer students	4072	21.9	11279	60.6	3256	17.5
Native students	16427	27.4	25884	43.2	17579	29.4
Campus Residential Status						
On-campus	10255	28.6	13501	37.7	12103	33.8
Off-campus	10250	24.0	23630	55.4	8743	20.5
Enrollment Status						
Full-time	18858	27.2	31498	45.4	19071	27.5
Part-time	1642	18.1	5620	62.1	1792	19.8

TABLE 1. (Continued)

Student Characteristics	Learning Communities: Yes		Learning Communities: No		Learning Communities: Undecided	
	N	%	N	%	N	%
Major Fields						
Humanities	2083	23.1	4640	51.5	2292	25.4
Math & Sciences	3828	23.2	8316	50.5	4328	26.3
Social sciences	2866	22.8	6575	52.4	3108	24.8
Pre-professional	8773	29.2	13494	45.0	7735	25.8
More than primary major	513	35.7	585	40.7	339	23.6

^aMembership in learning communities is identified by responding to the question "Have you participated in or do you plan to participate in a learning community or some other formal program where groups of students take two or more classes together?" with "Yes" or "No." A respondent who answers "undecided" is treated as missing.

these confounding variables in order to determine the net effect of learning communities on student academic performance.

Second, in order to answer the second, third, and fourth research questions we conducted a series of multivariate OLS regressions to determine the relationships between participating in a learning community and student engagement,

TABLE 2. Membership in Learning Communities by Institutional Characteristics

Institutional Characteristics	Learning Communities: Yes		Learning Communities: No		Learning Communities: Undecided	
	N	%	N	%	N	%
Institutional Sector						
Private	9652	25.8	17520	46.9	10219	27.3
Public	11047	26.4	19968	47.7	10864	25.9
Carnegie Classification						
Doctoral/Research Extensive	4085	26.7	7429	48.5	3801	24.8
Doctoral/Research Intensive	2036	26.0	3729	47.7	2058	26.3
Master's I and II	8726	27.0	15115	46.7	8536	26.4
Baccalaureate-Liberal Arts	3081	22.7	6548	48.3	3928	29.0
Baccalaureate-General	2163	26.8	3692	45.7	2222	27.5
Baccalaureate-Associate	608	28.7	975	46.0	538	25.4

Engagement Activities

1. academic effort
 2. higher order thinking skills required in the courses
 3. academic integration
 4. active and collaborative learning
 5. interaction with faculty members
 6. diversity-related experiences
-

Quality of Campus Environment

1. quality of academic advising experiences
 2. supportive campus environment (academic and social support, quality of relations with peers, faculty members, and administrators)
 3. satisfaction with the overall college experience
-

Student Outcomes

1. gains in personal and social development
 2. gains in general education
 3. gains in practical competence
-

FIG. 1. Dependent measures.

perceptions of the college environment, and learning, and satisfaction outcomes. We controlled for student and institutional characteristics, including enrollment status (full or part time), place of residence (on or off campus), age, gender, class, race/ethnicity, SAT/ACT score, major, parent’s education, transfer status, Greek affiliation, sector, Carnegie classification, and total undergraduate enrollment. By controlling for students’ entering SAT and ACT scores, we can establish whether the effects of the learning community are due to the possibility of self-selection (perhaps learning communities attract more academically able students) or to the distinctive features of the learning community milieu that foster higher levels of student engagement. We computed y -standardized coefficients (the unstandardized regression coefficient divided by the pooled standard deviation) to estimate effect sizes for the OLS models (Greenwald, Hedges, and Laine, 1996; Light and Pillemer, 1982; Pascarella, Flowers, and Whitt, 2001). As suggested by some researchers, we considered an effect size of less than .10 to be substantively trivial, meaning the differences are too small to warrant consideration in making policy decisions (Alexander and Pallas, 1985; Rosenthal and Rosnow, 1991). We considered an effect size larger than .10 to be of potential practical import and, thus, worthy of attention.

Finally, to answer the last research question, we employed logistic regression analysis to determine the characteristics of students who participate in a learning

community, such as year in school, gender, enrollment status, transfer status, and major field. We examined the odds ratio (Menard, 1995) to identify those student groups that had a higher probability of being in a learning community.

RESULTS

Participating in learning communities is uniformly and positive linked with student academic performance, engagement in educationally fruitful activities (such as academic integration, active and collaborative learning, and interaction with faculty members), gains associated with college attendance, and overall satisfaction with the college experience. In the following sections we describe these positive effects in more detail.

Academic Performance

Table 3 shows that students who participated in learning communities had lower entering SAT/ACT scores than their counterparts who did not participate in learning communities. This is true for both first-year and senior students. With respect to grades, first-year students in learning communities had lower grades than those without learning community experiences. However, there were no differences in the grades of seniors between those who did and did not have a learning community experience.

To determine if student ability might be affecting their academic performance, we first entered into the regression students' entering SAT/ACT scores as a control variable and then added other student and institutional characteristics to examine the influence of these potentially confounding factors on our study. This analysis indicated that after controlling for these factors there were no differences in the grades of first-year students; however, seniors with a learning community experience had higher grades compared with those who did not participate in a learning community at some point during college. This would suggest that participating in a learning community might have a salutary effect on academic performance.

Student Engagement and Perception of Campus Environment

The results in Table 4 indicate that for both first-year and senior students, experience with a learning community is associated with higher levels of academic effort, academic integration, and active and collaborative learning. Similarly, learning communities are positively linked with more frequently interacting with faculty members, engaging in diversity-related activities, and having classes that emphasize higher order thinking skills. Students in learning communities also were more positive about the quality of academic advising and the degree to which their campus was supportive of their academic and social needs,

TABLE 3. Academic Performance of Students Who Did and Did Not Participate in Learning Communities

Academic Ability	First-Year Students						Seniors						
	Learning Communities: Yes			Learning Communities: No			Learning Communities: Yes			Learning Communities: No			
	Mean (SD)	Mean (SD)	Mean Diff. (SD)	Effect Size	Sig.	Effect Size	Mean (SD)	Mean (SD)	Mean Diff. (SD)	Effect Size	Sig.	Effect Size	
<i>Pre-College</i>													
SAT/ACT Scores ^a	1071 (178)	1135 (173)	-64	***	-0.36		1085 (181)	1129 (178)	-44	***	-0.25		
<i>During College</i>													
Raw Grades	3.41 (1.12)	3.54 (1.13)	-0.14	***	-0.12		3.74 (.99)	3.72 (1.00)	0.01	NS	.01		
Grades Holding Entering SAT/Act Constant	—	—	.016	NS	.01		—	—	.103	***	.10		
Grades Holding Entering SAT/ACT, Student, and Institutional Characteristics Constant ^b	—	—	.033	NS	.03		—	—	.101	***	.10		

^aThe comparison was based on 64% of the total sample (N = 51484); 36% of entering SAT/ACT scores were missing.
^bInstitutional characteristics include class, age, gender, race, parent education, international students, transfer status, campus residence, enrollment status, major; institutional characteristics include sector, Carnegie classification, and enrollment size.
 ***p < .001.

TABLE 4. Effects of Learning Communities on Engagement Activities, Quality of Campus Environment and Selected Learning Outcomes

Measure	First-Year			Senior		
	Standardized Regression Coefficient	Y-Standardized Effect Size	Standardized Regression Coefficient	Sig.	Y-Standardized Effect Size	Sig.
Engagement Activities						
Academic Efforts	0.157	0.32	0.12	***	0.28	***
Higher Order Thinking	0.201	0.40	0.151	***	0.35	***
Academic Integration	0.193	0.39	0.164	***	0.38	***
Active and Collaborative Learning	0.264	0.53	0.237	***	0.54	***
Interactions with Faculty	0.299	0.60	0.224	***	0.51	***
Diversity Experiences	0.205	0.41	0.156	***	0.36	***
Perception of Campus Environment						
Quality of Academic Advising	0.118	0.23	0.076	***	0.17	***
Supportive Campus Environment	0.186	0.37	0.141	***	0.32	***
Satisfaction	0.126	0.25	0.101	***	0.23	***
Learning Outcomes						
Gains in Personal and Social	0.239	0.48	0.175	***	0.40	***
Gains in Practical Competence	0.224	0.45	0.157	***	0.36	***
General Education Gains	0.181	0.36	0.105	***	0.24	***

*** $p < .001$.

and generally more satisfied with their college experience. The effect sizes range from .23 to .60 for first-year students and .17 to .54 for senior students, indicating that the influence of the learning community experience was substantial. Being in a learning community was strongly linked with active and collaborative learning and interaction with faculty members (effect sizes were larger than .50) for both classes. As indicated by the relative magnitudes of the significant effects, learning communities have stronger effects for first-year students than for seniors. This is to be expected, as first-year students have the most recent experience with learning communities. At the same time, it is noteworthy that the effects of learning communities persist well into the senior year.

Learning Outcomes

Learning communities are also positively associated with student gains in personal and social development, practical competence, and general education. Once again, the effect sizes are substantial, ranging from .36 to .48 for first-year students and .24 to .40 for senior students. Similarly, first-year students had higher level of gains associated with learning community experiences than seniors across all three general areas.

Who Participates in Learning Communities?

Table 5 indicates the types of students (combined first-year and senior students) who are most likely to participate in a learning community. They include native students (contrasted with transfer students), students of color, members of fraternities and sororities, full-time students, students in preprofessional majors, and those with two or more majors. In addition, first-year students from families with lower levels of parental education and students living on campus are more likely to get involved in learning communities. Among senior students, women were more likely than men to report having been a part of a learning community.

LIMITATIONS

This study has several limitations. The most significant is the wording of the learning community question on the NSSE survey. The question asks students if they have participated in, or plan to participate in, a learning community before they graduate. Therefore, strictly speaking, we do not know if students had—in fact—participated in a learning community when they completed the survey, or whether they were planning to do so. This is problematic primarily for first-year students. For this reason, we excluded from the analysis all students who said they were uncertain about whether they would experience a

TABLE 5. Likelihood that Students Participate in Learning Community

Predictors	First-Year Students				Seniors			
	B	S.E.	Sig.	Odds Ratio	B	S.E.	Sig.	Odds Ratio
Female	0.074	0.033		1.077	0.182	0.029	***	1.200
Age	-0.011	0.004		0.989	0.004	0.002		1.004
Parent Education	-0.074	0.019	***	0.929	0.017	0.016		1.017
International Students	0.160	0.075		1.174	0.144	0.065		1.155
Transfer Students	-0.230	0.062	***	0.795	-0.105	0.031	***	0.900
White	-0.633	0.049	***	0.531	-0.380	0.042	***	0.684
American Indian	-0.338	0.230		0.713	0.115	0.170		1.122
Asian	0.047	0.080		1.049	0.121	0.069		1.129
Latino/a	0.162	0.085		1.176	-0.026	0.075		0.974
Greek Affiliation	0.174	0.049	***	1.191	0.261	0.037	**	1.299
Living On-campus	0.197	0.039	***	1.218	0.078	0.034		1.081
Enroll Full-time	0.329	0.080	***	1.389	0.476	0.042	***	1.610
Humanity	-0.028	0.058		0.972	0.053	0.048		1.055
Math and Science	-0.077	0.050		0.926	0.010	0.044		1.010
Pre-professional	0.221	0.045	***	1.248	0.445	0.037	***	1.561
Multiple major	0.360	0.106	***	1.433	0.665	0.094	***	1.944

TABLE 5. (continued)

Predictors	First-Year Students				Seniors			
	B	S.E.	Sig.	Odds Ratio	B	S.E.	Sig.	Odds Ratio
Private	0.017	0.040		1.017	0.014	0.034		1.014
Enrollment Size	0.005	0.003		1.005	0.002	0.003		1.002
Doctoral/Research Extensive	-0.262	0.058	***	0.769	-0.097	0.050		0.908
Doctoral/Research Intensive	-0.179	0.056		0.836	0.010	0.048		1.010
Baccalaureate-Liberal Arts	-0.242	0.050	***	0.785	-0.166	0.043	***	0.847
Baccalaureate-General	-0.099	0.056		0.905	0.055	0.047		1.056
Baccalaureate-Associate	0.019	0.094		1.019	0.170	0.084		1.185
Constant	0.309	0.153		1.363	-1.657	0.102		0.191
Model Fit								
-2 Log likelihood			24309				35160	
Model chi-square (df)			651.1 (23)***				799.4 (23) ***	
Cox & Snell R^2			0.035				0.025	
Nagelkerke R^2			0.047				0.037	
% Correct Prediction			58%				75%	

*** $p < .001$.

learning community. For example, about 43% of first-year students indicated they were uncertain. That said, the results are essentially the same for both first-year students, some fraction of whom probably had not yet had a learning community experience even though they may have answered the question in the affirmative, and for seniors, the vast majority of whom almost certainly did have the experience inasmuch as they were in their final semester of undergraduate study. Thus, despite the ambiguous wording, the results show an overwhelmingly positive effect of participating in learning communities for both first-year and senior students.

The second limitation is related to our inability to distinguish among different types of learning communities. As mentioned earlier, learning communities take different forms, and it would be instructive to know if some approaches have more or less desirable effects. However, we cannot do this with the information from the NSSE survey.

A third limitation relates to the reliability of some of the scales employed in this study. To summarize the large number of survey items, we used 12 measures that have a good deal of conceptual consistency to represent the major academic and social aspects of engagement activities. Two of the scales have marginal Cronbach alpha coefficients—.53 for academic effort and .62 for academic integration. The results associated with these scales should be interpreted with some caution.

Fourth, the gain measures used in this study are based on self-reported data. Students in different learning environments have different learning experiences and the influence of these factors on their perceptions may differ (Pike, 2000). In addition, students may report their gains from college using different baselines depending on their openness to college experiences, a concern that is especially relevant for studies using student self-reported gains (Pascarella, 2001). Therefore, the findings related to gains and satisfaction should be interpreted with this in mind.

Finally, membership in learning communities influences student development in complex ways. As suggested by Pike (2000) and his colleagues (Pike et al., 1997), learning communities probably do not directly affect student gains; rather, learning communities provide a fertile environment for student growth through engagement with other influential agents of socialization, such as peers and faculty members. Consistent with this rationale, path models or structural equation modeling may have advantages in understanding the effects of learning communities on student engagement, learning, and personal development.

DISCUSSION AND IMPLICATIONS

By and large, the findings from this study tend to corroborate previous research on the value-added effects of participating in learning communities. Learning communities are associated with enhanced academic performance, in-

tegration of academic and social experiences, gains in multiple areas of skill, competence, and knowledge, and overall satisfaction with the college experience. Taken together, the results are impressive, especially the substantial effect sizes that favor students who had a learning community experience. These effects remain fairly strong into the senior year, suggesting that introducing students early in their college years to the kinds of educationally purposeful activities often associated with learning communities, such as interacting with faculty members and cooperating with peers on learning tasks, may encourage them to continue these activities throughout college. Given the weight of this and other evidence (MacGregor, 1991, Matthews, 1994; Pike, 2000; Smith, 2001; Tinto, 1997, 1998, 2000), learning communities qualify to be added to the list of effective educational practices (Chickering and Gamson, 1988; Education Commission of the States, 1995; Kuh, 2001, 2003).

Given these uniformly positive effects, academic leaders at colleges and universities should seriously consider at least two actions. First, every campus should take stock of how many and what kinds of learning communities are operating and the numbers of different groups of students (e.g., first-year students, men, students of color) who are participating in them. A related step is to determine the optimal number of students that a campus can accommodate with its various forms of learning communities. This is especially important at large, complex institutions where curricular fragmentation and social isolation are likely to be great and crossdisciplinary learning needs to be encouraged.

Second, efforts should be targeted to creating additional learning communities and attracting students to them, especially those who tend to be underrepresented at the present time. All students should have the chance to benefit from structured efforts that create conditions for connected learning and promote integration of their academic and social experiences. The findings from this study suggest that men, transfer students, and part-time students are less likely to participate in a learning community before they graduate. Individual institutions need to determine whether these national results hold for their campus and what factors are operating that may preclude their participating in this educationally rich opportunity. Student affairs professionals, academic advisors, faculty members, and others need to work collaboratively to make sure students are aware of the opportunity and to recruit students to participate in learning communities.

Third, some forms of learning communities may be more educationally effective than others (Lenning and Ebbers, 1999). Thus, additional research is needed both at the institution level and across multiple colleges and universities to determine whether some forms of learning communities are more effective than others for various groups of students and for what kinds of outcomes. Linking participation in learning communities with institutional records about student academic progress and other college experiences could yield promising insights into how to structure more effectively other aspects of the college program for certain groups of students. Any efforts to estimate the efficacy of learning

communities at the campus level need to take into account the form and nature of student experiences in the respective learning community as well as the outcomes measured and triangulated with a variety of student learning and success measures. What are, for example, the relationships between various forms of learning communities and student persistence, academic performance, and other measures of student development across different groups of students? MacGregor and her colleagues at the National Learning Communities Project at The Evergreen State College may be able to answer some of these questions when they complete their review of the published and fugitive literature related to the evaluation and assessment of learning communities.

Caveats

While the results of this study are impressive, learning communities are not silver bullets. There are likely limits on their effectiveness. Some students chafe at the prospect of cooperative learning tasks, and some faculty find collaborating with other faculty and staff difficult (Tinto, 1998). In addition, despite the sound theoretical framework on which learning communities are based and the promising evidence from this and other studies, learning communities are complicated phenomena. More work needs to be done to understand fully the features that work best and which forms are more potent than others (Pike, 2000).

Some researchers argue that learning communities, in and of themselves, do not produce positive effects; rather, their effects are probably indirect. That is, learning communities enhance student involvement, which in turn positively affects student success (Pike, 2000). Studies are needed that estimate the direct and indirect effects of learning communities on desired outcomes of college and weigh these against other types of enrichment programs. For example, cooperative education and internships, study abroad, and service learning may well have similar positive effects, if implemented appropriately. As attractive as learning communities appear to be from the results of this study, it would be shortsighted to hitch all efforts to improve undergraduate education to the learning community bandwagon.

CONCLUSION

This study explored the relationships between learning communities and student academic performance, engagement in a broad array of educationally purposeful activities, and student learning outcomes. The findings generally corroborate previous research and conceptual work in this area, indicating that participation in some form of learning community is positively related to student success, broadly defined to include enhanced academic performance, integration of academic and social experiences, positive perceptions of the college environ-

ment, and self-reported gains since starting college. The effects are somewhat stronger for first-year students. This is to be expected, as they had recently experienced, or were still involved in, the learning community when they completed the survey. The effect sizes for seniors were nontrivial on a number of variables, indicating that the positive influence of learning communities persists throughout the college experience.

These results from 4-year colleges and universities coupled with the evidence from the 2-year sector empirically confirm that the learning community is an effective educational practice. Undergraduate improvement efforts should include increasing the number of learning community opportunities, adapted to an institution's culture, mission, and student characteristics, to increase the chances of success for more students.

APPENDIX: SURVEY ITEMS CONTRIBUTING TO STUDENT ENGAGEMENT MEASURES

Academic Effort (Cronbach's $\alpha = .53$)

- Number of hours per week spending on preparing for class (studying, reading, writing, rehearsing, and other activities related to your academic program)
- The frequency of having worked harder than you thought you could to meet an instructor's standards or expectations during the current school year
- The extent the institution emphasizes spending significant amounts of time studying and on academic work

Higher Order Thinking (Cronbach's $\alpha = .80$)

- During the current school year, the extent coursework emphasized analyzing the basic elements of an idea, experience, or theory
- During the current school year, the extent coursework emphasized synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships
- During the current school year, the extent coursework emphasized making judgments about the value of information, arguments, or methods
- During the current school year, the extent coursework emphasized applying theories or concepts to practical problems or in new situations

Academic Integration (Cronbach's $\alpha = .62$)

- The frequency of having worked on a paper or project that required integrating ideas or information from various sources
- The frequency of having included diverse perspectives (difference races, religions, genders, political beliefs, etc.) in class discussions or writing assignments
- The frequency of having put together ideas or concepts from different courses when completing assignments or during class discussions

Active and Collaborative Learning (Cronbach's $\alpha = .64$)

- The frequency of having asked questions in class or contributed to class discussions during the current school year
- The frequency of having made a class presentation during the current school year

- The frequency of having worked with other students on projects during class during the current school year
- The frequency of having worked with classmates outside of class to prepare class assignments during the current school year
- The frequency of having tutored or taught other students (paid or voluntary) during the current school year
- The frequency of having discussed ideas from your readings or classes with others outside of class (students, family members, co-workers, etc.) during the current school year
- The frequency of having participated in a community-based project as part of a regular course

Student Interactions with Faculty Members (Cronbach's $\alpha = .76$)

- The frequency of having discussed grades or assignments with an instructor during the current school year
- The frequency of having talked about career plans with a faculty member or advisor during the current school year
- The frequency of having discussed ideas from your readings or classes with faculty members outside of class during the current school year
- The frequency of having worked with faculty members on activities other than course-work (committees, orientation, student life activities, etc.) during the current school year
- The frequency of having received prompt feedback from faculty on your academic performance (written or oral) during the current school year
- Have done or plan to work on a research project with a faculty member outside of course or program requirements before you graduate from your institution

Diversity Experiences (Cronbach's $\alpha = .66$)

- The frequency of having had serious conversations with students of a different race or ethnicity than your own during the current school year
- The frequency of having had serious conversations with students who differ from you in terms of their religious beliefs, political opinions, or personal values during the current school year
- The extent the institution emphasizes encouraging contact among students from different economic, social, and racial or ethnic backgrounds

Supportive Campus Environment (Cronbach's $\alpha = .77$)

- The extent the institution emphasizes providing the support you need to help you succeed academically
- The extent the institution emphasizes helping you cope with your non-academic responsibilities (work, family, etc.)
- The extent the institution emphasizes providing the support you need to thrive socially
- Quality of relationships with other students at your institution
- Quality of relationships with faculty members at your institution
- Quality of relationships with administrative personnel and offices at your institution

Quality of Academic Advising (Single item)

- Evaluate the quality of academic advising you have received at your institution

Gains in Personal and Social Development (Cronbach's $\alpha = .85$)

- The extent your college experience contributed to developing a personal code of values and ethics

- The extent your college experience contributed to understanding people of other racial and ethnic backgrounds
- The extent your college experience contributed to understanding yourself
- The extent your college experience contributed to learning effectively on your own
- The extent your college experience contributed to solving complex real-world problems
- The extent your college experience contributed to voting to local, state, or national elections
- The extent your college experience contributed to improving the welfare of your community

Gains in Quantitative, Analytical, and Work-Related Skills (Cronbach's $\alpha = .73$)

- The extent your college experience contributed to analyzing quantitative problems
- The extent your college experience contributed to acquiring job or work-related knowledge and skills
- The extent your college experience contributed to using computing and information technology
- The extent your college experience contributed to working effectively with others

Gains in General Education (Cronbach's $\alpha = .80$)

- The extent your college experience contributed to writing clearly and effectively
- The extent your college experience contributed to speaking clearly and effectively
- The extent your college experience contributed to acquiring broad general education
- The extent your college experience contributed to thinking critically and analytically

Satisfaction (Cronbach's $\alpha = .79$)

- How would you evaluate your entire educational experience at this institution?
- If you could start over again, would you go to the same institution you are now attending?

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