

Collaborative Learning: Its Impact on College Students' Development and Diversity

Alberto F. Cabrera
Amaury Nora

Jennifer L. Crissman
Patrick T. Terenzini

Elena M. Bernal
Ernest T. Pascarella

Using a sample of 2,050 second-year students at 23 institutions, researchers examined three issues: (a) gender and ethnic differences in terms of preferences towards collaborative learning, (b) effects of collaborative learning on student outcomes, and (c) determinants of openness to diversity. Results showed that exposure to collaborative learning practices influenced positively each of the outcomes under study.

Collaborative learning, extensively used and researched in elementary and secondary schools (Slavin, 1990), emerged as an important pedagogy in higher education during the late 1980s (Bruffee, 2000; Goodsell, Maher, & Tinto, 1992). Collaborative learning restructures the classroom away from the traditional lecture to small-group work requiring intensive interaction between students and the faculty member while working through complex projects. Through completion of projects, learning is supposed to be enhanced as students build upon their personal experiences while working with other students. In this context, the role of faculty is one of facilitator rather than one of knowledge source (Bruffee; Johnson, Johnson, & Smith, 1991; Slavin, Karweit, & Madden, 1989).

The vitality of the classroom experience

has regained recognition as one of the most important factors influencing college students' cognitive, motivational, and affective development. Classroom experiences have been found to exert positive effects on a diverse array of student outcomes. These include academic and cognitive development, knowledge acquisition, clarity in educational goals, interpersonal skills, and the quality of student effort spent in academic activities (e.g., Astin, 1984, Cabrera, Colbeck, & Terenzini, 2001; Pascarella & Terenzini, 1991; Tinto, 1997; Volkwein, 1991; Volkwein, King, & Terenzini, 1986).

In view of the centrality of classroom experiences in student development, the concomitant attention that has been devoted to those forces shaping the classroom experience itself is not surprising. Accordingly, the curriculum (Stark & Latucca, 1997), frequency and nature of interactions with faculty in the classroom (Pascarella & Terenzini, 1991), student learning styles (Claxton & Murrell, 1987), racial climate (Cabrera & Nora, 1994; Hurtado, 1992), and the character of teaching practices (Murray, 1991) have received increasing recognition as important predictors of classroom experiences. Among the many teaching practices, collaborative learning has been singled out as the most promising (Cockrell, Caplow, &

Alberto F. Cabrera is Professor of Educational Administration and Policy Studies at the University of Wisconsin-Madison. Jennifer L. Crissman is Assistant Professor of Counselor Education at The Pennsylvania State University. Elena M. Bernal is a doctoral candidate in Higher Education at The Pennsylvania State University. Amaury Nora is Professor and Associate Dean of Educational Administration at the University of Houston. Patrick T. Terenzini is Professor of Higher Education at The Pennsylvania State University. Ernest T. Pascarella is the Petersen Professor of Higher Education at the University of Iowa.

Donaldson, 2000). In his recent review of the Student Integration Model, Tinto (1997), for instance, placed collaborative learning at the core of the academic and social experiences of the student and highlighted its role in the quality of effort the student spends in learning. After examining the results of a four-year longitudinal study of students at 159 four-year institutions, Astin (1993) found that classroom pedagogical practices that promoted meaningful collaboration among students made a significant contribution to student achievement.

Collaborative learning, although gaining momentum in the classroom, has long been associated with student affairs outside the classroom. Learning communities are among the oldest and most revered models of education (Shapiro & Levine, 1999, p. 2). Learning communities help students establish academic and social support networks outside the classroom. Freshman Interest Groups (FIGs) are another type of collaborative learning. FIGs often include both residential and curricular components. New students often live near one another in the residence halls and enroll in several courses together. Student affairs personnel's emphasis on collaborating with faculty in framing orientation program constitutes another example of collaborative learning. The resulting orientation programs, administered by student affairs professionals, create contexts whereby students learn about academic integrity, expectations for academic work, and the academic resources available to them.

Cocurricular activities, block scheduling, and residence halls are other ways to promote collaborative learning. Cocurricular activities involve faculty members taking students on field trips, to special events, films, or guest speakers. They might also include a community service component. Block scheduling

is when a group of students are enrolled in two classes together. Faculty work together to integrate the curriculum and involve students in the learning process. Collaborative learning in the residence halls is "fostered by commonality and consistency of purpose, shared values, and transcendent themes" (Schroeder, 1994, p. 171). Collaborative learning in the residence halls may take on different forms: academic and cocurricular activities are scheduled in the halls; classes may be held in the halls; and faculty may have an office in the residence halls, may eat in the dining hall with students, or may present workshops in the students' residence.

The literature follows two approaches regarding the value of collaborative learning for student development. One approach regards collaborative learning techniques as having universal value for all students (e.g., Johnson et al., 1991; Tinto, 1997). The second approach emphasizes differences in learning styles between White women and minorities to argue for a differential effect of collaborative learning practices (e.g., Baxter Magolda, 1992; Belenky, Clinchy, Goldberger, & Tarule 1986; Lundeberg & Diemert, 1995; Martínez-Alemán, 1997).

Advocates of the universal approach to collaborative learning call attention to the link between this instructional technique and different student outcomes. Some evidence seems to support this position. In their extensive review of the literature, Kulik and Kulik (1979), for instance, found class discussions, an ingrained component of collaborative learning, leading to higher cognitive development and long-term knowledge retention as compared to traditional pedagogy. In a meta-analysis of studies among college students Johnson et al. (1991) revealed positive correlations between cooperative learning and achievement,

personal development (interpersonal attraction and self-esteem), and social support. However, several limitations that exist within the current literature prevented us from reaching firm conclusions regarding the effect of collaborative learning among college students. To begin, most of the literature is based at the elementary and secondary school levels (e.g., Slavin, 1990). Those few studies wherein researchers empirically examined collaborative learning in the higher education setting are dated and based on a single program or institution. Furthermore, with the exception of Tinto's (1997) recent longitudinal study, most studies have been correlational and cross sectional in nature. This type of research design prevented us from teasing out the effect of collaborative learning from other factors (e.g., academic ability, quality of academic effort) that are also related to student learning and cognitive development.

Proponents of the view of the differential effect of collaborative learning have based their arguments on the theory that White women and minorities learn differently than White men do (Anderson & Adams, 1992; Belenky et al., 1986). The basic argument is that both White women and minorities' learning styles emphasize connected knowing, cooperative problem solving, and socially based knowledge. Consequently, White women and minorities prefer collaborative learning settings because this pedagogy matches their learning styles. On the other hand, White men prefer traditional pedagogy given their more analytical, individualistic, and competitive learning styles. Research evidence has been mixed. Lundeberg and Moch (1995), in their qualitative study of women attending a private, single-sex Midwestern college, found that women preferred collaborative learning. Lundeberg

and Moch (1995) also observed that the collaborative nature of the student interactions promoted intellectual risk taking and connected understanding of concepts. In a comprehensive review of programs for college students at risk, Levine and Levine (1991) found that minorities were remediated best in collaborative learning settings. Treisman and Fullilove (1990) reported that African American students enrolled in collaborative learning courses had higher GPAs, higher retention rates, and were more likely to major in math-based majors than their African American counterparts enrolled in traditional courses. On the other hand, Tinto (1997) found that collaborative learning was effective in promoting persistence in college regardless of a student's gender or race or ethnicity.

Vogt (1997) has persuasively argued that cooperative learning may be an important force to promote tolerance among college students, in addition to its potential connection with student cognitive and affective development. At the core of Vogt's argument lies Allport's (1954) five principles for a successful contact situation among people from different ethnic backgrounds. Cooperative learning meets some of these conditions: Individuals collaborate rather than compete, equal status among participants is promoted, and the focus of the group effort is directed at solving projects. Albeit promising, the connection between collaborative learning and tolerance among college students has not been empirically examined. However, the scarce research suggests some students' personal characteristics (e.g., precollege academic ability, number of hours per week spent studying) and some classroom-based activities (e.g., participation in class discussions) foster openness towards diversity (Pascarella,

Edison, Nora, Hagedorn, & Terenzini, 1996; Whitt, Edison, Pascarella, Terenzini, & Nora, 2001). Nonetheless, certain classroom practices can be perceived by the students as discriminatory and prejudiced. Cabrera and Nora (1994), for instance, found that minority students who felt singled out and treated differently in the classroom reported high levels of alienation and isolation from the institution.

With collaboration occurring both inside and outside the classroom, the need to link together classroom and out-of-classroom activities to create environments fostering both development and openness to diversity is increasingly apparent. A joint statement by the American College Personnel Association (ACPA) and the National Association for Student Personnel Administrators (NASPA) (1998) best encapsulates this concept:

Student learning occurs best in communities that value diversity, promote social responsibility, encourage discussion and debate, recognize accomplishments, and foster a sense of belonging among their members. Good student affairs practice cultivates supportive environments by encouraging connections between students, faculty, and student affairs practitioners. (p. 5)

In addition to the efforts of student professional organizations, several influential reports have made a compelling case for collaboration. In 1997, for instance, the Kellogg Commission challenged colleges and universities to improve undergraduate education. One suggestion has been to couple students' in-class and out-of-class experiences (Pace, 1984). In 1998, the ACPA and NASPA wrote *Principles of Good Practice for Student Affairs*, in which they called for academic and student affairs professionals

to "share responsibility for learning" (p. 2). This report expanded on the ACPA's 1994 publication, *The Student Learning Imperative*, which stressed the importance of linking students' in-class and out-of-class experiences to create seamless learning environments. Terenzini and Pascarella (1994) stated that "faculty members, joined by academic and student affairs administrators, must devise ways . . . to capitalize on the inter-relatedness of the in- and out-of-class influences on student learning" (p. 32).

Much has been written about the benefits of collaborative learning (Schuh & Whitt, 1999; Shapiro & Levine, 1999; Whitt, 1999); yet, as acknowledged by Tinto (1997), collaborative learning, however promising, has not been subjected to empirical investigations that examine the relationships to specific college-related outcomes.

We examined three areas regarding the role collaborative learning plays in student development and learning. These propositions center around: (a) preferences among different gender and ethnic groups towards collaborative learning; (b) effects of collaborative learning on perceived cognitive and affective gains for White males, White females, and minorities; and (c) the potential role that collaborative learning may have in increasing tolerance and openness towards diversity.

METHOD

Sample

The sample was comprised of 2,050 second-year college students enrolled at 23 institutions of varying types including private, public, research, liberal arts, and historically Black colleges and universities. This sample was randomly drawn from the incoming freshman class of 1992 who participated in

the National Study of Student Learning (NSSL), an extensive, longitudinal investigation of the factors influencing learning and development in college (see Whitt et al., 2001). The sample was predominately female (64.5%) and Caucasian (62.2%). Most students reported that their parents had some college education. These students attended high schools whose racial composition was predominately White, and the average student spent between 11 and 15 hours per week studying (see Table 1).

Measures

We used five dependent variables in this study. Four of the dependent variables were assessed via Pace's (1984) scales that measure perceived gains in learning-related and cognitive skills. These four dependent variables were: Personal Development ($\alpha = .81$), Understanding Science & Technology ($\alpha = .90$), Appreciation for Fine Arts ($\alpha = .73$), and Analytical Skills ($\alpha = .80$). These scales were highly reliable (with alpha reliabilities ranging from .73 to .90) and have been found to be predictive of college persistence (Nora, Cabrera, Hagedorn, & Pascarella, 1996).

The fifth dependent variable, Openness to Diversity, was measured with a 7-item scale assessing students' attitudes and predispositions towards interacting with people from different ethnic backgrounds. As Whitt et al. (2001) noted, the scale is highly reliable and has been found to show moderate but significant correlations with measures of critical thinking, academic motivation, involvement in coursework, and first-year extracurricular involvement. As in previous studies (Pascarella et al., 1996; Whitt et al., 2001), the scale was found to be highly reliable for the student sample under examination ($\alpha = .85$, see Table 1).

Seven independent variables were examined. Preference for collaborative learning was measured via a four-item scale, tapping preferences towards learning in groups inside and outside the classroom. The reliability of this scale was high ($\alpha = .85$). Item composition and corresponding factor loadings are provided in Appendix A. Cooperative learning practices were assessed via a five-item scale asking the frequency with which the student was engaged in group projects, class discussions and study groups. The reliability of the scale was also high ($\alpha = .78$). Other independent variables included indicators of socioeconomic status (parental education), precollege ability (CAAP scores), academic performance (high school GPA), and quality of academic effort (average hours per week spent studying). Selection of these additional independent variables was guided by the extant literature (Astin, 1993; Cabrera & Nora, 1994; Nora et al., 1996; Pascarella et al., 1996; Tinto, 1997; Vogt, 1997; Whitt et al., 2001); and these variables were included in the regression analyses to control for relevant sources of variance. A measure of the racial composition of the student's high school was also included because research findings show that students who attend desegregated K-through-12 schools are more tolerant towards ethnic diversity (Braddock, 1980). Table 1 displays descriptive statistics and reliabilities for the variables and scales used in the study.

RESULTS

Preferences and Learning Styles

We found mixed support for the proposition regarding preferences towards collaborative learning. Among minorities, women were as predisposed towards collaborative learning as were men ($t = -.17, p = .865$). Likewise,

we noted no significant differences between White females and White males ($t = 1.18$, $p = .402$). Both groups were just as likely to prefer collaborative learning. However, minorities, regardless of their gender, were more predisposed towards collaborative

learning than were Whites. Although significant, the magnitude of the mean differences between minorities and White male and female students was rather small, less than 1 point out of a 5-point scale (see Table 2).

TABLE 1.
Descriptive Statistics

Variable	N	% Cell	M	SD	Reliability
<i>Gender</i>					
Male	779	35.3			
Female	1,424	64.5			
<i>Ethnicity</i>					
African American	331	16.1			
Asian American	173	8.4			
Hispanic	272	13.3			
White	1,274	62.2			
Preference towards Collaborative Learning			3.45	0.86	0.85
Collaborative Learning			2.32	0.57	0.78
<i>Parental Education</i>					
Mother's			5.02	2.04	
Father's			5.30	2.30	
<i>Precollege Ability</i>					
CAAP Scores			185.26	13.53	
HS GPA			4.70	1.16	
<i>Effort</i>					
Hours spent studying per week			3.94	1.34	
Racial Composition of HS			3.64	1.20	
<i>Second Year Gains in</i>					
Personal Development			2.77	0.63	0.81
Understanding Science & Tech.			2.18	0.89	0.73
Appreciation for Art			2.31	0.69	0.80
Analytical Skills			2.83	0.66	0.90
Openness to Diversity			3.82	0.65	0.85

TABLE 2.
Differences in Preferences Towards Collaborative Learning (*t* Tests)

Group	1	2	3	4	<i>M</i>	<i>SD</i>
White/Female (1)	—				3.34	.88
White/Male (2)	1.18	—			3.41	.81
Minority/Female (3)	3.87**	2.63**	—		3.59	.85
Minority/Male (4)	3.08**	2.21*	.17	—	3.61	.79

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

Cooperative Learning Practices and Student Outcomes

Table 3 summarizes the regression results of our test of the effect of cooperative learning practices on cognitive and affective outcomes on all students. All regressions were significant at .01. The model explained 10.3%, 9.7%, 6.6%, and 13.2% in gains related to personal development, understanding science and technology, appreciation for art, and analytical skills, respectively. In relation to all factors under consideration, collaborative learning was the single best predictor for each of the four cognitive and affective outcomes under consideration.

Learning Styles Hypothesis

Twelve regression analyses were conducted to test the differential learning style hypothesis. The groups under consideration were: White males (469), White females (805), and Hispanic and African Americans (518). The small number of males in the minority group as well as the small number of Asian Americans prevented analysis among other minorities. However, treating women and men as a group was supported by two findings. No significant differences in preferences towards cooperative learning between males and females were noted (see

Table 2), and a series of regression analyses controlling for gender found no significant gender effect among minorities in each of the four cognitive and affective outcomes. Table 4 summarizes the regression results across ethnic and gender groups.

All 12 regressions were significant at .01. The model explained as little as 4.5% and as much as 14.5% of the variance observed in the cognitive and affective outcomes. No support for the differential learning style hypothesis was found. Collaborative learning was the most significant predictor for each of the four self-reported gains under consideration and across each of the three groups under consideration. Although the magnitude of the effect of collaborative learning did vary across the three groups in each outcome, the pattern of effects was consistent in each of the three groups.

Openness to Diversity

The model was significant at .01 and explained 9.4% of the variance observed in openness to diversity. After controlling for precollege academic ability, gender, ethnicity, quality of academic effort, socioeconomic status, and racial composition of the high school, collaborative learning exerted the highest effect on a college student's openness

towards diversity. Net of precollege ability, performance, and academic effort results also show that women and Hispanic students were more predisposed to tolerance of others at the end of the second year than were White males (see Table 5).

DISCUSSION

This study is constrained in several ways. To begin, it was based on a limited number of

postsecondary institutions; the sample was not large enough to further examine how the connections between learning practices and student outcomes may vary by institution type. Because of the exploratory nature of this study and the fact that we relied on an important set but otherwise small number of student outcomes, future researchers may want to incorporate other important student outcomes; or they may want to examine in depth some of the connections that emerged

TABLE 3.
Regression Results for All Students (Standardized Betas)

Variable	Cognitive & Affective Outcomes			
	Personal Development	Understanding Science & Technology	Appreciation for Art	Analytical Skills
<i>Precollege Academic Ability</i>				
CAAP scores	-.088**	-.003	.009	.008
High School GPA	.065*	.112**	-.009	.094**
Gender (Female)	-.117**	.136**	-.019	-.033
<i>Parental Education</i>				
Mother's education	.011	.004	.012	-.006
Father's education	.075*	.014	.054	.040
Racial Composition of HSchool	.031	.035	-.020	-.011
<i>Ethnicity</i>				
African American	-.075**	.081**	-.017	.004
Asian American	-.018	.077**	-.008	-.025
Hispanic	.028	.068*	.015	-.006
<i>Effort</i>				
Hours spent studying	.033	.132**	.035	.116**
Cooperative Learning Practices	.256**	.215**	.253**	.302**
R^2	11.00%	10.40%	7.30%	13.80%
R^2 adjusted	10.30%	9.70%	6.60%	13.20%
F test	16.43**	15.59**	10.61**	21.50**

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

TABLE 4.
Regression Results Across White Males, White Females, and Minorities (Standardized Betas)

Variable	Personal Development			Understanding Science & Technology			Appreciation for Art			Analytical Skills		
	White Males	White Females	Minorities	White Males	White Females	Minorities	White Males	White Females	Minorities	White Males	White Females	Minorities
<i>Precollege Academic Ability</i>												
CAAP scores	-.128*	-.102*	-.132*	.125	-.014	-.061	-.065	.128**	-.131*	.022	.017	-.100
High school GPA	.079	.112*	.089	.037	.044	.270**	.036	-.049	.059	.097	.111**	.121*
<i>Parental Education</i>												
Mother's education	.071	-.007	.004	-.071	-.026	.098	.098	.042	-.057	-.031	-.002	.011
Father's education	.036	.107*	-.034	.123	.010	-.068	.058	.000	.027	.094	.008	.014
Racial Composition of HSchool	.009	.010	.042	.018	-.012	.072	-.031	-.066	.085	.014	.009	-.016
<i>Effort</i>												
Hours spent studying	.065	.029	.031	.134*	.115**	.138**	.074	.019	-.008	.207**	.095*	.075
Cooperative Learning Practices	.275**	.248**	.225**	.224**	.186**	.216**	.190**	.233**	.261**	.204**	.336**	.253**
R^2	11.0%	8.4%	7.5%	11.2%	5.6%	16.1%	7.0%	7.7%	9.1%	12.2%	15.5%	10.0%
R^2 adjusted	9.0%	7.3%	5.4%	9.2%	4.5%	14.2%	4.9%	6.6%	7.1%	10.3%	14.5%	7.9%
F test	5.48**	7.79**	3.51**	5.67**	5.08**	8.43**	3.35**	7.10**	4.43**	6.25**	15.74**	4.83**

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

in this study. Finally, generalization of this study's findings to women who are members of minority groups is not warranted; the sample did not have a large number of females in the minority group to facilitate comparisons.

Collectively, the findings make a compelling case for using cooperative learning practices both inside and outside the classroom. These techniques harness the ability and motivation of students towards their personal development, understanding of science and technology, appreciation for art, analytical skills gain, and openness to diversity. Across these five cognitive and affective outcomes, cooperative learning practices had the highest effect, well beyond those attributable to precollege academic ability, gender, ethnicity, parental education, and academic effort. Hence, collaborative learning is a direct tool that institutions can implement to bring about critical student development outcomes.

The teaching and learning literature has lauded the benefits of collaborative learning; however, the extent and specificity of its benefits remains at issue. These results concur with the universal approach, that not only do White women and minorities prefer collaborative learning settings, so do their White male counterparts (Tinto, 1997). Furthermore, not only do these settings foster White women's and minorities' cognitive and affective development, these settings provide the same environment for White males as well.

Chickering and Reisser (1993) considered developing mature interpersonal relationships as a key vector of student development. This vector "require[s] the ability to accept individuals for who they are, to appreciate and respect differences" (p. 146). Kuh, Douglas, Lund, and Ramin-

Gyurnek (1994) regarded openness to diversity as a component of cognitive complexity, a skill that "enable[s] a college-educated person to think critically and to evaluate logically" (p. 25). Furthermore, as students prepare to enter an increasingly global and diverse society, all sectors of the labor market are demanding graduates whose modes of thinking and relating transcend ethnocentric spheres (Pucik, Tichy, & Barnett, (1992). Acknowledging the need for

TABLE 5.
Regression Results for All Students
(Standardized Betas)

Variable	Openness to Diversity
<i>Precollege Academic Ability</i>	
CAAP scores .....	.064*
High School GPA	-.062*
Gender (Female)	-.165**
<i>Parental Education</i>	
Mother's education .....	.001
Father's education .....	.030
Racial Composition of High School	-.014
<i>Ethnicity</i>	
African American	-.018
Asian American .....	.038
Hispanic .....	.084**
<i>Effort</i>	
Hours spent studying .....	.060*
Cooperative Learning Practices	.235**
R^2	10.1%
R^2 adjusted	9.4%
F test	15.17**

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

tolerant graduates, accreditation bodies have increased the pressure on institutions of higher education to proactively foster "expand[ed] cultural awareness" (Middle States Association of Colleges and Universities (1996, p. 2) among students and produce graduates who can "function on multidisciplinary teams" (Accreditation Board for Engineering and Technology, 1998, p. 6).

Recognizing the importance of openness to diversity, several institutional strategies have been enacted, primarily focusing on content or structures. Content strategies stress the inclusion of multicultural education, either through general education requirements or through specific course materials (Banks, 1993). Others have resorted to increasing the numerical diversity, hoping that student intercultural contact would evolve naturally (Hurtado, Milem, Clayton-Pedersen, & Allen, 1998). Instead, racial tensions magnify when the proportion of minorities increases (Blalock, 1967; Blumer, 1958; Smith, 1981). So, the basic paradox that college administrators face is how to increase diversity in the student body while minimizing tensions. Our results point to collaborative learning settings on campus as one solution to this paradox. Just throwing people together lacks a process to challenge helpfully the attitudes and beliefs of culturally different subgroups. Cooperative learning practices create the process and setting where learning is maximized and preconceptions are confronted through positive, productive interactions between students of different backgrounds.

Collaborative learning also has the potential for realizing the general-education goal of promoting active and responsible citizenship in a democratic society. In *Renewing Civic Capacity: Preparing Stu-*

dents for Service and Citizenship, Suzanne Morse (1989) identified one major civic competency as "the ability of individuals and groups to talk, listen, judge, and act on issues of common concern" (p. 6). Collaborative learning encourages collective responsibility in a diverse world.

IMPLICATIONS

Institutional leaders realize that learning occurs almost anywhere on campus: in classrooms, on playing fields, in residence halls, in libraries, at volunteer sites, and at sites of student work. The job of an institution is to maximize and synthesize that learning. As Love and Love (1995) stated, "The intellectual, social, and emotional elements of learning can be integrated in and out of the classroom" (p. 78). But integrating that in-class and out-of-classroom collaborative learning is not easy. A statement in the Joint Task Force on Student Learning's (1998) *Powerful Partnerships: A Shared Responsibility for Learning*, supported this integration:

People collaborate when the job they face is too big, is too urgent, or requires too much knowledge for one person or group to do alone. Marshaling what we know about learning and applying it to the education of our students is just such a job...only when everyone on campus—particularly academic affairs and students affairs staff—share the responsibility for student learning will we be able to make significant progress in improving it. (p. 1)

By using collaborative learning techniques, students' collegiate experiences are enhanced. Both faculty members and student affairs administrators have a responsibility to be committed to collaborative learning, and

then to use that commitment to guide their work. By working together, faculty and student affairs staff create seamless and diverse learning environments (ACPA, 1994; ACPA & NASPA, 1998).

So how can colleges and universities use collaborative learning to promote diverse experiences for students? They must continue to build alliances between academic affairs and student affairs. Institutional leaders must also be aware of how collaborative learning affects their students. Because research has shown that collaborative learning has taught students to be more accepting and tolerant of others, college professors and student affairs professionals must find more ways to incorporate this into classrooms, into residence halls, and into programming efforts. Several examples of successful collaborative learning between students, faculty, and student affairs practitioners include co-curricular opportunities, block scheduling of courses, placing faculty in residence halls, and having a multicultural curriculum (Schuh & Whitt, 1999).

By using collaborative learning across the institution, everyone benefits. Students break down stereotypes, learn to work together in groups, develop listening skills, learn the art of compromising and negotiating, learn interpersonal skills, and are exposed to a variety of different people. In sum, students become active learners in the educational process. Faculty benefit as well by using different teaching strategies and encouraging the use of multiple perspectives when examining classroom topics. And, institutions benefit too by retaining students, encouraging faculty to try new teaching techniques, and producing graduates who are more open to diversity, a key condition to live and work successfully in the current global society (Chang, 1999).

Correspondence concerning this article should be addressed to Alberto F. Cabrera, University of Wisconsin–Madison, Educational Administration Department, 1025 West Johnson Street, Madison, WI 53706; cabrera@education.wisc.edu

APPENDIX A.
A. Cooperative Learning

Item	Factor Loading
I am often required to work cooperatively with other students on course assignments .....	.768
Instructors encourage learning in student groups .....	.745
In my classes, students teach each other in groups instead of only having instructors teach classes .....	.851
Instructors encourage learning in student groups .....	.784
Instructors engage me in classroom discussion or debate of course ideas and concepts .....	.482
Cronbach's alpha reliability .....	.778

B. Preferences Towards Collaborative Learning

Item	Factor Loading
I feel that I learn better when students teach each other rather than having instructors teach in class .....	.790
I prefer learning in groups with other students to learning from lectures .....	.866
I learn best when I am required to work cooperatively with other students on course assignments .....	.853
I learn a great deal when I participate in study groups outside of class .....	.800
Cronbach's alpha reliability .....	.847

REFERENCES

- Accreditation Board for Engineering and Technology. (1998). *Engineering criteria 2000*. Baltimore: ABET.
- Allport, G. W. (1954). *The nature of prejudice*. Reading, MA: Addison-Wesley.
- American College Personnel Association. (1994). *The student learning imperative: Implications for student affairs*. Washington, DC: Author.
- American College Personnel Association & National Association of Student Personnel Administrators. (1998). *Principles of good practice for student affairs*. Washington, DC: Author.
- Anderson, J. A., & Adams, M. (1992). Acknowledging the learning styles of diverse student populations: Implications for instructional design. *New Directions for Teaching and Learning*, 49, 19-33.
- Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel*, 22, 297-308.
- Astin, A. W. (1993). *What matters in college? Four critical years revisited*. San Francisco: Jossey-Bass.
- Banks, J. A. (1993). The canon debate, knowledge construction, and multicultural education. *Educational Researcher*, 22(5), 4-14.
- Baxter Magolda, M. B. (1992). *Knowing and reasoning in college: Gender-related patterns in students' intellectual development*. San Francisco: Jossey-Bass.
- Belenky, M. F., Clinchy, B. M., Goldberger, N., & Tarule, J. M. (1986). *Women's ways of knowing: The development of self, voice, and mind*. New York: Basic Books.
- Blalock, H. M. (1967). *Toward a theory of minority-group relations*. New York: Wiley.
- Blumer, H. (1958). Race prejudice as a sense of group position. *Pacific Sociological Review*, 1, 3-7.
- Braddock, J. H. (1980). The perpetuation of segregation across levels of education: A behavioral assessment of the contact hypothesis. *Sociology of Education*, 53, 178-186.
- Bruffee, K. (2000). *Collaborative learning: Higher education, interdependence, and the authority of knowledge (2nd Edition)*. Baltimore: Johns Hopkins University Press.
- Cabrera, A. F., Colbeck C. L. & Terenzini P. T. (2001). Developing performance indicators for assessing classroom teaching practices and student learning. *Research in Higher Education*, 2(3), 327-352.
- Cabrera, A. F., & Nora, A. (1994). College students' perceptions of prejudice and discrimination and their feelings of alienation: A construct validation approach. *Review of Education/Pedagogy/Cultural Studies*, 16(3-4), 387-409.
- Chang, M. J. (1999). Does racial diversity matter? The educational impact of a racially diverse undergraduate population. *Journal of College Student Development*, 40(4), 377-395.
- Chickering, A. W., & Reisser, L. (1993). *Education and identity*. San Francisco: Jossey-Bass.
- Claxton, C. S., & Murrell, P. H. (1987). *Learning styles: Implications for improving educational practices (ASHE-ERIC Higher Education Report No. 4)*. Washington, DC: Association for the Study of Higher Education.
- Cockrell, K. S., Caplow, J. A., & Donaldson, J. F. (2000). A context for learning: Collaborative groups in the problem-based learning environment. *Review of Higher Education*, 23, 347-364.
- Goodsell, A., Maher, M., & Tinto, V. (1992). *Collaborative learning: A sourcebook for higher education*. National Center on Postsecondary Teaching, Learning & Assessment. Syracuse University. The Pennsylvania State University: NCTLA.
- Hurtado, S. (1992). The campus racial climate: Contexts of conflict. *Journal of Higher Education*, 63, 539-569.
- Hurtado, S., Milem, J. F., Clayton-Pedersen, A. R., & Allen, W. R. (1998). Enhancing campus climates for racial/ethnic diversity: Educational policy and practice. *Review of Higher Education*, 21(3), 279-302.
- Johnson, D. W., Johnson, R. T., & Smith, K. A. (1991). *Cooperative learning: Increasing college faculty instructional productivity (ASHE-ERIC Higher Education Report No. 4)*. Washington, DC: George Washington University, School of Education and Human Development.
- Joint Task Force on Student Learning. (1998). *Powerful partnerships: A shared responsibility for learning*. Washington, DC: American Association for Higher Education, American College Personnel Association, National Association for Student Personnel Administrators.
- Kellogg Commission on the Future of State and Land-Grant Universities. (1997). *Returning to our roots: The student experience*. Washington, DC: National Association of State Universities and Land-Grant Colleges.
- Kuh, G. D., Douglas, K. B., Lund, J. P., & Ramin-Gyurnek, J. (1994). *Student learning outside the classroom: Transcending artificial boundaries (ASHE-ERIC Education Report No. 8)*. Washington, DC: Association for the Study of Higher Education.
- Kulik, J., & Kulik, C. L. (1979). College teaching. In P. Peterson & H. Walberg (Eds.), *Research on teaching: Concepts, findings and implications* (pp. 70-93). Berkeley, CA: McCutcheon.
- Levine, M. E., & Levine, R. L. (1991). A critical examination of academic retention programs for at-risk minority college students. *Journal of College Student Development*, 32, 323-334.
- Love, P. G., & Love, A. G. (1995). *Enhancing student learning: Intellectual, social and emotional integration (ASHE-ERIC Higher Education Report No. 4)*. Washington, DC: George Washington University, School of Education and Human Development.
- Lundeberg, M. A., & Moch, S. D. (1995). Influence of social interaction on cognition: Connected learning in science. *Journal of Higher Education*, 66(3), 312-335.
- Martínez-Alemán, A. (1997). Understanding and investigating female friendships educative value. *Journal of Higher Education*, 68(2), 119-159.
- Middle States Association of Colleges and Universities. (1996). *Framework for outcomes assessment*. Philadelphia: Commission on Higher Education.
- Morse, S. W. (1989). *Renewing civic capacity: Preparing students for service and citizenship*. ERIC Clearinghouse.

- Washington, DC: Association for the Study of Higher Education.
- Murray, H. G. (1991). Effective teaching behaviors in the college classroom. In J. C. Smart (Vol. Ed.), *Higher education: Handbook of theory and research Volume 7* (pp. 135-172). New York: Agathon Press.
- Nora, A., Cabrera, A. F., Hagedorn, L. S., & Pascarella, E. (1996). Differential impact of academic and social experiences on college-related behavioral outcomes across different ethnic and gender groups at four-year institutions. *Research in Higher Education, 37*(4), 427-452.
- Pace, C. R. (1984). *Measuring the quality of college student experiences*. Los Angeles: University of California, Higher Education Research Institute.
- Pascarella, E. T., Edison, M., Nora, A., Hagedorn, L. S., & Terenzini, P. T. (1996). Influences on students' openness to diversity and challenges in the first year of college. *Journal of Higher Education, 67*(2), 178-195.
- Pascarella, E. T., & Terenzini, P. T. (1991). *How college affects students*. San Francisco: Jossey-Bass.
- Pucik, V., Tichy, N. M., & Barnett, C. K. (1992). *Globalizing management: Creating and leading the competitive organization*. New York: Wiley.
- Schroeder, C. C. (1994). Developing learning communities. In C. C. Schroeder & P. Mabel (Eds.), *Realizing the educational potential of residence halls* (pp. 148-162). San Francisco: Jossey-Bass.
- Schuh, J. H., & Whitt, E. J. (Eds.). (1999). *Creating successful partnerships between academic and student affairs* (New Directions for Student Services No. 87). San Francisco: Jossey-Bass.
- Shapiro, N. S., & Levine, J. H. (1999). *Creating learning communities*. San Francisco: Jossey-Bass.
- Slavin, R. E. (1990). *Cooperative learning: Theory, research, and practice*. Englewood Cliffs, NJ: Prentice-Hall.
- Slavin, R. E., Karweit, N. L., & Madden, N. A. (1989). *Effective programs for students at risk*. Boston: Allyn & Bacon.
- Smith, A. W. (1981). Racial tolerance as a function of group position. *American Sociological Review, 46*, 558-573.
- Stark, J. S., & Latucca, L. R. (1997). *Shaping the college curriculum: Academic plans in action*. Boston: Allyn & Bacon.
- Terenzini, P. T., & Pascarella, E. T. (1994, January/February). Living with myths: Undergraduate education in America. *Change, 26*, 28-32.
- Tinto, V. (1997). Classrooms as communities: Exploring the educational character of student persistence. *Journal of Higher Education, 68*(6), 599-623.
- Treisman, U., & Fullilove, M. (1990). Mathematics achievement among African American undergraduates at the University of California, Berkeley: An evaluation of the mathematics workshop program. *Journal of Negro Education, 59*, 463-478.
- Vogt, P. V. (1997). *Tolerance and education: Learning to live with diversity and difference*. London: Sage.
- Volkwein, J. F. (1991, November). *Improved measures of academic and social integration and their association with measures of student growth*. Paper presented at the annual meeting of the Association for the Study of Higher Education, Boston, MA.
- Volkwein, J. F., & Cabrera, A. F. (1998, November). *Student measures associated with favorable classroom experiences*. Paper presented at the Association of Institutional Researchers Forum, Minneapolis, MN.
- Volkwein, J. F., King, M., & Terenzini, P. T. (1986). Student-faculty relationships and intellectual growth among transfer students. *Journal of Higher Education, 57*(4), 413-430.
- Volkwein, J. F., & Lorang, W. (1996). Characteristics of extenders: Full-time students who take light credit loads and graduate in more than 4 years. *Research in Higher Education, 37*(1), 43-68.
- Whitt, E. J. (1999). *Student learning as student affairs work: Responding to our imperative*. NASPA Monograph 23, Washington, DC: National Association of Student Personnel Administrators.
- Whitt, E. J., Edison, M. I., Pascarella, E. T., Terenzini, P. T., & Nora, A. (2001). Influences on students' openness to diversity and challenge in the second and third years of college. *Journal of Higher Education, 72*(2), 172-204.