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ABSTRACT

A program designed to encourage university faculty and teaching assistants (TAs) to use cooperative learning in undergraduate classrooms was evaluated through the perspectives of faculty, TAs and students. The program was part of an initiative called DiverSCity, and the evaluation focused on the initial climate and culture of the college and responses to a series of faculty seminars conducted to introduce faculty to collaborative instruction and to encourage its use for the creation of diversity. Three surveys were administered in the spring semester 1998 to a sample of faculty, the population of TAs, and the senior student cohort. The response rate across all three surveys was about 24%. The evaluation also included a follow-up contact with faculty after a workshop on the program. In general, students had only a slightly higher than neutral opinion of collaborative learning techniques. Faculty members had the highest opinion of cooperative learning. TAs were less concerned about the grading involved with collaborative learning than were students. Survey responses indicated that faculty members were more open to diversity than were TAs or students. Students were most likely to think that the university was accepting of diversity but least accepting themselves, based on survey responses. Students indicated that they would prefer to pick their own groups for cooperative learning, but faculty members and TAs preferred to assign students to groups. Overall, results suggest that faculty development, as evidenced by responses to the workshop, can be a powerful tool to encourage the use of collaborative instruction and positive acceptance of diversity. (Contains 43 references.) (SLD)

Cooperative Learning and Unity: The Perspectives of Faculty, Students, and TA's

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America is a nation of diversity. No where is American diversity more obvious than in the state of California where a rainbow of fleshtones, facial features, and alternative lifestyles options blend into a landscape creating a unique and, judging from population migration trends, a desirable place to live and work. Of course, in the very near future the "typical Californian" will no longer be the combination of white, middle class, and heterosexual. Based on California -specific data and trends on births, deaths, and migration (both international and domestic), the U. S. Census Bureau estimates that by the year 2015, more than half of all Californians will be non-white. Further, the proportion of non-white is expected to grow to over two-thirds of the state's population by the year 2025 (U.S. Census Bureau, 1998). Adding to our diversity is the gay, lesbian, and bisexual population, usually estimated to be approximately 10% of the population (Deutsch, 1948; Kinsey, 1948)[1]. Thus the mosaic of California becomes more intricately vivid with time. The growing American diversity has led to increased interests in multicultural education (Banks, 1988) and in methods that provide appropriate educational opportunities and learning environments for all students (ERIC Digest, 1992).

Cooperative learning techniques have been promoted as tools to improve student achievement outcomes, prepare students to deal with the real world of individual differences, as well as improve the social climate in undergraduate classrooms. Therefore, researchers, college professors, and administrators are turning to cooperative

[1] Obtaining accurate information on estimates of the gay, lesbian, and bisexual populations is very difficult and fraught with questionable reliability. Estimates are suspect because they are dependent on how the question was phrased and of whom it was asked. Another problem with estimates is that they do not make a distinction between behavior and identity. The Kinsey Report is the most cited source that postulated that up to 10% of the population was homosexual (not necessarily claiming that as an identity, but admitting to experience, behavior and preferences that Kinsey analyzed as homosexual). Although the Kinsey report is relatively old, no new reports or statistics supercede or contradict the classic report.

learning to close the achievement gap between majority and minority students and to enhance classroom climate and relationships for all students regardless of race, gender, sexual orientation, or other class or feature (Bruffee, 1993; Smith et al., 1997). However, is it realistic to expect a change in teaching methodology to exact such extraordinary change? The present study seeks to evaluate a program designed to encourage university faculty and teaching assistants to employ cooperative teaching and learning in undergraduate classrooms and to assess differences in the resulting unity.

Review of the Literature

Numerous studies have found that racial minorities and students from diverse cultural and linguistic backgrounds face additional challenges at all stages of education (Lindjord, 1998; Perna, 1998). In addition to lower achievement scores and lower graduation rates, many racial and cultural minority students report alienation and marginalization in the educational process (Allison, 1996; Rothstein, 1995; Velasquez, 1998).

Ogbu (1987, 1990) provided a theoretical approach to the variability in academic performance of minorities using a dual cultural definition. Defining one type of minority student as "immigrant", Ogbu described a type of minority student whose ancestors came to the United States willingly with the expectation that the new culture will bring greater well-being and opportunities (for example many Asian Americans). However, a second type of minority student could be labeled "involuntary". "Involuntaries" are those whose ancestors were brought to the United States through slavery or colonization, thus establishing an entirely different set of cultural roots (such as African Americans or Mexican Americans). Ogbu and others posit that the initial intendment for entry to

America has deep psychological and learning implications. For example, where "immigrants" may perceive learning as additive, the acquiring of another language and culture which will assist in school and societal success, "involuntaries" may equate learning with loss of ethnic identity and replacement of traditional culture (Ogbu, 1987; Gibson, 1987). Consequently, "immigrants" may be more likely to encourage their children to adopt majority schooling strategies within the majority culture and thus create the perception of greater academic success and social adjustment.

Despite origins and historical backdrops, racial and other minorities face multiple challenges. Social maladies such as racial discrimination, stereotyping, avoidance, and prejudice by majority students and teachers heighten minority isolation (Allison, 1996; Pounds, 1987; Rothstein, 1995; Smith et al, 1997) and lead to higher than expected drop-out rates (Christler-Tourse, 1987). An early inquiry on the progress of minority students in majority-ruled environments posited that minority students may be anxious regarding social acceptance which may lead to lower academic performance (Katz, 1968). A recent study of special education students seems to validate the earlier work (Stanovitch, Jordan, & Josette, 1998). The evidence, therefore, indicates that minority students will maximize performance in environments that are perceived as more accepting. Cooperative learning methods may encourage group interaction thereby reducing minority isolation, marginalization, and exclusion, thus encouraging higher levels of academic performance.

Cooperative Learning to Enhance Ethnic Relations

In early elementary school children easily mix with others without regard to racial groups. Racial division and tensions appear to increase through middle school and by the end of the elementary school years many appear to be instilled with racism and the desire

to segregate (Rooney-Rebeck & Jason, 1986). Even on the most desegregated college campuses, many students choose to segregate along racial lines and associate with others who share their ethnic backgrounds (Slavin, 1990; Smith et al, 1997; Parrenas & Parrenas, 1990). It is obvious that merely enrolling diverse students in the same school or classroom is insufficient to bring about unity and harmony (Slavin, 1990). Regrettably, there is evidence that students are becoming even more ethnocentric and less intolerant of diversity (Maruyama, 1992).

Conceptual Heritage of Cooperative Teaching Methods

The conceptual roots of cooperative teaching methods reach deeply. For example, in 1947 Watson proposed the *Contact Theory* that specified the conditions under which positive interpersonal relationships with different races could develop. His four stated conditions were:

1) positive interdependence,
2) equal status,
3) social norms favoring equalitarian cross-ethnic contact, and
4) contact that promotes interaction on a personal as well as a task level.

Similarly, Allport (1954) stated three basic conditions for positive cross-cultural relationships:

1) groups share common goals,
2) everyone provided an opportunity to become safely acquainted, and
3) the groups work together with equal footing.

Rather than provide safe, harmonious, and equal opportunities, traditional teaching methodologies create competition (Johnson & Johnson, 1987). One student's goals can

only be achieved when other students do not fulfill their goals. Under the system, each group competes for grades and for teacher approval leaving little harmony, unity, or chance for deep contact.

Since the cooperative teaching methodology encourages students to work in small heterogeneous groups and to assist each other to attain mastery (Slavin, 1990, 1991a, 1991b), rather than the establishment of competition and environments of "winners" and "losers", cooperative methodologies encourage students to learn from each other through the medium of consensus and mutual support (Zanger, 1990). Thus, all students, regardless of race, status, or other situation, have an opportunity to be successful. The success of others is no longer the failure of self, but rather the success of the entire team (Slavin, 1990, 1991a, 1991b, Benard, 1991). The rules of this methodology challenges high, average, and even low achievers to perform at their optimum level. Moreover, all students can be a leader. The result is that students study together within racially and culturally diverse groups becoming more accustomed to working toward a common goal.

With only few exceptions, research has demonstrated that students exposed to cooperative methodologies are more likely to create friendly structures external of their own status (i.e., race, gender, sexual orientation) than those exposed only to traditional classrooms (Slavin, 1990, 1991b). Specifically, a study by Slavin and Oickle (1981) found that cooperative teaching methodology had a significantly positive effect on cross-racial friendship as measured by the number of African American students named as friends by white students. A study by Scott (1984) had similar results in which students identified more cross-ethnic friends and significantly reduced rejection of cross-ethnic academic teammates.

Cooperative learning has additional goals in addition to the encouragement of inter-group relationships. Another very important goal that has been extensively researched is the improvement of academic performance. Slavin (1990, 1983) analyzed multiple research studies on the practical applications of cooperative learning methods in elementary and secondary schools. In this review, 96% of the studies measured positive effects on student achievement as compared with traditional classroom practices. However, this finding only held when both group and individual accountability was assessed. Another meta-analysis (Johnson, Maruyama, Johnson, Nelson, & Skon, 1981) of 122 achievement-related studies, concluded that cooperative learning promotes higher individual achievement than competitive and individual learning structure across all age levels, subject areas, and for almost all tasks tested.

From a cognitive perspective, academic performance may be enhanced when students work in collaboration with more capable peers. This aspect of cooperative learning supports Vygotsky's *zone* of *proximal* development (1978). Interestingly, studies of high-achievers in cooperative learning environments revealed that they tended to perform better than in traditional classrooms (Slavin, 1991a). Thus, while cooperative learning may provide low-achieving students special benefits, it is not done at the sacrifice of the high-achievers.

Do all students respond well to cooperative methods? Evidence indicates that minority students may be more cooperatively oriented than their majority counterparts. Johnson and Johnson (1987) found that when using cooperative learning, African American students reported more satisfaction with group work and perceived greater class cohesion, less conflicts, and more peer academic support than white students.

Studies of Hispanic students indicated a preference for activities and goal-setting in environments that are cooperative rather than competitive (Avellar & Kagan, 1976; Kagan & Madison, 1971). A study of Native American students (Havighurst, 1971) reported that these students tend to be highly concerned with peer interactions. Their proclivity was not unexpected as Native American cultures tend to emphasize noncompetitive, cooperative living, with a strong sense of community and extended family (Kasten, 1992).

The research also ties cooperative learning with increased self-concept (Slavin, 1990). Self-concept, also related to high achievement, involves one's perceptions about self (Hamachek, 1985). In a study of adult computer achievement and anxiety, those trained in cooperative groups experienced less learning anxiety (McInerney, McInerney, & Marsh, 1997). A study of high school seniors from lower socioeconomic levels who were studying economics found that learning in cooperative learning groups produced significantly more confidence with respect to correct answers (Kourilsky & Wittrock, 1992).

Conclusions and Implications from the Literature

The American educational system may benefit richly from the liberal use of cooperative learning. Cooperative learning's dual goals -- enhancing ethnic relations and increasing achievement gains appear to be supported by empirical studies. The benefits of cooperative learning are especially germane in the state of California where diversity is high and expected to grow.

Methodology

Setting and Background

The Office of Student Affairs at the University of Southern California has been concerned and motivated to take steps to increase diversity while creating an environment where all are accepted and welcomed. In 1992, the university received a grant from the James Irvine Foundation to create a program called DiverSCity to promote multicultural programs. Specifically, DiverSCity was created to produce an environment where differences of race, gender, ethnicity, ability, economic background, national origin, religion, sexual orientation, and age, cannot diminish the potential excellence of university students, faculty, and staff. Although the university has developed several programs to enhance diversity, this paper will describe and evaluate only the initial climate and culture as perceived by faculty, students, and teaching assistants, and the result of a series of faculty seminars conducted to introduce faculty to collaborative instruction and to encourage its use for the creation of diversity.

The data collection was multi-phasic. The first collection of data occurred during the Spring semester of 1998. Qualitative interview data and a second student survey were conducted during the Spring and Summer of 1999.

Purpose

The purpose of the project was to establish a scientifically sound benchmark of attitudes and assessments in general, and cross-cultural interaction in curricular and co-curricular activities in particular, as they relate to pluralism and unity issues among faculty, teaching assistants and a sample of undergraduate students.

Faculty, Teaching Assistant, and Student Surveys

Three independent surveys were administered during the Spring semester of 1998. The first survey was distributed to a representative sample of USC's full time faculty

involved in undergraduate teaching. The second survey was administered to the population of teaching assistants (hereafter referred to as TAs), while the third survey was administered to the population of the senior student cohort. The surveys collected information on general demographics, the frequency of cooperative group work, opinions on the efficiency and perceived outcomes associated with collaborative groups, as well as general opinions on diversity and its role and place in the university.

The response rate across all three surveys was approximately 24%. Our initial of respondents was very similar to that of the actual populations. Responding faculty were predominately Caucasian (81%) with lessor representation from Asian/Asian Americans, (7.1%), African Americans (4.5%), and Latino/Hispanics (3.5%). The TA respondents were 54.2% Caucasian, 32.2% Asian/Asian Americans, 3.3% Latino/Hispanic, and 2.3% African American. The senior student population was 48% Caucasian, 27.3% Asian/Asian American 11.7% Latino/Hispanic, 6.7% other, and 5.4% African American. With respect to gender, while the responding faculty and TAs were predominately male at 71% and 60% respectively the student sample was more heavily composed of females (61.7%).

Measures of Opinions on Collaborative Learning and Diversity

We conducted a factor analysis on all three surveys for the purpose of identifying the distinct factor structure underlying the 15 items pertaining to collaborative learning and the 16 items regarding participants' overall opinions on diversity. An exploratory factor analysis using a Varimax rotation extracted 4 factors[2] for the collaborative learning items and 5 factors for the opinions on diversity items. The individual items comprising each scale are provided in Tables 1a and 1b. The first scale pertaining to collaborative

learning provided a measurement of the positive aspects of collaborative learning, whereas the second scale provided a measurement of perceived grading problems associated with collaborative learning. Scale three measured a preference for instructor-controlled assignment (versus student-controlled) of collaborative groups. Finally, the fourth factor consisted of a one-item construct representing respondent acceptance of cross-cultural groupings. The scales for the diversity items included acceptance of diversity at USC, acceptance of other ethnic groups, acceptance of other sexual orientations, perceptions of discrimination on campus, and acceptance of other religious groups. Means and alpha reliabilities of each of the scales are provided in Table 2. The mean values imply that the respondents had a somewhat positive opinion on collaborative learning whereas they had a slightly more negative perspective when it came to grading issues with respect to collaborative group work. The mean for the fourth factor on cross-cultural grouping indicates that students were moderately open to working in cross-cultural groups.

An interpretation of the means of the diversity scales revealed that the respondents were fairly open to diversity at the institution. However, they may be more open to some differences than to others.

Insert Tables 1 and 2 About Here

Group Differences in Opinions Across Groups

The next phase of the analyses consisted of separating the three groups for the purpose of a close comparison. Table 3a provides a summary of the means by group across the collaborative learning scales while Table 3b supplies similar information for

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[2] Varimax is a method of orthogonal rotation of the axes in a factor analysis.

the diversity scales. Note that a score of 3.0 is indicative of a neutral response.

Insert Tables 3a and 3b about here

To identify with specificity the differences across the three groups, we performed multivariate analysis of variance (MANOVA) tests across both the collaborative learning scales and the diversity scales. Significant findings were followed by separate univariate tests for the individual scales. To determine exact pairwise differences, post-hoc tests were used. In both analyses, all of the four test statistics (Pillai's Trace, Wilk's Lambda, Hotelling's Trace, and Roy's Largest Root Criterion) revealed a significant difference (see Tables 4a and 4b). Because each of the four tests was calculated using a different mathematical function, it is highly likely that true group differences exist.

Insert Tables 4a and 4b about here

For the collaborative learning scales, there were significant differences across three of the four scales ($p<.05$); Perceptions of grading problems, preference for instructor-assigned groups, and acceptance of cross-cultural groupings. For the diversity scales, there were significant differences across acceptance of diversity, acceptance of other ethnic groups, and acceptance of other sexual orientations (see Tables 5a and 5b).

Insert Tables 5a and 5b about here

The final step in these analyses was to perform the pairwise comparisons. Tables 6a and 6b provide the results of the post hoc comparisons for the collaborative learning and diversity scales respectively. An asterisk (*) designates each significant pairwise comparison.

Insert Tables 6a and 6b about here

According to the post hoc comparisons students cite grading problems with collaborative learning assignments as a significantly larger problem than do faculty or TA's. Similarly, students were significantly more likely to prefer student-assigned groups. Finally, TA's were significantly less open to cross-cultural group assignments than were students or faculty.

With respect to opinions on acceptance of diversity at USC, all three groups differed; faculty perceived USC as most accepting followed by TAs, and finally students. For opinions on acceptance of other ethnic groups, the faculty score was found to be significantly higher than that of students and TAs. In addition, the score of TAs was significantly higher than that of students. The test of acceptance of other sexual orientations revealed that faculty were significantly more accepting than were TAs or students.

The 1998 Hewlett Summer Institute

The project evaluation included a 1999 Spring semester follow-up contact with faculty who had participated in a two-week concentrated program of pedagogy dedicated to demonstrating and explaining the use of collaborative instruction. Instruction included theory, examples, and grading procedures. Of the original 15 faculty members who participated in the workshops, only one had left the college between the time the seminar was conducted and the follow-up procedures. The remaining 14 participants were sent electronic and hardcopy correspondence to establish initial contact for follow-up. Although each faculty member was interviewed, this study will not cover the data from

that particular part of the analyses. However, following the interviews, each of the faculty were asked to administer a follow-up student survey to their current students to provide data for a comparison with the initial student surveys conducted in the Spring 1998 semester. Simply put, we requested faculty administer the survey instrument to their present students who had the benefit of class time with a faculty participant. The follow-up surveys, like the initial ones, were strictly anonymous. Most (12 of 14) of the professors agreed to administer the survey.

The general student population surveyed in Spring of 1998 will hereafter be referred to as the "no treatment group." The second group of students enrolled in one or more classes (Fall 98/ Spring 99) under instructors trained and therefore actively using collaborative instruction will hereafter be called the "treatment group." The research questions driving these analyses were:

1. Do students exposed to a larger quantity of collaborative instructional methods have more positive opinions regarding its usage than those who have had less exposure?
2. Are students exposed to larger quantities of collaborative instructional methods more open to issues of diversity and unity?

Comparisons regarding Opinions on Collaborative Learning and Diversity

Tables 8a and 8b provides the means, standard deviations, and sample sizes for both the "no treatment" and "treatment" groups for the collaborative learning scales and the diversity scales respectively. For this series of analyses, we formed all scales by summing the individual item responses.

Insert Tables 8a, 8b, 9a, and 9b About here

The results from a MANOVA test of differences between the treatment and no

treatment groups are displayed in Tables 9a and 9b. Note that all of the four test statistics (Pillai's Trace, Wilk's Lambda, Hotelling's Trace, and Roy's Largest Root) revealed significant differences.

The results of the univariate follow-up tests (Tables 10a and 10b) revealed that the two groups differed in two of the four collaborative learning scales and only one of the diversity scales. The treatment group had significantly higher scores in both their preference for instructor-assigned groups and in not viewing grading as a problem[3]. Unlike our earlier analysis, post-hoc tests were not required because the comparison consisted only of only two groups[4]. Thus it appears that partaking in a course taught with collaborative learning mechanisms tends to create more positive opinions of its use. Further, grading problems do not seem as lofty or as threatening after being exposed to the method. The only diversity scale showing statistically different results was acceptance of other ethnic groups. Thus it appears that exposure and participation in collaborative learning experiences increases the likelihood that student will be more accepting of other individuals regardless of ethnicity.

Insert Tables 10a and 10b About Here

Limitations of the Study

As in all studies, there are inherent limitations to this inquiry. Although the samples appear to be representative of the faculty, students, and TAs of the University of Southern California, it cannot be said with certainty that the views expressed by the

[3] Grading problem was coded in such a way that higher scores indicate less of a problem. We tried to be consistent in that higher scores in all of the measurements indicated positive rather than negative opinions.
[4] Post hoc tests are only necessary when comparing three or more groups to isolate pairwise differences.

sample mirror the entire population of the university in specific or of populations at other universities in general.

All faculty members who participated in the Hewlett Foundation Summer Institute volunteered for the experience. Thus, it is possible that the volunteers were more open and/or receptive to collaborative learning techniques and to acceptance of diversity than faculty members who did not volunteer.

The present inquiry is cross-sectional in nature. Although our findings represent student, faculty, and TA reports during the spring semesters of 1998 and 1999, opinions may change with time and long-range effects may or may not occur. Therefore, our findings are a report of the culture and climate of one university at one point in time.

Conclusions and Policy Implications

Collaborative Learning

In general, students had only a slightly higher than neutral opinion of collaborative learning techniques. We maintain that this simple finding is very powerful and should be taken very seriously. It may be that most students were not adequately exposed to these techniques or it may be that their experiences were not overly positive. Whatever the reason, it appears that instructors employing collaborative techniques should acknowledge that some students may be initially resistant. Even after exposure some students will remain resistant. Like all techniques, collaborative learning exercises will not be accepted uniformly by all students at all times. Nor is collaborative learning a panacea for instructors.

Of the three groups, faculty members had the highest opinions of collaborative learning and generally see it in a somewhat more positive light than do students.

Although they acknowledge that grading may sometimes be a problem in collaborative techniques, they do not feel it creates a major limitation. Faculty members prefer to be in charge of assigning students to groups.

It appears that for students, a hindrance to acceptance and appreciation of collaborative learning was grading. While undergraduate students are naturally apprehensive about grades, they may be even more uncomfortable with the grading process when collaborative group learning techniques are employed. Students may feel that they lose control of the grading process when their grade is determined by the joint efforts of a team. The prospect of getting a lower than deserved grade based on the contribution (or lack thereof) of a teammate was viewed as problematic by students.

Rather than have faculty members assign students to specific groups, students prefer to be in charge of deciding with whom they will work. Of course this finding was not unanticipated but does carry important implications.

TAs were less concerned about the grading procedures involved with collaborative learning than were students. Although it could be argued that TAs become less personally involved in the grading process, in many cases it is the TA who assign grades and it is the TA who receive the lion's share of the student backlash when grades are perceived to be unfair. When it comes to creating work-teams or collaborative groups, TAs were most comfortable with instructor (or TA) assigned groups.

A significant correlation between "positive aspects of collaborative learning" and "grading problems" provides further evidence that fears of grading inequities were a hindrance to positive views of collaborative learning. This red flag should be taken seriously. Students want a fair grading process that assigns a grade to their work

representing the level of their dedication to the course. Any possibility that their work may be lost amidst a sea of group-work is viewed negatively. Further, faculty and TAs were also wary of the grading procedures of collaborative work. Thus instructors and TAs must not only be mindful of this limitation of cooperative learning techniques, but should also be informed of grading structures that may diminish the problem. Processes that encourage ownership and reflect a personal level of accomplishment appear warranted.

Students want to create their own groups while faculty and TAs are more comfortable when they are in control of the process. The implications of allowing students to choose with whom they work is the chance that students will remain with their friends and will not venture out to meet new and possibly more diverse people. The lure to work with people "like me" is usually great. Therefore to allow students to *always* choose their own groups may be detrimental to exposure to issues of diversity. On the other hand, to always make the choices of group assignment takes one of the powerful tools of diversity out of the hands of students. Balance, although difficult to achieve, is probably the best policy.

Diversity and Unity

Because faculty may be more open to diversity than either TAs or students, they should be cognizant of their responsibility to promote unity in the classroom and an acceptance of diversity. This finding is probably among our most important because it clearly indicates that faculty should not assume that all students and TAs share their views regarding the importance of diverse thought. Knowing that conflict may be present allows faculty and TAs to be aware of it and to be ready should it surface. Further, the

divergence of thought regarding acceptance of others underscores the important job of the faculty – promoting acceptance of diversity and thus establishing a more unified campus environment.

Of the three groups, faculty members scored the lowest in believing that USC accepted diversity. Yet, faculty members were the group reporting the highest levels of acceptance of other ethnic groups and other sexual orientations. In short, the faculty members appear to be more open to diversity than either TAs or students.

Of all three groups, students felt that the university was more accepting of diversity. Yet, they were the group that had the lowest acceptance of other ethnic groups and other sexual orientations. We are not projecting a picture of students as intolerant; but rather wish to portray that as a group, they appear to be less tolerant than either TAs or faculty.

With respect to diversity, the TAs scored between that of the faculty and students on most of the scales. Whether it be a question of age, experience, or other reasons it is interesting and provocative as to why this occurred. Many of the TAs were students but a short time ago. Perhaps it is the experience or exposure to authority that changed opinions. Nevertheless TAs tend to be more open to accepting diversity than students and less open than faculty.

The correlations between the diversity scales indicated two significant and negative correlations of interest. The first was between "acceptance of diversity at USC" and "acceptance of other ethnic groups". The second was between "acceptance of diversity at USC" and "acceptance of other sexual orientations". Therefore, those USC members who reported being more accepting of others perceived the university as less

accepting. Although this relationship makes intuitive sense, it may be a signal that the campus community needs to continue to work towards a greater acceptance of diversity and the creation of more cultural and ethnic unity. It appears that the campus members who view USC as most accepting are less open to differences than those who view the campus as less accepting of differences. Thus, we sense an inverse relationship between personal sensitivity and openness. The implications of this finding are that the sole use of respondent opinions regarding the campus climate may be inadequate to judge the actual level of acceptance of diversity. Other measures (including observational and tangible) should also be included for a valid gauge.

Another explanation for faculty members being more accepting of diversity and promotion of unity than students may be reflective of general generation differences. Many of the faculty members were in the "baby boom" generation and may represent a group with generally liberal tendencies. Further, university faculty have historically been more liberal and open with respect to acceptance of others and differences than has the general population. Again, the implications are clear and important. It cannot be assumed that all college students embrace diversity. Nor can it be assumed that students are willing to work with other students who are perceived to be "different".

Grading

One of the strongest findings of this evaluation was that all three samples cite problems with the grading structure when using collaborative learning methods. Certainly there are no simple answers to this dilemma. The total absence of grades may encourage a few students to do less or discourage others. Perhaps one avenue may be to increase the number of grades in such a way that both individual and group grades are

assigned. By using the combination grade procedure, the hardest working students will benefit while the less ambitious will receive less academic recognition. The key to this technique is the training of faculty. Thus, while encouraging faculty to use collaborative techniques, the university must also provide the appropriate training to make the transition smooth and comfortable.

Instructor Assigned Groups

Faculty should allow the mixing of groups in an easy and casual manner. Although it may be advisable to let students choose their teammates at times, instructors should not relegate the authority to assign groups all of the time. Instructor-assigned groups give the faculty the opportunity to purposely mix work groups with respect to gender, ethnicity, ability, and other attributes. On the other hand, faculty and TAs should be mindful that students would prefer to pick their own team members. Balancing student preferences with activities designed for their benefit is a delicate balancing act. Again we appeal to the necessity for faculty and TA training to help balance these activities.

Conclusions Regarding the Hewlett Summer Institute

The evidence that faculty actually used the knowledge gained during the summer is evident. Although the sample of students exposed to the treatment faculty was relatively small, the comparison with the general student survey clearly indicated differences. Students of the seminar participants were more likely to have higher opinions of collaborative learning and to be less concerned with its associated grading problems. The tests of diversity revealed only a difference across the scale"acceptance of

other ethnic groups" in the direction indicating that treatment students were more accepting.

With the caveats that the sample of treatment students was relatively small and the effects tested were short-term rather than long-term clearly in place, we feel that the evidence suggests that students in classes taught by participants of the Hewlett Summer Institute had more positive opinions of collaborative learning and were more accepting of others from diverse ethnic backgrounds than the general senior student population of the university. Thus, faculty development appropriately used can be a powerful tool to encourage the use of collaborative instruction and to encourage positive acceptance of diversity.

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Table 1a: Underlying Factor Structure of *Opinions on Collaborative Learning* Scale

Factors	Items
1. Positive Aspects of Collaborative learning	Group projects present an accurate depiction of a real life work environment.
	Group projects transform students into active participants, not just passive learners.
	Group projects expose students to a wide array of perspectives on the subjects
	Students benefit by learning how to organize and delegate responsibilities
	.Students learn about other cultures by working in cross-cultural groups
	.Students learn more in groups than individually
	Group projects increase interactions among students in and out of the class.
2. Grading Problems	It is difficult for the instructor to evaluate individual students' performance
	Group assignments can be problematic when some students are not fluent in English.
	Some students take advantage of the other group members
	Students are reluctant to work in groups because of concern for their grades
	One student always tends to dominate in group projects
3. Preference for instructor-assigned groups	Instructors should assume the role of assigning students to group
	Students should be allowed to select their group members (recoded).
4. Cross-cultural grouping	Students are resistant to working within cross-cultural groups

Table 1b: Underlying Factor Structure of *Opinions on Diversity Scale*

1. Acceptance of Diversity at USC	Anyone who wants to belong to the Trojan Family is welcome to the part of it.
	Women have the same opportunities in the sciences as men at USC.
	At USC there is a strong commitment to incorporating works from non-western sources into the undergraduate curriculum.
	USC provides an environment that is welcoming to people of all backgrounds.
	The undergraduate curriculum at USC is very reflective of diverse cultures, ethnicities, and lifestyles.
2. Acceptance of Other Ethnic Groups	All official federal and state documents should be in English only
	The proliferation of different ethnic clubs at USC hinders cultural integration.
	Affirmative action in college admissions should be abolished.
	The diversity GE requirement at USC represents an improvement in the undergraduate curriculum.
	Undocumented immigrants should be denied access to public education and services.
3. Accepting Other Sexual orientations	Law should prohibit homosexual relationships
	Same sex couples should have the right to legal marital status.
4. perceptions of discrimination on campus	Racial discrimination is no longer a problem in America.
	Racism and prejudice still exist at USC.
5. Accepting Other Religious Group	Having a personal religious commitment doesn't fit into university life.
	Having a strong religious faith can really help with fundamental human needs and problems.

Table 2: Means and Reliabilities of Scales

Measures of Collaborative Learning	Mean[5]	Alpha Reliability
Positive aspects of CL	3.5834	.8124
Grading problems	2.3788	.5953
Instructor assigns groups	2.7811	.6886
Cross-cultural grouping	3.4793	Single item[6]
Total (all) collaborative learning items	3.0679	.7055
Measures of *Diversity*		
Acceptance of diversity at USC	3.44	.7291
Acceptance of other ethnic groups	3.15	.7005
Acceptance of other sexual orientations	3.71	.7096
Perceptions of discrimination on campus	1.97	.6099
Acceptance of other religious groups	3.75	.3449
Total diversity scale	3.45	.4323

[5] As measured by a 5-part Likert scale (1=strongly disagree to 5=strongly agree).
[6] The alpha coefficient can only be calculated for scales consisting of two or more items.

Table 3a. Summary of Means for Collaborative Learning Scales

Group	Positive aspects of CL	Perceptions of grading problem	Instructor assigns groups	Cross-cultural grouping	Total score
Faculty	3.62	2.48	2.94	3.53	3.14
TA	3.59	2.58	2.95	3.22	3.14
Student	3.57	2.21	2.61	3.63	2.99

Table 3b. Summary of Means for Diversity Scales

Group	**Acceptance of Diversity at USC**	**Acceptance of other ethnic groups**	**Acceptance of Other Sexual orientations**	**perceptions of discrimination on campus**	**Acceptance of Other Religious Groups**	**Total Scale**
Faculty	3.14	3.51	4.05	1.89	3.82	3.30
TA	3.41	3.22	3.65	2.00	3.74	3.24
Student	3.58	2.97	3.63	1.98	3.73	3.21

Table 4a: Multivariate Analysis of Variance (MANOVA) on Four *Collaborative Learning* Scales

Effect	Test Name	Value	F	df	p
Status (Faculty , TAs, Students)	Pillai's Trace (ν)	.158	26.901	8, 2502	.000
	Wilk's Lambda (λ)	.843	27.928	8, 2500	.000
	Hotelling's Trace (*T*)	.185	28.957	8, 2498	.000
	Roy's Criterion(θ)	.178	55.809	4, 1251	.000

Table 4b Multivariate Analysis of Variance (MANOVA) on Five *Diversity* Scales

Effect	Test Name	Value	F	df	p
Status (Faculty , TAs, Students)	Pillai's Trace (ν)	.105	13.805	10, 2500	.000
	Wilk's Lambda (λ)	.896	14.100	10, 2498	.000
	Hotelling's Trace (*T*)	.115	14.393	10, 2496	.000
	Roy's Criterion(θ)	.109	27.219	5, 1250	.000

Table 5a: Univariate Follow-Up Tests on *Collaborative Learning* Scales

Variable (by Status)	Univariate F	p
General Aspect of Collaborative Learning	.628	.534
Perceptions of Grading Problems	50.498	.000
Preference for Instructor-Assigned Group	23.607	.000
Acceptance of Cross-Cultural Grouping	25.433	.000

Table 5b: Univariate Follow-Up Tests on *Diversity* Scales

Variable (by Status)	Univariate F tests	p
Acceptance of Diversity at USC	37.148	.000
Acceptance of Other Ethnic Groups	37.483	.000
Acceptance of Other Sexual Orientations	13.037	.000
Perceptions of discrimination on campus	1.638	.195
Acceptance of Other Religious Groups	1.000	.368

Table 6a: Tukey Post-Hoc for Univariate Follow-Up Test – Collaborative Learning

Means of *Grading Problem*	**Group**	**Faculty**	**TAs**	**Students**
2.48	**Faculty**			*
2.58	**TAs**			*
2.21	**Students**	*	*	
Means of *Preference for Instructor – Assigned Group*	**Group**	**Faculty**	**TAs**	**Students**
2.94	**Faculty**			*
2.95	**TAs**			*
2.61	**Students**	*	*	
Means of *Cross-Cultural Grouping*	**Group**	**Faculty**	**TAs**	**Students**
3.53	**Faculty**		*	
3.22	**TAs**	*		*
3.63	**Students**		*	

Table 6b: Tukey Post-Hoc for Univariate Follow-Up Test – Diversity

Means of *USC accepting Diversity*	**Group**	**Faculty**	**TAs**	**Students**
3.14	**Faculty**		*	*
3.41	**TAs**	*		*
3.58	**Students**	*	*	
Means of *Acceptance of Other Ethnic Groups*	**Group**	**Faculty**	**TA**	**Students**
3.51	**Faculty**		*	*
3.22	**TA**	*		*
2.97	**Students**	*	*	
Means of *Accepting Other Sexual orientations*	**Group**	**Faculty**	**TAs**	**Students**
4.05	**Faculty**		*	*
3.65	**TAs**	*		
3.63	**Students**	*		

Table 8: Means and Standard Deviations of Collaborative Learning Scales Between No-Treatment and Treatment Groups

Group	Positive aspects of CL	Perceptions of Grading problems	Instructor assigns groups	Acceptance of Cross-cultural grouping	Total score
No-Treatment Group					
Mean	24.96	11.07	5.22	3.63	44.89
SD	(4.85)	(3.05)	(1.93)	(.96)	(6.59)
N	625	625	625	625	625
Treatment Group					
Mean	27.46	12.91	5.48	3.63	49.61
SD	(2.91)	(3.81)	(1.80)	(.96)	(5.70)
N	85	85	85	85	85

Table 8b: Means and Standard Deviations of Diversity Scales Between No-Treatment and Treatment Group

Group	Acceptance of Diversity at USC	Acceptance of other ethnic groups	Acceptance of Other Sexual orientations	Perceptions of discrimination on campus	Acceptance of Other Religious Groups	Total Scale Score
No-Treatment Group						
Mean	17.80	14.86	7.25	3.95	7.46	51.39
SD	(3.41)	(3.88)	(2.11)	(1.52)	(1.53)	(5.80)
N	625	625	625	625	625	625
Treatment Group						
Mean	17.29	16.28	6.99	3.98	7.43	52.14
SD	(3.05)	(3.08)	(2.00)	(1.53)	(1.44)	(5.23)
N	87	87	87	87	87	87

Table 9a:) Test of the *Collaborative Learning* Scales by Group

Effect	Test Name	Value	F	Df	P
Group	Pillai's Trace (v)	.055	10.298	4, 705	.000
	Wilk's Lambda (λ)	.945	10.298	4, 705	.000
	Hotelling's Trace (*T*)	.058	10.298	4, 705	.000
	Roy's Criterion(θ)	.058	10.298	4, 705	.000

Table 9b: Test of the *Diversity* Scales by Group

Effect	Test Name	Value	F	Df	p
Group	Pillai's Trace (v)	.030	4.336	5, 706	.001
	Wilk's Lambda (λ)	.970	4.336	5, 706	.001
	Hotelling's Trace (*T*)	.031	4.336	5, 706	.001
	Roy's Criterion(θ)	.031	4.336	5, 706	.001

Table 10a: Univariate Follow-Up Tests across the *Collaborative Learning* Scales by Group

Scale/Factor (by Group)	Univariate F	p
General Aspect of Collaborative Learning	21.509	.000
Perceptions of Grading Problem	25.278	.000
Preference for Instructor-Assigned Group	1.399	.237
Acceptance of Cross-Cultural Grouping	1.417	.234

Table 10b: Univariate Follow-Up Test across the *Diversity* Scales

Scale/Factor (by Group)	Univariate F tests	p
Acceptance of Diversity at USC	2.301	.130
Acceptance of other ethnic groups	10.594	.001
Acceptance of Other Sexual orientations	1.156	.283
Perceptions of discrimination on campus	1.398	.238
Acceptance of Other Religious Groups	.035	.852

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