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ABSTRACT

A study was conducted to identify the curricular factors that contribute to variations in transfer rates. The study used data on community college liberal arts and non-liberal arts course offerings drawn from the Center for the Study of Community Colleges' (CSCC's) National Community College Curriculum Study and data on transfer rates from the CSCC's 1993 Transfer Assembly data. The sample for the study included the 64 colleges that participated in both CSCC research projects. Transfer rates were calculated for each college in the sample, and rates of ethnic student transfer were calculated when possible. The study involved correlation analyses between transfer rates and broad curricular categories, institutional size, and percentage of non-whites; and the contributions of disciplinary categories in predicting transfer rates. Study findings included the following: (1) the liberal arts were found to be positively related to the transfer rate; (2) of the six liberal arts disciplines, humanities and math and computer courses accounted for the most variance in transfer rates; (3) non-liberal arts curriculum had a negative relationship to transfer, a relationship especially apparent in the trade and industry discipline; (4) transfer was found to be both a direct function of student population changes and an indirect function of curricular changes stimulated by new student demands and needs; and (5) a negative relationship was found between total student transfer and the proportion of remedial courses offered. (Contains 22 references.) (AC)

Reassessing Curriculum and Transfer Rates:

A Delicate Balance for the Mission of Community Colleges

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Abstract

This study re-examines the question, "Are curriculum and transfer rates related?" The purpose of this study is to identify the curricular factors that contribute to variations in transfer rates. The results of this study supports previous contentions that liberal arts curriculum is positively related to the transfer rate of community college students. Of the six liberal arts disciplines, Humanities courses and Math & Computer courses account for the most variance in transfer rates. In contrast, non-liberal arts curriculum has a negative relationship with transfer. This relationship is especially apparent in the Trade & Industry discipline. Specific curricular disciplines were also identified to describe its relationship to transfer for different minority groups. The results suggest that transfer is both a direct function of student population changes and an indirect function of curricular changes that are stimulated by new student demands and needs. For example, findings regarding ESL and ethnic variations identify special student needs and curricular demands that impact transfer. These findings raise concerns about the responsibility of a community college in serving its unique student population while simultaneously maintaining its institutional goal to enhance transfer. This paradoxical mission challenges community colleges to be both sensitive to on-going community and student population changes while maintaining the academic integrity of its curriculum.

Reassessing Curriculum and Transfer Rates:

A Delicate Balance for the Mission of Community Colleges

Researchers and administrators often point to the importance and value of investigating the relationship between community college curriculum and transfer. They contend that transfer rates can be used as a fundamental indicator of community college effectiveness in meeting social needs and academic responsibilities. Studying the relationship between curriculum and transfer may provide fundamental insights into targeting curricular emphases, developing better articulation programs and meeting educational goals. For example, the 1991 National Curriculum Study (CSCC, 1992) found that 1) the more liberal arts courses offered, the higher the transfer rate 2) the ratios of remedial, standard, and advanced courses offered are not related to transfer 3) the greater the proportion of non-white students, the more liberal arts courses offered 4) the ratios of remedial, standard, and advanced courses offered are not related to the ethnic composition of a school 5) the larger the percent of non-white students, the lower the transfer rate.

This study re-examines the question, "Are curriculum and transfer rates related?" The purpose of this study is to identify the curricular factors that contribute to variations in transfer rates. Unlike previous studies of its kind, this analysis will include non-liberal arts data and the most recent transfer data (1993 Transfer Assembly) collected by the Center for the Study of Community Colleges at UCLA. In conjunction with the liberal arts information, the non-liberal arts data will broaden the understanding of curriculum and its effects on transfer. The 1993 Transfer Assembly data is advantageous to other transfer data in that the

transfer definition is well established and it includes a cohort that studied at the community colleges during the data collection year of the curriculum project. In addition, the 1993 transfer data provides a larger sample and includes ethnic information.

This study is also unique in its analytical approach. While the 1991 National Curriculum Study relied solely on the statistical techniques for two group comparisons (T-Test, Chi-Square or Pearson Product Moment Correlation), this study employs multiple regression statistics. The advantages to using this form of statistical analysis are numerous. This technique allows for the investigation of multiple variables and the examination of a variable's net influence on the transfer rate, as well as its relationship with other variables. By including multiple critical variables in the analysis, the statistically significant relationships are more robust because additional factors were considered and controlled.

Lastly, another contrast to previous studies is the use of detailed curricular categorizations. Earlier analyses used broad curriculum categories and did not distinguish between disciplines, which over-generalizes the findings and limits curricular recommendations. In contrast, this study takes advantage of disciplinary categorizations to analyze the relationship between curriculum and transfer.

Method

Data Sources and Sample

The data were obtained from the Center for the Study of Community Colleges at UCLA. Data on liberal arts and non-liberal arts course offerings were drawn from the National Community College Curriculum Study, which included community colleges from around the nation. These data were merged with the 1993 Transfer Assembly data, recently collected by the research center.

Sixty-four colleges that participated in both studies had useful data to make observations on the relationship between curriculum and transfer. These colleges comprised the sample for this study. The sample reflects 39% of the community colleges that participated in the National Curriculum Study and 18% of the 1993 Transfer Assembly colleges.

Although the community college sample for this study is a national representation, it somewhat over-represents colleges in California, North Carolina, Texas, and Illinois, and under-represents colleges in the Northeast and Pacific Northwest. Of the sixty-four colleges, 37% are from California, 17% from North Carolina, 14% from Texas, 13% from Illinois, and the remaining 19% are from Colorado, Florida, Kansas, New Jersey, New Mexico, and Oklahoma.

Despite the regional over-representations, the sample is a sound reflection of the national studies. The sample total and ethnic transfer rates closely resemble that of the national rates, not deviating more than two percentage points from the national rates for any particular transfer category. Similarly, the liberal arts disciplinary categories used in this sample did not deviate more than two percentage points from the national proportions. Lastly, the non-liberal arts disciplines most closely reflect their national counterparts, not deviating more than one percentage point from the national proportions.

Variables

Raw data from the sixty-four colleges in our sample were drawn from the National Curriculum Study database and the 1993 Transfer Assembly database. Variables were calculated by transforming the raw data into proportions and percentages for analysis. The proportion of liberal arts courses of the total course offerings at each college and the proportion of non-liberal arts courses were calculated. Similar to the 1991 National Curriculum Study (CSCC, 1992), the liberal arts curriculum was divided into six major disciplines (see Appendix 1), and the proportion of each discipline of the liberal arts curriculum was calculated. Likewise, the non-liberal arts curriculum was divided into eleven major disciplines (see Appendix 2) and proportions were derived for each discipline.

Courses designated as English as-a-Second Language (ESL) were not treated as part of the traditional liberal arts curriculum. Instead, ESL courses were treated as a separate category. The alteration is based on the rationale that the placement of ESL in the liberal arts curriculum is by no means standardized, and the departmental placement of ESL varies considerably from college to college (Ignash, 1994). The ESL variable was derived from the proportion of ESL courses to the total liberal arts curriculum and treated as a separate variable.

Liberal arts course offerings were also coded by the appropriate level of proficiency, defined as Remedial, Standard, and Advanced. Remedial applies to any compensatory, developmental, or basic course which is below college-level proficiency and which does not carry college transfer credit. Standard courses are *first tier* or *introductory courses* which have no prerequisite for enrollement and which carry college graduation or transfer credit. Advanced courses carry a

prerequisite in the same or a related field as a condition for enrollment. Foreign languages are coded as advanced only at the third and fourth years of study. Each proficiency's proportional contribution to the total liberal arts curriculum was calculated. Additionally, the percent of non-whites of the total student population was calculated for each college. Lastly, colleges were also coded by the size of their student population, categorized as Small (pop.<1500), Medium (1500<pop.<6000), or Large (pop.>6000).

The Total student transfer rate calculated for each of the sixty-four colleges is based on the Transfer Study definition established by the Center for the Study of Community Colleges: *all students entering the two-year college in the Fall of 1987 who have no prior college experience and who complete at least twelve college-credit units there, divided into the number of that group who take one or more classes at a university by the Spring of 1991*. For those colleges with ethnic data, ethnic rates were also calculated. The ethnic transfer rates analyzed were African American student rates, Latino student rates, White student rates, and Asian American student rates. Those ethnic groups with small student sampling were not analyzed. Thus, five transfer variables were used in this study.

Results

Correlations

Two stages of analyses were conducted. First, correlational analyses of transfer rates and their relationship to broad curricular categories (% Liberal Arts, % Non-Liberal Arts, % Remedial, % Standard, and % Advance), institutional size

and the percentage of non-whites were performed using the SPSS Correlation procedure with a two-tail test of significance.

Insert Table 1 about here

The results of the correlational analyses are summarized in Table 1. The results indicate that the percentage of liberal arts curriculum in the total college course offerings is positively correlated to transfer rates. In contrast, the percentage of non-liberal arts curriculum in the total college course offerings is negatively correlated to transfer rates. These findings are significant for all transfer rates except Latino student rates. Although the Latino rate was not significantly correlated to liberal arts or non-liberal arts, the direction of its relationship mirrors that of the other transfer variables.

The correlational analyses also reveal that the proportion of remedial courses is negatively related to Total student transfer rates. Conversely, the proportion of standard courses and the proportion of advanced courses are not significantly related to transfer rates. Similarly, the percentage of non-white students and institutional size are not statistically related to transfer.

The results support current literature contending that the liberal arts curriculum enhances community college student transfer, while non-liberal arts curriculum negatively affects it. However, it is unclear which disciplinary subjects exerts the greatest influence on transfer. To answer this question, a second stage of analyses was conducted.

Regressions

The second stage of analyses focused on the contribution of disciplinary categories in predicting transfer rates. Multiple regression analyses were employed to estimate the net or direct effect of disciplinary variables on community college student transfer rates. SPSS Forward Regression procedures were used to assess the simultaneous and unique effects of curricular factors on transfer. The dependent variables in these analyses were the transfer rates, and separate regressions were conducted for each of the five rates. The independent variables for the analyses included the seventeen liberal arts and non-liberal arts discipline variables, and the percentage of ESL courses.

Since the liberal arts curriculum was discovered in the first stage of analyses to have the strongest correlation to transfer rates, the six liberal arts discipline variables were analyzed in the first block. After controlling for liberal arts, the eleven non-liberal arts discipline variables which have a significant correlation to transfer but slightly weaker than that of liberal arts, were analyzed in the second block. The last block contained ESL percentages. Analysis of ESL occurred only after all liberal arts and non-liberal arts variables were controlled.

The results of the regression analyses are summarized in the following sections. Please contact the author for a detailed report of the standardized betas and multiple r's after each step of a regression analysis.

Total Transfer

Four of the eighteen curriculum variables significantly predict ($p<.05$) Total student transfer rates, accounting for 33% of the variance. Of the six liberal arts variables, only the percent of Humanities courses in the liberal arts

curriculum significantly contributes to the variance of Total transfer. Its relationship to Total transfer is positive. Of the eleven non-liberal arts variables, two entered the regression equation, the percent of Trade & Industry courses and the percent of Agriculture courses. Trade & Industry courses are negatively related to Total transfer, whereas Agriculture courses are positively related. Lastly, the proportion of ESL courses in the liberal arts entered the regression equation even after all curriculum variables were controlled, with a negative relationship to Total transfer.

African American Student Transfer

One liberal arts variable and one non-liberal arts variable entered the regression equation, accounting for 21% of the variance in African American student transfer rates. Both the percent of Social Sciences and the percent of Trade & Industry courses are negatively related to African American student transfer.

Latino Student Transfer

Two non liberal arts variables and the proportion of ESL courses entered the equation, while no liberal arts courses exhibited a significant effect. Both the percent of Marketing & Distribution courses and the percent of ESL courses are negatively related to Latino student transfer. On the other hand, the percent of Education courses has a positive relationship with Latino transfer. However, the relationship appears to be indirect, since the significant correlation to transfer emerged only after controlling for the percent of Marketing & Distribution courses. This suggests that the relationship of Education courses to transfer is indirect and occurs as a result of its relationship to other curricular variables. The

three significant curriculum variables accounted for 34% of the variance in predicting Latino student transfer.

White Student Transfer

The variables entering the regression equation for White student transfer closely resembles that of Total student transfer. The two dependent variables share three of the four significant curriculum variables. Similar to Total student transfer, percent Humanities, Trade & Industry and ESL significantly contributed to predicting White student transfer. Furthermore these curriculum variables' relationship to White student transfer mirrors that of Total student transfer; Humanities are positively related, whereas Trade & Industry and percent of ESL courses are negatively related. Unlike the relationship of curriculum to Total transfer, the percent of Math & Computer courses has a significant positive relationship to White student transfer. However, Math & Computer courses exert their influence only after Humanities courses are controlled, suggesting an indirect effect. In all, the four significant curriculum variables accounted for 37% of the variance in White student transfer.

Asian American Student Transfer

The percent of Math & Computer courses and the percent of Trade & Industry courses are significantly correlated to the transfer rate of Asian American students, accounting for 36% of the variance However, each variable exerts opposite influences. The liberal arts variable is positively related to Asian American student transfer and in contrast, Trade & Industry is negatively related.

Summary

The list below summarizes the important findings:

Correlations

- Liberal arts is positively related to transfer.
- Non-liberal arts is negatively related to transfer.
- % Remedial courses is negatively related to Total transfer.

Regressions

- Total student transfer is related to % Humanities (+), % Trade & Industry (-), % Agriculture (+), and % ESL (-).
- African American student transfer is related to % Social Science (-) and % Trade & Industry (-).
- Latino student transfer is related to % Marketing & Distribution (-), % Education (+), and % ESL (-).
- White student transfer is related to % Humanities (+), % Math & Computer (+), % Trade & Industry (-), and % ESL (-).
- Asian American student transfer is related to % Math & Computer (+) and % Trade & Industry (-).

Discussion

Liberal Arts and Non-Liberal Arts Curriculum

The results of this study supports previous contentions that liberal arts curriculum positively affects the transfer rate of community college students (American Council on Education, 1991; Watkins, 1989, Greenfield, 1988; Cohen & Brawer, 1987; Kissler, 1982). If transfer of students to four year institutions is valued, the liberal arts should be maintained as an important and necessary part of the general education curriculum. Of the six liberal arts disciplines, Humanities

courses and Math & Computer courses account for the most variance in transfer rates. However, it must also be emphasized that all liberal arts disciplines are inter-related and play either a direct or indirect role in transfer. Although only a few liberal arts disciplines are significantly correlated to transfer, other disciplines as a result of their relationships, also play an important role in matriculating students into four year institutions. According to the findings in this study, a decline in the Humanities discipline will have a negative influence on community college student transfer. This is especially alarming since nearly all the humanistic disciplines, including history, cultural anthropology, art history, music appreciation, philosophy, religious studies, and particularly literature, had dropped during the seventies (Cohen, 1980).

In contrast, non-liberal arts curriculum has a negative relationship with transfer. If the proportion of vocational, career oriented and community based courses increase in community colleges, transfer rates will likely decline. This relationship is especially apparent in the Trade & Industry discipline. Courses emphasizing construction, mechanical repair, material design and production, cosmetology, and travel are negatively related to transfer. Institutional characteristics can be attributed to this finding. Community colleges offering a large proportion of Trade & Industry courses, are often vocational and career oriented institutions. The mission of these institutions may be less concerned with student transfer and more aligned with terminal occupational degrees.

The above findings support the criticism that the emphasis on vocational studies is a major contributor to the students' failure to gain higher degrees (Brint & Karabel, 1989; Grubb, 1991). However, before attacking the academic

integrity of the non-liberal arts curriculum, caution must be taken in over-generalizing its effect on student transfer. This study indicates that Agriculture courses and Education courses are positively related to transfer rates. Many of the courses offered in these two disciplines target professions that require an advanced degree for employment i.e., forestry, teaching, botany, agricultural science, and psychology. Specialized occupational courses in non-liberal arts which encourage advanced degrees, may enhance student transfer.

Curricular Accomodation

Ethnic variations in the findings suggest that different student groups have unique curricular needs that support transfer. Because our three minority groups, African Americans, Latinos and Asian Americans make up approximately 10%, 18% and 9% respectively of our student sample, their unique needs are not necessarily reflected in the Total transfer analyses. Separate analyses of these groups reveal their unique relationships to curriculum and transfer. Unfortunately, for these analyses the sample size decreased due to missing data. Yet the sample did not fall below forty-five colleges, enabling the analysis of interesting information.

It appears that community colleges continue to be instrumental in the movement of Asian American and Latino students through the education system. This is evidenced by the disciplines which enhance the transfer of these ethnic groups. When compared to other ethnic groups, Asian American students are typically over-represented at the baccalaureate level in math oriented majors (i.e. engineering, mathematics, computer science, etc.), while Latino students are often over-represented in education (Suzuki, 1987; Vetter & Babco, 1987; U. S.

Department of Education, 1991). Consistent with the observations in four year institutions, the proportion of Math & Computer courses are positively related to Asian American student transfer and the proportion of Education courses are positively related to Latino transfer.

The Asian American student finding is incommensurate with Richardson and Bender's (1987) contention that Asian Americans will most likely transfer early due to "paucity of advanced science and math courses at community colleges." Instead the findings suggest that a large proportion of science and math courses rather than a paucity of these courses, fosters Asian American student transfer. This supports the preparatory function of community colleges. However, it is unclear whether the additional Math & Computer offerings are actually advanced courses rather than standard and remedial. Nonetheless, colleges that offer a large proportion of Math & Computer courses also show a higher rate of Asian American student transfer.

Another interesting finding that pertains to ethnic variations is the negative relationship between Total student transfer and the proportion of remedial courses offered. Superficially, this finding appears to indicate that community colleges serving a large developmental student population, often over-represented by minority students, do not effectively remediate students so that they can advance to college-level courses. The reality of such a conclusion would be distressing for the community colleges since compensatory education has often been regarded as an important goal. Furthermore, remediation requires more resources, is costly, and developmental students require additional instruction and support services. In view of the findings, the efforts and costs invested in remediation would become

highly suspect, but before heeding to suspicion, a closer examination of the results is warranted.

The correlations also indicate important ethnic variations between transfer rates and the proportion of remedial courses. For example, while the percent of remedial courses is negatively related to Total and White student transfer, by contrast, it is positively correlated to African American, Latino and Asian American transfer rates. Although remedial courses are not significantly related to these transfer rates, they are fairly robust for Latino and Asian American rates. This is not surprising since English dominates the remedial curriculum, especially in the area of English Composition and Reading. It appears that for many Latino and Asian American community college students, additional course offerings in remedial composition and reading may enhance their academic preparedness, especially those with immigrant backgrounds, and improve their ability to challenge college-level courses.

Although the relationship lends itself to other interpretations, the ethnic variations suggest that the impact of remedial courses on transfer is not purely negative but very ambiguous. Moreover, it is difficult to statistically realize the impact of remediation on transfer because those students who are served by compensatory courses, usually stay in community colleges for a longer period. In addition, the relationship between proficiency and transfer appears to be more indicative of the population served by the college rather than the curricular impact. An increase in remedial course offerings may be a response to a changing student population, which directly affects the transfer rate.

Likewise, English-as-a-Second Language (ESL) raise questions regarding how the student population drives curriculum and consequently affects transfer. The proportion of ESL courses in community colleges is found to be negatively related to student transfer. This may be a result of ESL's relationship with other courses rather than the academic nature of ESL. Given a community college's limited resources, constraints are often placed on their course offerings. As students' curricular demands change, colleges must accommodate the new needs by increasing offerings in highly demanded areas. Consequently, they must also sacrifice less popular courses.

Ignash (1994) reports that the increase in the number of foreign students, immigrants, refugees and asylees to the United States, has added to the number of ESL students in community college classrooms. She found that ESL courses have increased consistently with the changes in the population. Furthermore, she maintains that demands for ESL will not abate in the near future. According to the results obtained in this study, an increase in ESL courses resulting from the new demands, may subsequently decrease course offerings in other areas of the liberal arts curriculum.

More rigorous analyses reveal negative relationships between ESL and liberal arts disciplines. The proportion of ESL courses is negatively correlated to the proportion of English ($r=-.39$, $p<.01$), Social Science ($r=-.26$, $p<.05$), and most importantly Math & Computer ($r=-.37$, $p<.01$) courses that are positively related to transfer. This suggests that as the proportion of ESL courses increase, the proportion of "transfer fostering" disciplines such as Math & Computer offerings, will decrease. It is unclear whether this is a result of student demands and needs,

reducing the popularity of such courses, or limited financial resources that force course reduction even though there is student interest.

The relationship of ESL to transfer is further complicated by the goals and motivation of the changing student population. A different student population, especially immigrants, utilize the community colleges for different purposes (Spicer, Sanchez, & Ali, 1989). Therefore, the new student population will both directly affect the transfer rate in their goals, and indirectly affect it through demands for curricular change. The irony here is that as community colleges improve their response to changing curricular needs, their transfer rates may be negatively affected.

Conclusion

Given the findings in this study, one might suggest the re-articulation of community college curriculum to improve transfer rates. Unfortunately, this study cannot offer conclusive curricular recommendations to improve student transfer to four year institutions. It is clear that curriculum affects transfer and should be an important consideration in articulation (Deegan & Tillery, 1985). Particularly, liberal arts curriculum supports transfer and non-liberal arts curriculum hinders transfer. However, variables such as student characteristics, institutional factors, demographics, etc. not tested in this study but regarded by other analysts to have a significant effect on transfer (Knoell, 1992; Astin, 1982; Lombardi, 1979), may also have an important impact on curriculum.

Although this study identifies specific curricular disciplines that are significantly related to transfer, it is difficult to determine whether the lack of or the excess of such courses causes variations in transfer, nor can we discern

whether individuals actually utilize these courses for transfer. For example, it is unclear whether those Latino and Asian American students who do transfer take remedial courses. This leads to the conclusion that the two ethnic transfer rates' positive relationship to remedial course offerings may simply be a numerical fact rather than a curricular impact. In other words, those colleges that have high proportions of remedial courses may also have high proportions of Asian American or Latino students. Thus, while many of the students in these ethnic groups might take remedial courses, it is difficult to determine whether those Asian American and Latino students who actually transfer also utilize these courses. To further complicate the interpretation, multi-collinearity between curriculum variables influence those disciplines that are significantly related to transfer. For instance, the increase or decrease of Science course offerings will either directly or indirectly affect the offerings in Humanities, thus affecting the transfer rate.

Despite these shortcomings, the results suggest that colleges with certain curricular characteristics show a higher or lower transfer rate for a particular set of students, and these characteristics are typically influenced by factors outside the curriculum. In addition to identifying curricular disciplines, questions regarding how the student population drives curriculum and consequently affects transfer are raised. Ethnic variations and the ESL findings raise concerns about the responsibility of a community college in serving its unique student population while simultaneously maintaining its institutional goal to enhance transfer. On the one hand, a community college must be responsive to community and student needs, increasing course offerings such as ESL and remedial courses. On the

other hand, meeting the new demands either directly or indirectly impacts the breadth of the "traditional college" curriculum, negatively affecting the college's commitment to "vertical focus" (Cross, 1985). Thus, both the changing student population and a college's response to their curricular needs affect the transfer rate.

In view of the findings, the mission of community colleges seems contradictory. On one hand they maybe pressured by a legislature or certain community groups to focus on transfer as a primary goal, which encourages a curriculum that emphasizes traditional academic courses. On the other hand, community colleges must also be sensitive and responsive to the changing student population and community they serve, forcing them to offer a diversity of courses that deviate from the traditional curriculum. Unfortunately, in these days of shrinking budgets and financial constraints, the two demands are frequently incommensurate. Hence, the challenge to community colleges is achieving a delicate balance. Community colleges must find a balance to both attract students to their institution and provide the students with "an education that reveals itself in their having gained knowledge useful to them as thinking individual, productive citizens, and members of their community" (Cohen, 1987), while concurrently responding to demands that they also assist in workforce development.

As we approach the turn of the century, community colleges are challenged to be both sensitive to on-going community and student population changes while maintaining the academic integrity of its curriculum. Alternatively, they can re-define their institutional role and become more specialized in their course offerings; either reaffirming its link to higher education

by strengthening the academic and general education core or relinquishing the transfer function altogether to pursue other academic capabilities (Prager, 1993). In either case, the challenges will force each individual college to examine its curriculum, transfer rates, articulation agreements, policies on open enrollment, rendition of comprehensiveness, and proclamation to be "all things to all people." This is a challenge that will require both a re-examination of its mission and a firm understanding of the community and student population that it serves.

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Appendix A

Taxonomy for the Liberal Arts adopted from the 1975-1990 Liberal Arts Studies conducted by the Center for the Study of Community Colleges (CSCC).

Humanities

Art history/appreciation, cultural anthropology, cultural geography, foreign languages, history, interdisciplinary humanities (combination of two or more humanities area subjects), literature, fine and performing arts history/appreciation, music history/appreciation, philosophy, political science, religious studies, and social and ethnic studies.

English

English composition, reading, speech, and business communications.

Fine and Performing Arts

Dance, music, theater, visual arts (includes graphics, painting/drawing, handicrafts, design).

Social Sciences

Anthropology, economics, geography (general, economic and political), interdisciplinary social studies (combining two or more areas of sociology), psychology, sociology, and history, sociology and philosophy of science.

Sciences

Agricultural sciences and natural resources, biological sciences (includes human biology), chemistry, earth and space sciences, engineering sciences, environmental science, geology, integrated sciences, physics.

Mathematics and Computer Sciences

Introductory and intermediate mathematics, advanced mathematics (includes analytic geometry, calculus, linear algebra), applied mathematics-technology related, computer science (mainly programming), mathematics for other majors, statistics and probability.

Appendix B

Taxonomy for the Non-Liberal Arts adopted from the Taxonomy of Academic and Vocational Courses for less-than-4-year Post secondary Institutions, developed by the National Center for Research in Vocational Education (NCRVE).

Agriculture

Horticulture, agribusiness and crop production, forest products and other agriculture products, agricultural sciences, renewable natural resources, animal health technology, nursery operation.

Business and Office

Accounting, taxes, business and management, secretarial and related (filing, typing, shorthand, 10-key calculations), labor law, will, trusts and estate planning, legal assistant, other business and office, airline ticketing and reservations.

Marketing and Distribution

Real estate, fashion merchandising, salesmanship, auctioneering, advertising design layout, purchasing textiles.

Health

Nursing, health sciences, allied health, CPR, emergency technician, nutrition, marriage and family counseling courses, drug counseling, working with juvenile delinquents, dental assisting, corrective and rehabilitative physical education or other physical therapy for the physically challenged.

Home Economics

Home economics, sewing, cooking, preserving foods, home interior decorating, all home economics courses which are not focused on trade and industry and which are intended for one's personal use at home.

Technical Education

Computer software applications (word-processing, spreadsheets, database programs, networking, desktop publishing, all non-programming computer applications); protective services including fire, police and law enforcement, lifeguard, and military science courses; communication technologies including journalism TV, newspaper reporting, radio announcing, photo journalism, and other mass media courses, graphics.

Engineering Technologies

Most of this category was coded under the Spring 1991 Liberal Arts Study. Engineering courses which were too occupationally-oriented to be coded in the liberal arts, however, were coded under non-liberal arts. These non-liberal arts engineering courses focus on engineering principles such as "Analog or Digital Fundamentals" or "AC/DC Current" or "Ohm's Law" as well as more practical subject matter. Examples: "Avionics" (theory of flight and practical aspects of flying an airplane) or "Industrial Electricity."

Trade and Industry

Construction; automotive; aviation engineering (concerning the manufacture of airplanes); surveying; drafting including CAD/CAM; other mechanics and repairers; welding and precision metal; other precision production; transport and materials moving; consumer/personal/miscellaneous services including cosmetology, upholstery; hospitality industry courses including culinary

arts and wines; pattern design and many apparel construction courses; travel and tourist agent.

Personal Skills and Avocational Courses

Physical Education, freshman orientation, introduction to the library, parenting, fashion color analysis, career and life planning, self-appraisal courses.

Education

Early childhood education, physical education instructor courses, coaching, children's literature, nanny courses, math or music or art teachers, courses for future instructors of the emotionally and mentally challenged.

Other

Social services program training courses, library cataloguing procedures.

Table 1
The Relationship of Broad Curricular Categories to Transfer

Variable:	% Liberal Arts	% Non-Liberal Arts	% Non-Whites	% Remedial	% Standard	% Advanced	Size
Total transfer rate (n=64)	.357	-.319	-.299	-.246	.082	.053	-.175
African Am. transfer rate (n=46)	.475	-.375	.131	.075	-.031	-.008	.029
Latino transfer rate (n=46)	.203	-.084	-.247	.288	-.103	-.027	-.133
White transfer rate (n=52)	.449	-.363	-.206	-.123	-.100	.158	-.256
Asian Am. transfer rate (n=45)	.505	-.439	-.084	.201	-.240	.133	-.032

*—significance level at .05 (two tailed)

**—significance level at .01 (two tailed)