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ABSTRACT

A study was conducted to review the major functions of a two-year college curriculum as identified in the literature; to relate these functions to specific academic areas within the sciences, social sciences, and science-related technologies; and to relate curriculum functions to specific courses within these academic areas. The literature on the two-year college curriculum is consistent about identifying its four major functions as transfer, general education, preparation for work, and remediation. To determine whether these functions are served by discrete courses, findings from a survey of science, social science, and science-related technology instructors were analyzed. The analysis revealed: (1) the literature-identified curriculum functions were necessary and sufficient--all 1,244 course sections studied could be classified by one or more of the four functions; (2) 34% of the courses served one function, 45% served two functions, 20% served three functions, and 1% served all four functions; (3) transfer was the strongest discrete function and general education the weakest; (4) the transfer function was served in 72% of the sections, general education in 53%, preparation for work in 39%, and remediation in 7%; (5) the highest proportion of courses serving a single function was found in Engineering and the lowest proportion in Agriculture; and (6) the function of courses varied within academic areas. (LL)

Functions of the Two-Year College Curriculum

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FUNCTIONS OF THE TWO-YEAR COLLEGE CURRICULUM

INTRODUCTION

The literature on the curriculum of the two-year college is consistent about identifying specific functions of the two-year college curriculum and also about identifying several shifts in curriculum direction or emphasis within the past few years (6, 9, 10). This situation creates a substantial literature based on perceptions of what "ought" to be or what "appears" to be, but there is very little empirical data useful for describing the two-year college curriculum and its functions. This paper is a continuation of the effort begun by Arthur Cohen at UCLA to fill that gap. Two underlying assumptions guide this effort: first, curriculum consists not of what authorities say ought to be taught but of the specific courses actually taught and further, the function(s) of those courses are those identified by the course instructors. Second, the study assumes that the primary curriculum functions of the two-year college have been identified in the existing literature and that these functions will be both necessary and sufficient to describe the two-year college curriculum as perceived by its instructors.

The purposes of this study are to state the major curriculum functions of the two-year college curriculum as identified in the literature, to relate these curriculum functions to specific academic areas within the sciences, social sciences, and science related technologies, and finally to relate curriculum functions to specific courses within the sampled academic areas.

This study is limited to one segment of the two-year college curriculum since it used a data set restricted to science, social science, and science related technical courses taught in two-year colleges in Fall 1977. From this effort conclusions about the actual functions served by this segment of the two-year college curriculum will be drawn.

Curriculum Functions Identified

The curriculum functions of credit courses in the two-year college can be broken into four distinct areas: courses serving a transfer function, courses serving a general education function, courses serving a preparation for work function, and courses serving a remediation function. The transfer function is identified as an historically important and primary function of the community college by most writers in the two-year college curriculum field (4, 11, 12, 14). Credit courses serving the transfer function are designed to "prepare(s) students to enter the senior colleges and universities," (11) by providing classes and programs parallel to the first two years of a four-year college curriculum.

The same writers also identify the general education function with the community college but use a variety of definitions for general education. The more recent the definition, the more specific it is apt to be. A recent definition and the one used for this study is from the Carnegie Foundation for the Advancement of Teaching which identifies general education as that function which:

1. Builds skill for advanced studies and life-long learning.
2. Distributes time available for learning in such a way as to expose students to the main stream of thought and interpretation--humanities, science, social science, and the arts.

3. Integrates learning in ways that cultivate the student's broad understanding and ability to think about a large and complex subject (p. 165).

The third curriculum function, preparation for work, is clearly identified and assigned a primary role by writers focusing upon the two-year college curriculum (11, 12, 14); it is considerably less an emphasis for writers with a primary interest in the four-year college. The preparation for work function is served within this study where science, social science, and science related occupational technical courses and programs ". . . prepare students for immediate entry, after leaving the community college, into middle-level vocations or to upgrade the skill of persons already employed." (Monroe, C. R. Profile of the Community College, San Francisco: Jossey-Bass, 1977, page 82.)

The fourth function of the community college curriculum is remediation. Early writers about community college curriculum give little recognition to this function (12), later writers give nodding acknowledgement (14), but more recent writers give considerable emphasis (4, 13). The remediation function is served where specific courses are developed to provide assistance in skill development and/or personal development to increase students' ability to cope with college (5). Therefore, this study proposes that the four functions of the community college are described in the literature with an expectation that these will be discrete functions generally served by separate and identifiable courses. Monroe (11) is an exception to this as he acknowledged the need for the transfer and general education functions to overlap occasionally in the same course; however, the majority of the literature portrays separate functions served by separate courses.

METHOD

The population studies was science, social science, and science related technology instructors in two-year colleges in the United States who taught credit courses in the Fall, 1977. The sampling procedure and the survey instrument were developed by the Center for the Study of Two-Year Colleges, first under a grant of the National Endowment for the Humanities (NEH) and subsequently under a grant from the National Science Foundation (NSF). The questions related to curriculum function were developed as a result of the NEH study and were only included in the later NSF study. That second study is the basis for this paper. The sample was drawn, the survey instrument designed and administered, and the data recorded by the Center for the Study of Two-Year Colleges. Through the kindness of Arthur Cohen, Director of the Center and a faculty member at UCLA, this data was shared with the author for use with a graduate seminar on college curriculum conducted at Virginia Tech Fall 1979 and for subsequent secondary analysis.

Sample

The sample was constructed using the class section as the sampling unit. The 1977 Community, Junior, and Technical College Directory published by the American Association of Community And Junior Colleges was used to draw a stratified random sample of public and private two-year colleges in the United States. Since the Directory is arranged by state, the list was balanced geographically and the stratification procedure insured a balance by size of institution and by type of control. Each participating college then provided a listing of each section within the sciences, social sciences, and science related technologies to be offered

in the Fall of 1977. The colleges were randomly arranged, and beginning from a random number, each thirteenth course/section was chosen to be included in the study. This procedure was conducted in a "rolling" fashion across colleges to provide a proportional sample of all sections offered in these academic areas Fall 1977. The actual data were drawn between February and June 1978 from the instructors of the course/sections chosen. Complete descriptions of the sampling techniques and of the instrument are available (8).

Survey

The survey instrument itself was designed to provide information by instructor self report from a sample of all full and part-time faculty members teaching two-year college science, social science, and science related technologies in the Fall of 1977 and to provide insight into methods of instruction and faculty perceptions (3). The survey was an adaptation of a survey used in the NEH Survey of Humanities faculties but with the addition of nine questions used to describe curriculum functions. Since the college which offered each course and section was known, the survey included data about the geographic location of the institution, its size, and a variety of other characteristics. Instructors provided data about the academic area of the course, class size, the purposes the instructor perceived as operative for that course and section, and a variety of other data.

Definitions

The instructors surveyed were asked to indicate each of the items below that properly described their course and section:

A. Parallel or equivalent to a lower division college level course at transfer institutions.

B. Designed for transfer students majoring in one of the natural resources fields (e.g., agriculture, forestry) or in an allied health field (e.g., nursing, dental hygiene, etc.).

C. Designed for transfer students majoring in one of the physical or biological sciences, engineering, mathematics with the health sciences (e.g., pre-medicine, pre-dentistry).

D. Designed for transfer students majoring in a non-science area.

E. Designed for occupational students in an allied health area.

F. Designed for occupational students in a science technology or engineering technology area.

G. Designed as a high school make-up or remedial course.

H. Designed as a general education course for non-transfer and non-occupational students.

I. Designed for further education or personal upgrading of adult students.

J. Other

To analyze responses to this section, each response item was designated as serving a particular curriculum function. Items A, B, and C were identified as serving the transfer function; items D, H, and I were identified as serving the general education function; items E and F were designated as serving the preparation for work function, and item G was identified as serving the remediation function. A course was deemed to serve the transfer function if the instructor indicated any one of the three possible items appropriate to the transfer function. In the same way, if any one of the items relating to preparation for work was designated, the course was regarded as serving the preparation for work function. Because instructors

were allowed to pick any number of responses they felt appropriate, it was possible that a course could be indicated as serving more than one function of the two-year college curriculum. Although this complicated analysis, it clearly enriched the data and allowed insight into the use of single courses to serve multiple functions within the curriculum. The use of instructor perceptions of course purposes provides perhaps the most reliable indicator of the actual functions or purposes met by a course section since the instructor is involved in the day to day operation of the course and interaction with its students.

FINDINGS AND DISCUSSION

Curriculum functions - The four curriculum functions identified from the literature appeared to be both necessary and sufficient--all 1244 sections in the sample used one or more of the responses on the survey and therefore could be classified by curriculum function. Perhaps the most significant finding was that only one-third (34%) of the sections served discrete curriculum functions.

Insert Table 1 about here

The remaining two-thirds of the sections served two or more curriculum functions. Transfer was the strongest discrete function (N=229) and general education the weakest (N=44). This raises questions about the demise of the transfer function (9) but is consistent with the work of Blackburn et al.(2) who proclaim the demise of general education. However, forty-five percent of the sections surveyed two functions, twenty percent served three functions, and sixteen sections (1%) were perceived as serving all four functions. Clearly the dominant pattern in the two-year college is a single section serving

multiple functions. The most frequent configuration of functions in science, social science, and science related technology courses were

	N	%
transfer & general education	326	26
transfer	229	18
transfer, general education & preparation for work	216	17
transfer & preparation for work	138	11
preparation for work	99	8
remediation	48	4
general education	44	4
general education & preparation for work	43	3
general education & remediation	37	3
Total	1180	94

No other combinations accounted for more than 1.5% of the sections in the sample. The transfer function is served in 72% of the sections in this sample, the general education is served in 53% of the sections, preparation for work in 39%, and remediation in an almost negligible 7%.

Two findings about curriculum functions stand out. First, the dominant pattern is that courses do not serve discrete functions. Second, the pattern of multiple course functions may obscure the actual functions of two-year college curricula. General education appears more significant in the curriculum than the literature would suggest. This may be related to the finding that general education is rarely a primary or discrete function of a course but rather is usually one of two or three functions served by a course. Conversely, the preparation for work function may be overestimated because it more frequently is a primary or discrete course function but less frequently one of the multiple functions served.

Academic areas and curriculum functions

The curriculum functions just described represent findings about courses drawn from specific academic areas and may not be generalizable to the total two-year college curriculum. In the same way the patterns within any one academic area vary from the general patterns described. Table 2 presents curriculum functions by academic area and illustrates this finding. The highest proportion of courses serving a single function is found in Engineering (43%) with the lowest proportion in the Social and Behavioral Sciences (29%) and in Agriculture (22%).

Insert Table 2 about here

This difference among academic areas continues when single and multiple

course functions are considered. In the Biological, Physical, and Social and Behavioral Sciences and in Mathematics the dominant functions are Transfer and Transfer & General Education which together include almost 50% of the sections. When the multiple function Transfer, General Education & Preparation for Work is added in, the three categories account for 90% of the sections in the Social and Behavioral Sciences, approximately 70% of those in the Biological and Physical Sciences, and approximately 60% of the sections in Mathematics. In all these academic areas the co-mingling of the transfer and general education functions is apparent. In Engineering this same combination of curriculum functions accounts for only 40% of the sections reflecting a more precise assignment of functions to courses. This greater differentiation within academic areas is apparent in the more frequent designation of preparation for work for Engineering and to a lesser degree in the wider spread of functions and greater emphasis upon remediation evident in Mathematics.

Courses and curriculum functions

At the level of specific courses further differences within academic areas are apparent. Table 3 presents courses arrayed by assigned curriculum function.

Insert Table 3 about here

Differences within academic areas are evident in the Biological Sciences, Mathematics, and the Physical Sciences while similarities dominate in Engineering and the Social and Behavioral Sciences. In the Biological Sciences, General Biology serves the transfer and general education functions appropriate for the most frequently taken science course; Anatomy/Physiology and

Human Biology serves primarily a preparation for work function. In Mathematics the introductory course is the most frequently taken course; it serves primarily the remediation function with transfer the secondary function. The advanced math courses are clearly transfer oriented, the applied technical courses serve a preparation for work function, and the applied non-technical courses carry a heavy general education function. The pattern in the Physical Sciences differs from both the Biological Sciences and from Mathematics since both introductory and advanced chemistry serve the transfer function, non-calculus physics serves a preparation for work and a transfer function, and introductory physical science courses serve a general education function. Engineering courses are clearly oriented toward preparation for work with some overtones of the transfer function while the Social and Behavioral Sciences courses are a consistent welter of transfer and general education functions with the occasional addition of the preparation for work function.

The functions of courses vary within academic areas, but within that variation there are patterns. Curriculum functions are well defined in Engineering and the result is sharp differentiation among courses. In Mathematics and the Physical Sciences specific courses have taken on particular curriculum functions so a clear pattern of curriculum differentiation is apparent. This differentiation also occurs (but to a lesser degree) in the Biological Sciences, possibly mirroring curricular shifts towards a more general education oriented approach to biology. The Social and Behavioral Science courses show a consistent pattern of little curriculum differentiation. This undifferentiated approach to curriculum function suggests a need for closer scrutiny of the purposes of specific social science courses and for study of the relationship between the various curriculum functions and the purposes of the two-year institutions.

Conclusions

This study must be considered exploratory since it uses a new methodology for understanding curriculum by classifying courses by instructor perceptions of course purpose; the methodology needs refinement. This study is also limited because it draws data from only one sector of the two-year college curriculum; generalizations to the total curriculum are not warranted. Within those constraints some conclusions can be drawn and several questions raised.

Curriculum functions can be identified and assigned by courses to provide a method to better understand the two-year college curriculum. The pattern of no academic areas and very few courses having a dominant single purpose was consistant for this sample of the curriculum. For the academic areas surveyed, this represents a substantial departure from the patterns described in the literature. Courses in these academic areas do not appear to have clear purposes or if the instructor begins with clear purposes, the heterogeneity of the student population forces the instructor to add to the original purposes. The curriculum of the two-year college appears to have high levels of ambiguity; even at the course level purposes are not clear. According to the traditional views on curriculum development, ambiguity of course purpose is a serious danger sign for the institution and a severe constraint on effective course planning.

Several questions are raised in the analysis of findings from this study. First, are the patterns of functions by courses and academic areas reported representative of the total curriculum? The literature describes a shift away from transfer and from general education toward preparation for work and remediation. This study does not support those shifts. Is it possible that the shifts are only apparent shifts? This study indicates that curriculum functions differ considerably when the primary function

only is considered and when multiple functions are recognized and recorded. Would more extensive analysis of the total curriculum support the reported shifts or is a more subtle phenomena occurring consistent with the findings of this study? This study of science, social science, and science related technology courses found a surprising dominance of the transfer and general education functions and an equally surprising underrepresentation of the remediation function when multiple course functions were considered. Is this a phenomena of the sample used or is it representative of the total curriculum? It does appear that a useful new tool for studying curriculum may now be developing. This effort is presented as a start in a process that might assist in making clearer to ourselves and our constituencies the functions of two-year institutions, their curricula, and their courses.

TABLE 1

CURRICULUM FUNCTIONS OF COURSES
AS PERCEIVED BY FACULTY
(N=1244)

Perceived Curriculum function(s) of courses	PERCEIVED CURRICULUM FUNCTION(S) Transfer	General Education	Preparation for Work	Remediation
One and two functions				
Transfer	229	326	138	8
General Education	x	44	43	37
Preparation for work	x	x	99	6
Remediation	x	x	x	48
Three Functions				
General Education & Preparation for work	216	x	x	14
General Education & Remediation	18	x	x	x
Preparation for work & Remediation	2	x	x	x
Four Functions				
General Education, Preparation for work & Remediation	16	x	x	x

One function courses - 420 (34%)
Two function courses - 558 (45%)
Three function courses - 250 (20%)
Four function courses - 16 (1%)

_____ indicates one function courses

x indicates equivalent cell was used.

TABLE 2

ACADEMIC AREA BY INSTRUCTOR

ASSIGNED CURRICULUM FUNCTION(S)

(ROW PERCENTAGE IN PARENTHESIS)

INSTRUCTOR ASSIGNED CURRICULUM FUNCTION(S)

		# Single Functions				# Multiple Functions				
Academic Area	Total # Sections in Restricted Sample	Transfer	General Education	Preparation for Work	Remediation	Transfer & Gen. Ed.	Transfer & Preparation for Work	Gen. Ed. & Prep. for Work	Gen. Ed. & Remediation	Transfer & Gen. Ed & Prep for Work
Agriculture	35	4 (11)	-	4 (11)	-	8 (23)	9 (26)	2 (6)	-	8 (23)
Biological Sciences	158	30 (19)	8 (5)	11 (7)	3 (2)	42 (27)	29 (18)	5 (3)	-	30 (19)
Engineering	141	17 (12)	1 (1)	43 (30)	-	4 (3)	38 (27)	18 (13)	-	20 (14)
Mathematics & Computer Science	324	56 (17)	15 (4)	22 (5)	41 (13)	74 (23)	27 (8)	6 (2)	35 (11)	48 (15)
Physical Sciences	182	42 (23)	7 (4)	17 (9)	3 (2)	59 (32)	32 (18)	1 (-)	1 (-)	25 (14)
Social and Behavioral Sciences	335	80 (24)	13 (4)	2 (1)	1 (-)	139 (41)	3 (1)	11 (3)	1 (-)	85 (25)
Totals	1180	229 (20)	44 (4)	99 (9)	48 (4)	326 (26)	138 (12)	43 (4)	37 (3)	216 (19)

Note: Table is restricted by requiring each function or combination of functions to total at least for 1.5% of the sample (approximately 20 sections) for inclusion in the Table. This resulted in a reduced N of 1180 for this Table.

TABLE 3

COURSES BY INSTRUCTOR ASSIGNED CURRICULUM FUNCTION(S)

Courses	Total # Sections in Restricted Sample	Single Functions as Percent of Course Sections				Multiple Functions as Percent of Course Sections				
		Transfer	General Education	Preparation for Work	Remediation	Transfer and Gen. Ed.	Transfer and Preparation for Work	Gen. Ed. and Prep. for Work	Gen. Ed. and Remediation	Transfer and Gen. Ed. and Prep. for Work
Biological Sciences										
General Biology	66	23	6	-	5	50	2	-	-	15
Anatomy/Physiology/ & Human Biology	54	9	4	19	-	4	37	7	-	20
Engineering										
Electrical	66	5	2	42	-	5	27	15	-	8
Mechanical	23	17	-	39	-	4	17	13	-	9
Mathematics & Computer Science										
Math-Introd.	185	11	-	1	18	10	6	2	14	15
Math-Advanced	24	75	-	-	-	8	16	-	-	-
Math-Applied-Tech	35	11	3	34	3	3	14	3	6	14
Math-Applied-Non Tech	88	6	15	1	7	45	3	1	8	8
Computer Science	29	20	3	24	-	24	10	-	-	14
Physical Sciences										
Chemistry-Introd.	65	25	3	3	5	11	28	-	2	14
Chemistry-Advanced	16	69	-	13	-	-	13	-	-	5
Physics-NonCalculus	34	11	-	26	-	15	29	3	-	15
Intro. Physical Sciences	19	5	21	-	-	37	-	5	-	26
Social and Behavioral Science										
Psychology	141	28	4	1	-	30	2	4	-	30
Sociology	94	18	3	-	-	45	-	2	-	32
Economics	68	26	6	1	-	53	-	3	-	9
TOTAL	1007									

Note: Table is restricted by two requirements, (1) each course area must represent at least 1.5% of sample (approximately 15 sections) and (2) each function or combination of functions must account for 1.5% of the sample (approximately 15 sections). These restrictions resulted in a reduced N of 1007 for this table.

REFERENCE LIST

1. American Association of Community and Junior Colleges. 1977 Community, Junior and Technical College Directory. American Association of Community and Junior Colleges, Washington, DC. 1978.

2. Blackburn, R., Armstrong, E., Conrad, C., Dedham, J., McKune, T. Changing Practices in Undergraduate Education. Carnegie Council on Policy Studies in Higher Education, Berkeley, CA. 1976.

3. Brawer, F. and Friedlander, J. Science and Social Science in the Two-Year College. (Topical Paper Number 69). Center for the Study of Community Colleges and ERIC Clearinghouse for Junior Colleges, Los Angeles. July 1979.

4. Carnegie Foundation, Missions of the College Curriculum. Jossey-Bass, San Francisco, CA. 1977.

5. Clowes, D. A. "Form and Function." Journal of Developmental and Remedial Education. 3:2-3, 13; Fall, 1979.

6. Cohen, A. & Brawer, F. The Two-Year College Instructor Today. Praeger, New York. 1977.

7. Gleazer, E. J. The Community College: Values, Visions & Vitality. American Association of Community and Junior Colleges, Washington, DC. 1980.

8. Hill, A., Monney, W. Methodologies Employed in a Study of Science Instructional Programs in Two-Year Colleges. Center for the Study of Community Colleges, Los Angeles. 1979. ED. 167 235.

9. Lombardi, J. The Decline of Transfer Education (Topical Paper Number 70). ERIC Clearinghouse for Junior Colleges, Los Angeles. December 1979.

10. Lombardi, J. Resurgence of Occupational Education (Topical Paper Number 65). ERIC Clearinghouse for Junior Colleges, Los Angeles. January 1978.

11. Monroe, C. R. Profile of the Community College. Jossey-Bass, San Francisco, CA. 1977.

12. Reynolds, J. The Comprehensive Junior College Curriculum. McCutchen, Berkeley, CA. 1969.

13. Roueche, J., Snow, G. H. Overcoming Learning Problems. Jossey-Bass, San Francisco. 1977.

14. Thornton, J. The Community Junior College. John Wiley, New York. 1972.