

A SURVEY OF JUNIOR COLLEGE BIOLOGY CURRICULA,
STAFFING POLICY AND TEACHER PREPARATION

by

DAVID A. BLEVINS

B.S., Kansas State University, 1974

A MASTER'S REPORT

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

College of Education

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1975

Approved by:


Major Professor

LD
2668
R4
1975
B58
C.2
Document

TABLE OF CONTENTS

	Page
LIST OF TABLES	iii
CHAPTER	
I. INTRODUCTION	1
IMPORTANCE OF STUDY	3
STATEMENT OF THE PROBLEM	3
DEFINITIONS	3
II. REVIEW OF THE LITERATURE	5
INTRODUCTION TO THE LITERATURE	5
TEACHER PREPARATION	5
BIOLOGY CURRICULUM	6
STAFFING POLICY	8
III. PROCEDURE	10
TWO-YEAR INSTITUTIONS INVOLVED IN STUDY	10
METHOD	10
QUESTIONNAIRE	11
IV. RESULTS	13
V. SUMMARY AND CONCLUSIONS	24
FOOTNOTES	30
BIBLIOGRAPHY	31
APPENDIX	32
ACKNOWLEDGMENTS	36

LIST OF TABLES

TABLE	Page
I. JUNIOR COLLEGE BIOLOGY CURRICULUM--OFFERED	14
II. NON-BIOLOGY TEACHING ASSIGNMENTS	15
III. DEGREE DESIRED	16
IV. TEACHING EXPERIENCE	17
V. TEACHER PREPARATORY COURSES	19
VI. DEGREES FOR STAFF	21
VII. NEW BIOLOGY TEACHERS	22

CHAPTER I

INTRODUCTION

Community colleges in the U.S. first came into existence in the later part of the nineteenth century. However, the establishment of the first public junior college in America was at Joliet, Illinois in 1901 and marked the start of an era of expansion and diversification. Precisely how many junior colleges have opened their doors since that date is unknown because an undeterminate number have gone out of existence, but by 1950-51 there were 577 junior colleges in operation in the United States, and by 1965 there were 780 plus.¹

One of the reasons for the success of this genuinely American institution is that it has been molded to the needs of a much larger cross-section of the population than the four-year institution. Besides serving the freshman and sophomore college students, it serves adults with other educational goals such as vocational and semiprofessional careers, skill improvement in their jobs, or simply cultural enrichment.² In order to do this, the community college offers a variety of programs and courses in academic, vocational and general education areas according to the community's interests. Many programs are offered at night in order to meet the needs of the working people. To make itself more accessible the community college practices an open-door admission policy and in some states, such as California, they are free of charge.³

Instructors in community colleges are going to face a more diverse student population and a different curriculum than does the instructor

in a four-year school. In order to succeed in this venture, the instructor must be prepared and highly motivated.

In the last five years there has been a growing interest in junior college curriculum and the preparation of junior college teachers. The purpose of this study was to determine curriculum, staffing and staffing policy in junior colleges, the types of courses that a prospective junior college biology instructor can expect to teach and the extent of preparation needed.

An examination of the literature regarding junior college biology curriculum, staffing, teacher preparation and the conduct of biology programs indicates that very little has been published in this area. In the area of teacher preparation, the expectations of the prospective junior college instructor are vague. It is commonly thought that at the junior college level a M.S. or M.A. is desired in order to teach. The literature makes no mention of courses thought to be necessary or advantageous. It would seem worthwhile to develop a recommended set of criteria that could be followed by prospective junior college biology instructors.

The researcher's objectives are to: (1) provide an inventory of curricula used in community junior colleges; (2) determine on the basis of department head recommendation, a listing of courses thought necessary for prospective junior college instructors; (3) show how community junior colleges are staffed generally; and (4) determine common teaching assignments of biology instructors both in and outside the biology area.

IMPORTANCE OF STUDY

Because of the lack of information on teacher preparation, staffing policy and curricula in community junior colleges, the importance of this study lies in its use by prospective community junior college biology teachers and their trainers. There is a need for literature which: (1) outlines courses needed for prospective junior college biology teachers; (2) shows generally what is expected of new junior college biology teachers; (3) provides a listing of courses offered at community junior colleges; and (4) shows staffing policy of community junior colleges.

STATEMENT OF THE PROBLEM

This study will seek data to answer the following questions:

- 1) What courses in biology are offered at community junior colleges?
- 2) What biology and non-biology courses are thought by community junior college biology administrative heads to be most important for teaching junior college biology?
- 3) Should the junior college biology instructor expect to teach non-biology courses and, if yes, what non-biology courses?
- 4) What is the staffing policy at community junior colleges?

DEFINITIONS

COMMUNITY JUNIOR COLLEGE - An institution of higher education that offers an equivalent of the first two years of education found in a four-year college and terminal vocational programs. For the purpose of this study the names community junior college, community college, junior college and two-year institution are used interchangeably.

TRANSFER STUDENT - A student at the junior college level planning to attend an educational institution beyond the junior college.

VOCATIONAL STUDENT - A student enrolled in a terminal program at the junior college.

BIOLOGY I - An introductory course in biology encompassing the whole spectrum of biology. For the purposes of this study Principles of Biology, General Biology, Biological (Life) Sciences, Elementary Biology and Biology are used interchangeably.

ZOOLOGY - A science of the form, nature and classification of animals.

BOTANY - A science of the form, nature and classification of plants.

HUMAN ANATOMY AND PHYSIOLOGY - A science dealing with the form and structure of human organisms and the function of various parts and organs of same.

MICROBIOLOGY - Study of minute living organisms, including bacteria, molds and pathogenic protozoa.

GENETICS - The branch of biology dealing with the phenomena of heredity and the laws governing it.

LABORATORY WORK - Task performed in a biology laboratory that involved manual and mental work.

DISCUSSION SESSION - A class period, smaller and more informal than a lecture, geared to aid students with problems derived from lecture and laboratory.

CHAPTER II

REVIEW OF THE LITERATURE

INTRODUCTION TO THE LITERATURE

The author found that three areas of junior college biology had not been researched effectively. These include teacher preparation, curriculum and staffing policy. They interrelate and contribute each to the other. In the following the author presents each area and provides information pertinent to that area.

TEACHER PREPARATION

Bawer suggests that in the past teachers in community colleges were prepared in one of three ways: (1) A degree and experience in the secondary school; (2) Master's degrees in typical academic programs; and (3) For vocational-technical programs, experience in a certain occupation and some training in the art of teaching. Bawer further states that pathways to the community junior college biology teaching position are roughly the same. Few community college teacher preparation programs offer an adequate core of planned experiences, and too little attention is paid to the literature in post-secondary education. Internships in community college teaching, Bawer says, have suffered from the cutbacks prevalent today. The master's degree remains the most common degree for the community college teaching personnel.⁴ The Doctor of Arts in teaching has recently been introduced and is a terminal degree which allows educators with degrees in other fields besides education to

advance their knowledge in teaching skills. However neither the M.A. nor D.A. includes training which, in the authors opinion, represents optimal preparation. Courses like Junior College, Junior College Curriculum and College Teaching have been introduced to provide a well rounded education for the prospective junior college teacher. More courses will probably be offered in the future due to more literature on the subject and better dissemination of same.

Bawer says those who plan junior college teaching careers spend most of their time majoring in some academic field and take only a minimum of professional educational courses. Very few colleges or universities offer anything like a course in the discipline of instruction (Junior College or College Teaching courses). The idea that such a discipline exists, continues Bawer, and should be better defined for prospective teachers has been advanced by some educational leaders, but few preparation programs reflect this premise. And although many of those now involved in education are talking about objectives, accountability, and the open-door admission concept--issues that were seldom dealt with in previous times--the organizing discipline is still inchoate (elementary).⁵

BIOLOGY CURRICULUM

Prospective junior college teachers in preparation for their role as instructor must, in the authors opinion, not only be educationally prepared but must also have a basic familiarity with junior college biology curricula in general.

Although community junior colleges have been in existence for some time, research reveals a relatively limited number of evaluation studies

of their curricula.⁶ The first community colleges in New York state, for instance, were established in 1953 yet one, Corbman says, is hard pressed to find information concerning the effectiveness of their various curricula. It is the author's opinion that for teaching effectiveness and junior college teacher preparation a standardized biology curriculum is in order. One which would encompass major areas of biology, i.e., General Biology, Zoology, Botany, Microbiology, Anatomy/Physiology, Genetics and Ecology.

It is commonly accepted that one of the highest rewards of the teaching profession is the satisfaction derived by the teachers from the favorable comments made concerning the curriculum by qualified persons. But true gratification cannot be based upon the flimsy support of isolated and fragmentary evidence. The faculty needs and deserves the answer to several questions concerning the fruits of their dedicated service. Corbman suggests that answers are needed to such questions as: (1) How effective has the curriculum been? (2) What has happened to all the graduates? (3) Have their experiences reflected credit on the curriculum? (4) Have their experiences indicated that the curriculum should be revised?⁷

It would be quite difficult to answer these questions or any questions concerning biology curricula in junior colleges today, because there is relatively little in literature about junior college biology curricula. After researching Junior College Journal from 1954 thru 1974, the ERIC file from 1966 thru 1974 and other journals and magazines it became quite apparent that a survey of junior college biology curricula was in order.

STAFFING POLICY

In the last two areas teacher preparation and biology curricula were studied and it was noted that teacher preparation is definitely influenced by biology curricula. So it is in this last area where both teacher preparation and biology curricula are influenced by staffing policy. In the authors' opinion, individual junior college faculty prejudices influence teacher selection and in doing so alter teacher preparation and biology curricula.

Staffing policies in the junior college biology department are vague and lack uniformity. The author reiterates that the only prerequisite is a masters degree in the area of biology. There is no fixed or suggested preparation for the prospective junior college biology teacher to follow. As it is set up now, all that is really needed is a general biology background plus a masters degree.

Eurick says that to meet challenges, in the ever changing junior college, one will need good teachers, many more, than one can possibly find. He continues that if junior colleges are to offer their students the quality of instruction they deserve, they will have to use good teachers much more effectively and efficiently. With such problems in mind junior colleges need to deal directly with two major questions: (1) How can a larger share of the ablest teachers be attracted to junior colleges, and (2) How can the available teaching talent be used more effectively?⁸

A first and obvious answer is higher salaries. If junior colleges could pay, in some instances, more than they do they could readily attract a larger share of the ablest faculty members. As it is now,

four-year colleges in most states pay a higher salary and thus attract the best qualified instructors, in the authors opinion. Another possibility is to use the staff members more effectively if the quality is not to deteriorate. This might be done by providing lectures, by the best lecturer, via television and motion pictures, team teaching, or a whole course over television.⁹ In biology today, there is much audio-visual work being done primarily in the beginning biology or general biology courses.

The masters degree, as mentioned before, in the subject field is becoming established as the necessary and sufficient academic degree for community college instructors. According to a survey conducted at Michigan's 29 public community colleges, over 94% of administrators indicated they would require at least a masters degree for a liberal arts teacher in the community college. Kovack states that only 42.6% of the administrators thought the masters degree should be the minimum educational degree for applied arts teachers to possess. In biology this is a must in junior colleges.

Advanced coursework beyond the masters degree is highly desirable and many respondents indicated that it should be encouraged and should be geared to improving the teaching skills. These extra courses should not lead to a doctorate degree. The doctorate degree is unacceptable primarily because of economic reasons.¹⁰

CHAPTER III

PROCEDURE

TWO-YEAR INSTITUTIONS INVOLVED IN STUDY

The population for the present study consisted of all institutions listed in the Community and Junior College Directory. There are 1141 institutions listed and the sample consisted of 145 schools chosen at random. Three schools were chosen from each state, and divided into the following groups: (1) institutions with enrollment under 1000; (2) institutions with enrollment of 1000-3000; and (3) institutions with enrollment over 3000. Division in this way made it possible to analyze the data according to differences in the institutions' biology curriculum teacher preparation, qualifications.

The sample was limited due to: (1) the small percentage of schools responding to the questionnaire; (2) knowledge of the respondent and the success of the researcher in getting the instrument to the person with the information; and (3) a lack of names of biology staff the instrument was sent to (see copy of the cover letter, Appendix I).

METHOD

The community junior colleges were studied through a questionnaire. Each questionnaire was accompanied by a cover letter addressed to the Biology Department Head and signed by Dr. R. K. James and the author. There was no way of knowing the instructor's name to make this letter

more personal. A stamped self-addressed envelope was enclosed for the return of the completed questionnaire. These were sent out on February 17, 1975 and asked to be returned by March 1, 1975. On March 14, 1975 a follow-up letter, questionnaire and self-addressed stamped envelope was sent out to all non-respondents. A summary of the results was offered to the respondents. Eighty-nine of the 145 solicited responded to the questionnaire and of these approximately 40% indicated they would like a summary of the results.

QUESTIONNAIRE

The questionnaire was designed, basically, by Dr. R. K. James, College of Education, and Wanda de Workman (Masters Report--1974). It was modified by the author and Dr. R. K. James. A copy of the questionnaire used in this study is inclosed in Appendix I. It consisted of two parts; the first part dealt with courses offered and teaching style; the second part dealt with teacher preparation. There was a total of 22 questions; 2 completion questions and the rest were multiple choice.

In the first part each biology course offered was listed, and questions were asked pertaining to these courses' prerequisites, laboratory work, lecture time and time per week allotted for discussion. The second part of the questionnaire inquired about the instructors and their academic training. The respondent was asked which courses besides biology, biology teachers were asked to teach, what biology courses and what courses in related fields the biology instructor had taken and considered necessary, helpful or unnecessary. The respondent was also given a column to respond to if the respondent had not taken the course and whether he felt it necessary, helpful or unnecessary. The

instructor was also asked whether a two-year college biology teacher should have high-school teaching experience and the approximate percentage of students taking courses in biology who were planning to transfer and those who were terminating at the community college. The next-to-the-last question asked for the schools total enrollment and the last question asked if they would like a summary of the results.

CHAPTER IV

RESULTS

A total of 62% or 90 of the participating schools returned the questionnaire. Of the 90 responses 45 came from institutions with enrollments of under 1000, 28 from schools with enrollments of 1000-3000 and 17 from schools with enrollments over 3000. Through the rest of the study schools with enrollments under 1000 will be referred to as "Small," 1000-3000 enrollments will be referred to as "Medium" and schools with enrollment over 3000 will be referred to as "Large."

The data gathered by the questionnaire are presented by Tables I thru VII. Each table deals with a different aspect of the questionnaire and shows the number of respondents that chose each of the possible answers to a given question. All results were expressed separately for each size category, but the total results were compiled for all responding schools.

Table I shows the number of institutions under each enrollment category which offers a particular course in what is termed beginning Biology courses, i.e., General Biology, Zoology, Botany, Microbiology, Anatomy/Physiology, Genetics and Ecology.

It is of particular interest to note that no size category had 100% offering a particular General Biology course.

In the small institutions 13% (7/45) failed to offer a "General Biology" course, 49% (22/45) do not offer a "Zoology" or "Botany" course,

**THIS BOOK
CONTAINS
NUMEROUS PAGES
WITH DIAGRAMS
THAT ARE CROOKED
COMPARED TO THE
REST OF THE
INFORMATION ON
THE PAGE.**

**THIS IS AS
RECEIVED FROM
CUSTOMER.**

51% (23/45) lack "Microbiology," 40% (18/45) do not offer "Anatomy/-Physiology," 78% (35/45) do not offer "Genetics" and finally 64% (29/45) do not offer a course in "Ecology."

TABLE I
JUNIOR COLLEGE BIOLOGY CURRICULUM--OFFERED
NUMBER OF USABLE RESPONSES--90

	SMALL (45)	MEDIUM (28)	LARGE (17)	TOTAL (90)
General Biology	38 (84%)	22 (79%)	16 (94%)	76 (84%)
Zoology	23 (51%)	18 (64%)	9 (53%)	50 (56%)
Botany	23 (51%)	21 (75%)	13 (76%)	53 (59%)
Microbiology	22 (49%)	22 (79%)	13 (76%)	57 (63%)
Anatomy/Physiology	27 (60%)	23 (82%)	13 (76%)	63 (70%)
Genetics	10 (22%)	11 (39%)	5 (29%)	26 (29%)
Ecology	16 (36%)	10 (36%)	7 (41%)	33 (37%)

In the medium sized schools the failure to offer these courses was as follows: "General Biology" 21% (6/28), "Zoology" 36% (10/28), "Botany" 25% (7/28), "Microbiology" 21% (6/28), "Anatomy/Physiology" 18% (5/28), "Genetics" 61% (17/28), and "Ecology" 64% (18/28).

In the large schools failure to offer a course was as follows: only 6% (1/17) don't offer a "General Biology" course, while "Zoology" and "Botany" are not offered at 47% or (8/17) of the schools, "Microbiology" 24% (4/17), "Anatomy/Physiology" 24% (4/17), "Genetics" 71% (12/17) and finally "Ecology" isn't offered at 59% (10/17) of the schools.

Of the totals only 29% (26/90) offered a "Genetics" course and 37% (33/90) offered an "Ecology" course.

Non-biology teaching assignments were studied in order to examine staffing policies in junior colleges. These data are presented in

Table II. Respondents were asked to choose from three non-biology areas, None and Other. It was of interest to note that the "None" response was the most common response, occurring 44% (40/90) of the time. However, according to these data more than half, 46%, of the respondents report that a course other than biology is taught by biology instructors. Chemistry was the most often taught course.

TABLE II
NON-BIOLOGY TEACHING ASSIGNMENTS

NUMBER OF USABLE RESPONSES--90

Questionnaire Item #17: "Courses other than biology taught by a biology instructor."

	SMALL (45)	MEDIUM (28)	LARGE (17)	TOTAL (90)
None	36% (16/45)	46% (13/28)	65% (11/17)	44% (40/90)
Chemistry	36% (16/45)	18% (5/28)	17% (3/17)	27% (24/90)
Math	8% (4/45)	4% (1/28)	6% (1/17)	7% (6/90)
Physics	--	7% (2/28)	--	2% (2/90)
Other	20% (9/45)	25% (7/28)	12% (2/17)	20% (18/90)

The greatest diversity was seen in the small and medium institution responses. In the small institution category "None" was chosen 36% (16/45) of the time, while "Chemistry," "Math," "Physics," and "Other" comprised 64% (29/45) of the total responses. As would be expected, the larger institutions reported the highest percentage of "None" responses.

The researcher felt that teacher preparation should be studied with regard to proper degree needed in order to teach junior college biology. In Table III such information is provided for by the use of Questionnaire item #18 which reads: "A junior college biology instructor should have a degree in," after which was a listing of four areas, Biology,

Biological Science, Biology Education and a final area denoted as "Either of These" from which to choose.

In the following listings are to be found a composite of the selections of 90 biology department heads concerning which degree they felt was most desirable for prospective junior college biology teachers. It was most notable that of the 90 institutions responding only 6% (5/90) selected "Biology Education" as the area for a degree most suited for teaching junior college biology. This may reflect a lack of definition of "Biology Education."

TABLE III
DEGREE DESIRED

NUMBER OF USABLE RESPONSES--90

Questionnaire item #18: "A junior college biology instructor should have a degree in."

	SMALL (45)	MEDIUM (28)	LARGE (17)	TOTAL (90)
Biology	27% (12/45)	32% (9/28)	35% (6/17)	30% (27/90)
Biological Science	31% (14/45)	28% (8/28)	24% (4/17)	28% (26/90)
Biology Education	4% (2/45)	4% (1/28)	12% (2/17)	6% (5/90)
Either of These . .	38% (17/45)	36% (10/28)	29% (5/17)	36% (32/90)

There may have been some confusion caused by the choice of terms in this item. In retrospect it is likely that the respondents did not distinguish between "Biology" and "Biological Science." It may be best to "lump" these data together. It is important to note that the most common response was the last one, "Either of These," with 36% total. That response was more popular with respondents from small schools.

Teacher preparation is further examined by studying the need for secondary experience as a possible prerequisite for junior college biology teaching. In Table IV data is provided by compiling results from questionnaire item #19: "The junior college biology instructor should have high school teaching experience?" and item #12: "How many instructors, in your biology department, have secondary or elementary experience?"

TABLE IV
TEACHING EXPERIENCE

NUMBER OF USABLE RESPONSES--90

Questionnaire item #19: "The junior college biology instructor should have high school teaching experience?"

	SMALL (45)	MEDIUM (28)	LARGE (17)	TOTAL (90)
Strongly Agree . .	16% (7/45)	10% (3/28)	12% (2/17)	13% (12/90)
Agree	27% (12/45)	29% (8/28)	41% (7/17)	30% (27/90)
Undecided	16% (7/45)	18% (5/28)	18% (3/17)	17% (15/90)
Disagree	37% (17/45)	25% (7/28)	24% (4/17)	31% (28/90)
Strongly Disagree	4% (2/45)	18% (5/28)	5% (1/17)	9% (8/90)

Questionnaire item #12: "How many instructors, in your biology department, have Secondary or Elementary experience?"

	SMALL (45)	MEDIUM (28)	LARGE (17)	TOTAL (90)
Over Half	11% (5/45)	25% (7/28)	12% (2/17)	16% (14/90)
Less Than Half . .	16% (7/45)	36% (10/28)	29% (5/17)	24% (22/90)
About Half	11% (5/45)	14% (4/28)	35% (6/17)	17% (15/90)
All Do	46% (21/45)	11% (3/28)	12% (2/17)	29% (26/90)
None	16% (7/45)	14% (4/28)	12% (2/17)	14% (13/90)

In the upper half of Table IV data is provided from question 19. Generally there was evenness between those who believed high school teaching experience was necessary and those who felt that it was not.

In the small schools 16% (7/45) marked "Strongly Agree" and 27% (12/45) marked "Agree"--a total of 43% (19/45). However 4% (2/45) and 37% (17/45) marked "Strongly Agree" and "Agree" respectively for a total of 41% (19/45). This is in contrast to the large school results which were 12% (2/17) and 41% (7/17) agreed, and 24% (4/17) and 5% (1/17) disagreed that high school experience is a necessity for junior college biology instructors. This opposite trend in the data is interesting.

In the second half of Table IV actual percentages of junior college biology teachers with secondary or elementary experience are presented. The respondent was to choose the best answer concerning the number of biology teachers in departments who had experience in secondary or elementary teaching. They chose from: "Over Half"; "Less Than Half"; "About Half"; "All Do"; and "None."

In the small school category 46% (21/45) reported "All Do," indicating that slightly less than half have had secondary or primary teaching experience. This is in contrast to the 41% (7/17) of the small schools reporting in the upper half of Table IV that disagreed that their instructors "should" have high school teaching experience.

Data regarding preparatory courses for the prospective junior college biology teachers are provided in Table V. The table consists of a list of courses from which, it is hoped, might come a model of courses for prospective junior college biology teachers to include in their preparation. Of these courses, the respondent was asked to check whether or not he or she had taken the course. In the "totals" section it is interesting to note that of the 83 responses received, only 56 or 67% of these claimed to have taken a general or introductory biology course.

TABLE V

TEACHER PREPARATORY COURSES

USABLE RESPONSES = SMALL (42), MEDIUM (26), LARGE (15)

	COURSES HAVE TAKEN (%)			
	SMALL (42)	MEDIUM (26)	LARGE (15)	TOTAL (83)
General Biology	26 (62)	19 (73)	11 (73)	56 (67)
Zoology	42 (100)	24 (92)	15 (100)	81 (98)
Botany	41 (98)	23 (88)	14 (93)	78 (94)
Microbiology	33 (79)	21 (81)	11 (73)	65 (78)
Algebra	42 (100)	26 (100)	15 (100)	83 (100)
Calculus	23 (55)	13 (50)	8 (53)	44 (53)
Trigonometry	32 (76)	21 (81)	12 (80)	65 (78)
Chemistry I	42 (100)	26 (100)	15 (100)	83 (100)
Chemistry II	42 (100)	24 (92)	15 (100)	81 (98)
Organic or Bio-organic Chemistry	36 (86)	23 (88)	14 (93)	73 (88)
Cell Biology	28 (67)	17 (65)	12 (80)	57 (69)
Environmental Biology	29 (69)	22 (85)	13 (87)	64 (77)
Genetics	39 (93)	23 (88)	15 (100)	77 (93)
Higher or Lower Vertebrates	36 (86)	23 (88)	14 (93)	73 (88)
Embryology	24 (57)	19 (73)	12 (80)	55 (66)
Human Physiology	31 (74)	23 (88)	12 (80)	66 (80)
Human Anatomy	31 (74)	18 (69)	12 (80)	61 (73)
Plant Physiology	26 (62)	16 (62)	9 (60)	51 (61)
Junior College	7 (17)	8 (31)	3 (20)	18 (22)
Junior College Curriculum	3 (7)	6 (23)	2 (13)	11 (13)
Principles of College Teaching	6 (14)	8 (31)	3 (20)	17 (20)

In considering the distribution of courses taken by size, the differences in percentages seem insignificant, indicating similar preparation of biology instructors among size categories. In total results, it is interesting to note that more than half have had math through calculus and that 98% report having completed Chemistry through Chemistry II. Equally noteworthy is that of the three education courses listed, only one was taken by more than 20% of the respondents. The remainder of the biology courses were taken by 60% or more of the respondents.

Since this instrument was directed to "Department Heads" some caution should be exercised in generalizing these results to all junior college biology instructors. Still, the trends are obvious and should be noted.

The preceding verifies generally that most of these courses have been taken by a good percentage of junior college biology instructors. It seems likely then that most of these courses should be included in course work for a prospective junior college biology instructor. If this is true, then the fact that few instructors had taken the Junior College, Junior College Curriculum and Principles of College Teaching courses, would imply then that these courses need not be taken by the prospective junior college biology teacher. This is a position the author strongly questions. It may be that these courses were unavailable at the time training was completed.

A major concern of the researcher was to determine the relative number of Biology instructors with an "Education" degree versus those with graduate Biology degrees. Question #13 and 14 of the questionnaire asked the respondents to indicate degrees held by their present staff.

In Table VI staffing is dealt with in two parts asking first, questionnaire item #13: "How many instructors in your biology department have a M.S. or M.A. in Education?" To this question there were five possible responses: (1) None; (2) Over Half; (3) Half; (4) Less Than Half; and (5) All Do.

TABLE VI
DEGREES FOR STAFF

NUMBER OF USABLE RESPONSES--90

Questionnaire item #13: "How many instructors, in your biology department, have a M.S. or M.A. in Education?"

	SMALL (45)	MEDIUM (28)	LARGE (17)	TOTAL (90)
None	56% (25/45)	57% (16/28)	35% (6/17)	52% (47/90)
Over Half	2% (1/45)	--	12% (2/17)	3% (3/90)
Half	9% (4/45)	7% (2/28)	--	7% (6/90)
Less Than Half	11% (5/45)	18% (5/28)	41% (7/17)	19% (17/90)
All Do	22% (10/45)	18% (5/28)	12% (2/17)	19% (17/90)

Questionnaire item #14: "How many instructors, in your biology department, have a M.S. or Ph.D. in Biology?"

	SMALL (45)	MEDIUM (28)	LARGE (17)	TOTAL (90)
None	20% (9/45)	7% (2/28)	--	13% (11/90)
Over Half	9% (4/45)	7% (2/28)	41% (7/17)	14% (13/90)
Half	13% (6/45)	15% (4/28)	12% (2/17)	13% (12/90)
Less Than Half	4% (2/45)	7% (2/28)	18% (3/17)	8% (7/90)
All Do	54% (24/45)	64% (18/28)	29% (5/17)	52% (47/90)

Of the total responses slightly over half, 52% (47/90), indicated that none of their present biology instructional staff had a degree in Education, while 19% report that all have education degrees. The remaining 29% report some kind of mixed degree pattern. It is interesting to note when considering the data by size of reporting school,

that large schools are more apt to have one or more staff members with an "Education" degree preparation.

In order to gain information about the number of biology degrees, question #14 asked, "How many instructors, in your biology department, have a M.S. or Ph.D. in Biology?" To this they could respond either: (1) "None"; (2) "Over Half"; (3) "Half"; (4) "Less Than Half"; and (5) "All Do." This is reported in the lower half of Table VI.

As would be expected based on the results to question #13, slightly more than half of the respondents report "All Do" have M.S. or Ph.D. in Biology. In the large schools sampled, no school selected the "None" response indicating that of their instructors in each department one or more has a M.S. or Ph.D. in Biology. In the small schools with 45 usable responses "All Do" was still chosen most often with a 54% (24/45), while 64% of the medium sized schools report that all have biology degrees.

It was desired to determine whether recent hirings would indicate a preference for prospective instructors in biology education. Table VII presents data concerning the question: "How many new faculty members,

TABLE VII

NEW BIOLOGY TEACHERS

NUMBER OF USABLE RESPONDENTS--90

Questionnaire item #16: "How many "new" faculty members, hired in the past two years, with M.S. in Biology Education?"

	SMALL (45)	MEDIUM (28)	LARGE (17)	TOTAL (90)
None	87% (39/45)	93% (26/28)	71% (12/17)	86% (77/90)
Less Than 3	11% (5/45)	7% (2/28)	24% (4/17)	12% (11/90)
3-5	2% (1/45)	--	5% (1/17)	2% (2/90)
Over 5	--	--	--	--

hired in the past two years, with M.S. in Biology Education?" To this the responses are: (1) None; (2) Less Than 3; (3) 3-5; and (4) Over 5.

It came as no surprise to the author that the "None" response had the greatest percentage with 86% (77/90). The "Less Than 3" response compiled all of 12% (11/90), and the "3-5" gained 2% (2/90). There was very little diversity among different schools in this instance.

CHAPTER V

SUMMARY AND CONCLUSIONS

The results of this study can be summarized as follows:

- 1) The most frequently taught course in community junior college biology curricula is a general biology course or one which deals generally with the entire area of biology and doesn't dwell on any one aspect. It was taught in 84% or 76/90 of the institutions responding. The next most frequently taught course is Anatomy/Physiology with 70% of the institutions responding, followed by Microbiology 63% (57/90), Botany 59% (53/90), Zoology 56% (50/90), Ecology 37% (33/90) and Genetics 29% (26/90). The only change from this general hierarchy can be seen in the "medium" schools where Anatomy/Physiology was the most frequently taught course with 82% or 23/28 schools responding. The next most frequently taught course is Microbiology and General Biology with both recording 79% or 22/28. The remaining courses were in accordance with the general hierarchy listed above.
- 2) Non-biology teaching assignments are most diverse in "small" institutions where 64% or 29/45 of those schools responding reported biology instructors teaching non-biology courses, i.e., Chemistry, Math, Physics and a response termed "Other." "Large" schools responding showed least diversity in non-biology teaching assignments at 35% or 6/17. The overall total was 56% (50/90) of the institutions responding reported to have biology personnel teaching non-biology courses.

- 3) Of the total respondents, in this survey, 36% or 32/90 reported that the most desirable degree for a prospective community junior college biology instructor to possess is either one in Biology, Biological Sciences or Biology Education. However only 5/90 or 6% of the respondents selected the Biology Education degree as most desirable for teaching. The rankings from most desirable to least desirable were: "Either of These" (Biology, Biological Science or Biology Education) was responded to 36% or 32/90 of the time. Biology was next with 30% (27/90), followed by Biological Science with 28% (26/90) and Biology Education 6% (5/90).
- 4) Given five areas to respond to: Strongly Agree; Agree; Undecided; Disagree; and Strongly Disagree, the author asked, "Should community junior college biology instructors have high school teaching experience?" The overall total response, with 90 schools responding, was 43% (39/90) Strongly Agree and Agree, while 40% (36/90) responded to Disagree and Strongly Disagree. In the Undecided category there was a response of 17% or 15/90. There was almost an even percentage response for or against a need for secondary experience. In the "large" institutions 53% or (9/17) of the schools responding chose Strongly Agree or Agree while only 29% (5/17) disagreed that pre-secondary experience was needed in order to be able to teach community junior college biology.

Also, respondents were asked, "How many instructors, in your biology department, have Elementary or Secondary teaching experience?" The following five responses were given to choose from: "Over Half"; "Less Than Half"; "About Half"; "All Do"; and "None." The total response of 90 schools participating was as follows: "Over Half" 16%

or (14/90); "Less Than Half" 24% (22/90); "About Half" 17% (15/90); "All Do" 29% (26/90); and "None" 14% (13/90). In the "small" school category 46% (21/45) of the respondents chose the "All Do" category.

In comparison it was seen that although 46% (21/45) of the "small" school respondents chose "All Do" in reference to total biology personnel with Secondary or Elementary experience, 37% or (17/45) chose "disagree" as a response to, "Should a community junior college biology instructor have high school teaching experience?" Also in the "large" school category 53% (9/17) agreed that junior college biology instructors should have high school teaching experience. However 12% (2/17) responded to "All Do" in reference to total number of biology teachers with Secondary and Elementary experience.

- 5) The respondent was given a list of biology and non-biology courses and asked to check whether he/she had or had not taken a particular course. The totals reveal that of the 83 usable responses from community junior college biology department heads, 67% or (56/83) had taken a General Biology course, 98% (81/83) had taken Zoology, 94% (78/83) Botany, 78% (65/83) Microbiology, 100% (83/83) had taken Chemistry I and Algebra, 53% (44/83) Calculus, 78% (65/83) Trigonometry, 98% (81/83) Chemistry II, 88% (73/83) Organic or Bio-Organic Chemistry, 69% (57/83) Cell Biology, 77% (64/83) Environmental Biology, 93% (77/83) Genetics, 88% (73/83) Higher or Lower Vertebrates, 66% (35/83) Embryology, 80% (66/83) Human Physiology, 73% (61/83) Human Anatomy and 61% (51/83) Plant Physiology. Only 22% (18/83) responded to "have taken" Junior College, 13% (11/83) Junior College Curriculum and 20% (17/83) had taken Principles of College Teaching.

- 6) The author asked, "How many instructors in your department have a M.S. or M.A. in Education?" The respondents were asked to check one of the following: (1) "None"; (2) "Over Half"; (3) "Half"; (4) "Less Than Half"; or (5) "All Do." Totally of the 90 responding schools 52% or (47/90) checked that "None" of their instructors had an M.S. or M.A. in Education, 3% (3/90) reported having "over half," 7% (6/90) about "half," 19% (17/90) had "less than half" and 19% (17/90) said that all their instructors had a M.S. or M.A. in Education. In the "large" school category 35% (6/17) responded to the "none" category while the "small" and "medium" schools responded 56% (25/45) and 57% (16/28) respectively to the "none" response.

Further it was asked of the respondents to indicate, "How many instructors have a M.S. or Ph.D. in Biology?" Not too surprisingly the "All Do" response received 52% of the total response or 47/90. Although it received such a high percentage in the "large" school category only 29% or (5/17) reported "All Do." The "Over Half" response was the only other answer that fluctuated significantly. The "small" and "medium" schools responded 9% (4/45) and 7% (2/28) respectively while the "large" school category responded 41% or (7/17).

- 7) When the author asked, on the questionnaire, "How many "new" faculty members, hired in the past two years, with M.S. in Biology Education?" It came as no surprise to note that totally 86% (77/90) reported to have hired "none." In the "less than 3" hired category 12% or (11/90) responded and in the "3-5" hired category 2% or (2/90) responded. Finally in the "over 5" hired category there was zero response.

It is interesting to note that not one school "size" category reported to having 100% offering in General Biology. It is the authors opinion that schools generally must either teach the entire beginning biology courses (General Biology, Zoology, Botany) in either one compact course or interrelated in a General Biology course (aspects of Zoology and Botany). Microbiology and Anatomy/Physiology are taught as medical prerequisites and so taught by many institutions not offering any other biology courses.

Small schools generally lack personnel, funding and space and so fewer instructors teaching a more diverse curricula which may include non-biology courses. So it is with small schools that generally most "new" faculty comes from secondary schools in the area of the community junior college. Which could account for the high percentage responding to the need for secondary teaching experience.

Small schools are not the only biased category. In general all schools were biased in their beliefs that Biology Education is not an appropriate degree to have for teaching community junior college biology. Is there a prejudice against education as a possible source in the betterment of community junior college instructors? It would seem that knowing what to teach should be coupled with knowing how to teach.

Every item in this survey which dealt with education was given a minute percent response. Is there a prejudice against education--is the only "good" biology instructor one who has completed a certain number of years in secondary school and can now graduate into junior college? The author thinks not.

The author feels that there should be much more research done in this area. Biology Education should be defined and provided for in

junior colleges. Curricula should be evaluated with respect to necessity and teacher preparation should be given upmost consideration and there should be an understanding and a "working together" of four-year schools and junior colleges.

FOOTNOTES

¹American Association of Junior Colleges, "Junior Colleges: 50 States/50 Years," Reprint: Junior College Journal, 1969.

²Roger B. Solomon, "An Open Letter to a Community College Freshman and His Parents," Peabody Journal of Education, Vol. 45, #4, January 1968, p. 205.

³John Lombardi, "Tuition and the Open Door," Junior College Journal, Vol. 42, #8, May 1972, p. 9.

⁴Florence B. Bawer, "Community College Teacher Preparation: Past, Present and Future, Published 1973 (ERIC ED 071 661).

⁵Florence B. Bawer, "Community Colleges: Selecting and Training New Teachers," Change Magazine, Vol. 5, #8, October 1973.

⁶Bernard Corbman, "The Need for Curriculum Evaluation of Community Colleges," Junior College Journal, Vol. 32, February 1962, p. 340.

⁷Ibid.

⁸Alvin C. Eurick, "Staffing Junior Colleges," Junior College Journal, Vol. 33, March 1963, pp. 89-90.

⁹Ibid.

¹⁰Robert V. Kovack, "Which Degree's for Faculty," Junior College Journal, Vol. 44, #3, November 1973, pp. 30-31.

BIBLIOGRAPHY

1. Solomon, Roger B., An Open Letter to a Community College Freshman and His Parents, Peabody Journal of Education, Vol. 45, 4:205, January 1968.
2. Lombardi, John, Tuition and the Open Door, Junior College Journal, Vol. 42, 8:8-11, May 1972.
3. American Association of Junior Colleges, Junior Colleges: 50 States/- 50 Years, Reprint: Junior College Journal, 1969.
4. Bawer, Florence B., Community Colleges: Selecting and Training New Teachers, Change Magazine, Vol. 5, 8:61-63, October 1973.
5. Bawer, Florence B., Community College Teacher Preparation: Past, Present and Future, Published 1973 (ERIC ED 071 661).
6. Corbman, Bernard, The Need for Curriculum Evaluation of Community Colleges, Junior College Journal, Vol. 32, February 1962.
7. Eurick, Alvin C., Staffing Junior Colleges, Junior College Journal, Vol. 33, March 1963.
8. Kovack, Robert V., Which Degree's for Faculty, Junior College Journal, Vol. 44, #3, November 1973.

APPENDIX

ILLEGIBLE DOCUMENT

**THE FOLLOWING
DOCUMENT(S) IS OF
POOR LEGIBILITY IN
THE ORIGINAL**

**THIS IS THE BEST
COPY AVAILABLE**



Department of Curriculum and Instruction
College of Education
Holton Hall
Manhattan, Kansas 66506
Phone: 913 532-5550

February 17, 1975

Department Head
Biology Department

Dear Sir:

An examination of the literature regarding junior college biology curriculum, staffing, and the conduct of biology programs indicates very little has been published in this area. We are interested in examining the situation from your perspective and making that available for others who have questions similar to ours. Enclosed please find a survey instrument designed to determine biology courses you presently offer, how those biology courses are conducted, the nature of your student body, and the qualifications of your staff. Our preliminary estimates are that this instrument would require no more than 30 minutes of your time to complete. We recognize that your time is valuable but feel that the information provided will be very useful to people in the area of Biology Education, and more specifically, in the curriculum of the Biology Departments in junior colleges.

We are asking you to return this not later than March 1, 1975. Thank you for your assistance. Please be assured that your anonymity will be maintained at all times.

Sincerely,

Dr. Robert James
Associate Professor
Science Education

Mr. David Blevins
Graduate Student
Junior College Education

RJ,DB/cbl

Enclosure

**THE FOLLOWING
PAGE IS CUT OFF**

**THIS IS AS
RECEIVED FROM
THE CUSTOMER**

PART I

Choose the answer that best fits each course

DIRECTIONS: In Items 2-10 please choose the best response for each question and record that letter in the space at the right of the question. Be sure to record a letter for each course.

List in the space provided at the right, the biology department courses offered during the last two years in the order from most basic to most sophisticated. List the courses and their separate laboratories together.

High school science prerequisites for the courses are: a. Biology b. Chemistry c. Chemistry & Biology d. None

In this course, an algebra background is very important. a. Strongly agree b. Agree c. Undecided d. Disagree

The laboratory work in this course is: a. Optional b. Required c. Not available

In this course, lab work is very important to understanding. a. Strongly agree b. Agree c. Undecided d. Disagree

Hours per week usually required in the laboratory: a. None b. 2-4 c. 4-6 d. over 6

Laboratory work in this course is graded: a. On a letter basis (A,B,C, etc.) b. On a pass-fail basis c. It is not graded

In this course, the laboratory is taught by: a. The lecture instructor b. Another biology instructor c. A student d. Other

Hours of lecture per week; a. none b. less than 3 c. 3 d. over 3

Time per week allotted for discussion or problem sessions. a. None b. 1-2 c. 3-5 d. Depends on instructor.

PART II

Of the total student population taking biology courses, roughly what percentage is composed of students who plan to transfer to another school to complete their training, what percentage are pursuing vocational training, and what percentage of students with no degree goal beyond the two year program?

- a. Transfer (to four year school) _____ %
b. Vocational _____ %
c. No degree goal beyond two years _____ %

How many instructors, in your Biology Department, have secondary or elementary experience?
a. Over half b. Less than half c. About half d. All do e. None

How many instructors, in your Biology Department have a MS or MA in education?
a. None b. Over half c. Half d. Less than half e. All do

How many instructors, in your Biology Department, have a MS or Ph.D. in Biology?
a. None b. Over half c. Half d. Less than half e. All do

PART II, cont.

15. What is the "tenure/discharge" policy in your department? a. No such policy b. One yr.-then tenure or discharge c. Two yrs.-then tenure or discharge d. Three yrs.-then tenure or discharge e. Do have the policy, but no specific times involved f. Other (please describe) _____
16. How many "new faculty members, hired in the past two years, with MS degrees in Biology Education do you have? a. None b. Less than 4 c. 4-5 d. Over 5
17. What courses, other than Biology, are taught by instructors whose principal assignment is in Biology? a. None b. Chemistry c. Math d. Physics e. Other _____
18. In your opinion, a Junior College Biology instructor should have a degree in: a. Biology b. Biological Science c. Biology Education d. Either of these
19. The Junior College Biology instructor should have high school teaching experience? a. Strongly agree b. Agree c. Undecided d. Disagree e. Strongly disagree
20. Catalog both A & B of the following courses as to:

	A. Have or have not taken		B. Value of each, whether taken or not.		
	HAVE TAKEN	HAVE NOT TAKEN	NECESSARY	HELPFUL	UNNECESSARY
Prin. of Biology					
General Biology					
Zoology					
Botany					
Bacteriology					
Algebra					
Calculus					
Trigonometry					
Chemistry I					
Chemistry II					
Organic or Bio-Organic Chemistry					
Cell Biology					
Environmental Biology					
Genetics					
High or Lower Vertebrates					
Embryology					
Human Physiology					
Human Anatomy					
Plant Physiology					
The Junior College					
Junior College Curriculum					
Prin. of College Teaching					

21. Approximate enrollment (full & part-time students) at your institution:
a. Under 1000 b. 1000-3000 c. Over 3000

22. Would you like to receive a summary of these results?
If yes, please give your name and address below.

YES _____ NO _____

ACKNOWLEDGMENTS

The author wishes to acknowledge the people who have made a contribution to this study:

Dr. Robert K. James for his "much needed" words of encouragement.

Mrs. Linda R. (Welk) Blevins, the author's wife, for her love, patience, understanding and that occasional "push."

Beth for her typing and especially for that one errand.

A SURVEY OF JUNIOR COLLEGE BIOLOGY CURRICULA,
STAFFING POLICY AND TEACHER PREPARATION

by

DAVID A. BLEVINS

B.S., Kansas State University, 1974

AN ABSTRACT OF A MASTER'S REPORT

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

College of Education

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1975

The purpose of this study was to determine curriculum, staffing and staffing policy in junior colleges, the types of courses that a prospective junior college biology instructor can expect to teach and the extent of preparation needed.

The importance of this study lies in its use by prospective community junior college biology teachers.

This study was conducted through a written questionnaire mailed to Junior College Biology Department Heads. One hundred and forty-five of the 1141 institutions in the Community Junior College Directory were randomly selected for this study. The participating schools were stratified into three categories according to their enrollment.

The most frequently taught course in community junior college biology curricula is a General Biology course or one which deals generally with the entire area of biology and doesn't dwell on any one aspect. The next most frequently taught course is Anatomy/Physiology. Non-biology teaching assignments are most diverse in "Small" institutions. The most desirable degree for a prospective community junior college biology instructor to possess is either one in Biology, Biological Science or Biology Education. There was almost an even percentage response for or against a need for secondary experience. Very few respondents had taken courses in Junior College Education. Totally 52% of the respondents checked that "None" of their instructors had a M.S. or M.A. in Education while 52% marked "All Do" in response to their instructors having a M.S. or Ph.D. in Biology.