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Course Demands of Students in Teacher Education at Portland State University as Demonstrated by an Induced Course Load Matrix

Elinore Janet Rogers
Portland State University

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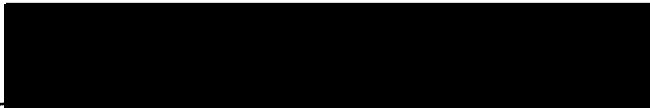
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AN ABSTRACT OF THE THESIS OF Elinore Janet Rogers for the Master of Science in Education presented August 1, 1975.

Title: Course Demands of Students in Teacher Education at Portland State University as Demonstrated by an Induced Course Load Matrix.

APPROVED BY MEMBERS OF THE THESIS COMMITTEE:


Mary K. Kitchick, Chairperson


Colin G. Dunkeld


James R. Hale

The purpose of this study was to examine the interrelationships between the School of Education and the rest of the university by means of the course demands placed by elementary education majors and graduate education students on other academic departments during the fall terms of 1972 and 1973. It also examined the course demands placed on the School of Education by other major groups for this period. The Induced Course Load Matrix (ICLM) was the vehicle used in this examination. The hypotheses tested were 1) that elementary

education majors and graduate education students placed equal course demands on the other academic departments, 2) that other major groups place equal course demands on the School of Education, and 3), that course demands by these three groups were consistent over time.

Results indicated that elementary education majors and graduate education students did not place equal demands on other academic departments. Elementary education majors placed the greatest course demands, as might be expected, on departments where there are course requirements such as Psychology, English, General Science, Mathematics and Speech. However, this group also placed heavy course demands on the History Department even though there are no required courses. Graduate education students placed course demands on other academic departments similar to elementary education majors, especially in the Departments of Psychology, English and History.

Other major groups did not place equal demands on the School of Education. Major groups for which there are direct secondary teacher education programs placed the greatest course demands. These included majors in Business Education, Health and Physical Education, Speech and Hearing, General Social Science and the foreign languages of Spanish, French and German. Major groups for which there is no direct teacher education placed few course demands on the School of Education.

These course demands have been consistent over time with one exception. The exception was for graduate education students who placed greater course demands on the Political Science Department during fall term, 1972 than during fall term, 1973.

The implications are that if there is an increase in the enrollment of elementary education majors or graduate education students, it can be predicted that there will be an increase of course demands placed on other academic departments, such as Psychology, English and History. Also, if there is an increase in the enrollment of other major groups for which there are secondary teacher education programs, there will be an increase of course demands placed on the School of Education.

COURSE DEMANDS OF STUDENTS IN TEACHER EDUCATION AT PORTLAND STATE
UNIVERSITY AS DEMONSTRATED BY AN INDUCED COURSE LOAD MATRIX

by

Elinore Janet Rogers


A thesis submitted in partial fulfillment of the
requirements for the degree of


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in
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TO THE OFFICE OF GRADUATE STUDIES AND RESEARCH:

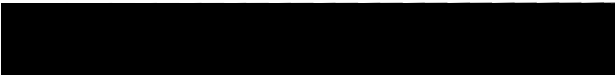
The members of the Committee approve the thesis of
Elinore Janet Rogers presented August 1, 1975.


Mary K. Kinnick, Chairperson


Colin G. Dunkeld


James R. Hale

APPROVED:


E. Dean Anderson, Acting Dean, School of Education

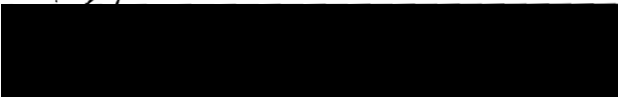

David T. Clark, Dean of Graduate Studies and Research

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CHAPTER I

STATEMENT OF THE PROBLEM

Background

Teacher education programs for which Portland State University is approved reflect the certification requirements of the Oregon Teacher Standards and Practices Commission as well as university degree requirements.

The School of Education offers basic certification programs at the undergraduate level in elementary education and in secondary education in the following fields: art, English, music, foreign language (Spanish, French, and German), speech, theater arts, mathematics, biology, chemistry, general science, physics, earth science, social science, health, physical education, and business education. There are also equivalency programs in all of the above areas for students who already have a baccalaureate degree and want to meet teacher education requirements for basic certification. At the graduate level, the School of Education in conjunction with the university offers Masters of Arts and Masters of Science in Education as well as Masters of Arts in Teaching and Masters of Science in Teaching degrees. The MA and MS degree require that a majority of coursework be taken in education courses, while the MAT and MST degree require a majority of coursework to be taken in subject areas. Elementary education students will usually pursue an MA or MS degree.

combined with a standard elementary certificate. Secondary education students will generally pursue a MAT or MST degree in their teaching field combined with a standard secondary certificate. Those who wish to concentrate in a specialist program also pursue the MA or MS degree. Specialist programs include basic and standard certification in educational media, special education, counseling, administration and supervision.

At Portland State University, teacher education is a university wide function. The School of Education functions within and throughout the university. It functions within the university as an agency for students intending to become elementary or secondary teachers by offering approved teacher preparation programs. It also offers teachers in elementary or secondary education the opportunity to gain additional certification or preparation in one of the specialist programs.

The School of Education functions throughout the university by requiring that students take specific courses. For example, all basic teacher education programs require that students have a general psychology course as well as Human Development, Psychology 311. In this instance, an increase or decrease in the number of teacher education students would have an immediate impact on the Psychology Department. A speech course is also a general education requirement, so that the same impact would hold true for the Speech Department. In the elementary education program, courses in art, music, mathematics, biological and physical science are also required. This indicates that the resource requirements of these departments are also affected by the

teacher education program. Therefore, the course demands of students in teacher education programs play an important part in the course demands and in the resource requirements of the university as a whole.

The School of Education additionally functions within the university in that teacher education students place course demands directly on the School of Education. At the undergraduate level, a student who is an education major and is therefore, preparing to be an elementary teacher will take a minimum of 42 credits in education courses. The remainder of the course demands are made on the various other departments of the university. Other majors in the university who are planning to teach at the secondary level take the majority of their courses in their major department or college, but place course demands on the School of Education. These students must take a minimum of 27 to 30 credits in education courses. At the graduate level, the masters and certificate program require courses in education and in the other academic departments. While the MA/MS in Education has required a minimum of 24 credits in education courses and a minimum of 9 credits in other academic courses, the MAT/MST program has required the reverse or a minimum of 30 credits in other academic courses and a minimum of 9 credits in education courses.

There is, therefore, an interdependency between the School of Education and the university as a whole. The School of Education depends on the rest of the university to provide elementary education majors academic preparation in subject matter. While the School of Education provides preparation in educational theories, strategies and the experiences needed for teaching at the elementary level, other

academic departments depend on the School of Education to provide their majors with the expertise in the art of teaching at the secondary level.

Statement of the Problem

Long range planning and cost analysis have become increasingly important for higher education during the last ten years. At one time, enrollment was evergrowing and social and economic factors were favorable for continued growth. Then, however, enrollment began to decline. The public began to demand that colleges and universities make more effective use of their resources, both fiscal and human, as the competition among many other governmental agencies and organizations for public dollars became more intense. As a consequence, higher education has had to scrutinize more carefully how effectively it is using current resources to carry out programs. The teacher education program at Portland State University with its interrelationships within and throughout the university, is one program engaging in a review of its utilization of resources.

The purpose of this study is to examine the interrelationship between the School of Education and the university more closely. This examination can be made by seeking answers to some basic questions. 1) On which departments throughout the university do elementary education majors place course demands and what is the extent of those demands? 2) Which departments throughout the university place course demands on the School of Education and what is the extent of these demands? 3) On which departments do graduate students in education place course demands and what is the extent of those demands? 4) Are the course

demands of elementary education majors and graduate students in education on other departments stable over time? 5) Are the course demands of other student major groups on the School of Education stable over time?

The implications of this examination are multi-faceted. First, by examining the course demands of education students, better communication with departments where education students are placing course demands can be established. Also, the converse is applicable. By examining the education course demands of other student major groups, better communication with advisers in departments for those groups who are placing the greatest demands can also be established.

Second, by knowing the course demands, their extent and stability, future planning can take into consideration an increase or decrease in the number of students planning to teach at the elementary or secondary level. Also, if there are changes in the number of graduate students, changes can also be predicted. For instance, if it can be determined that an elementary education student takes an average of .50 credit hours in history and the number of elementary education students increase by 50, it could be expected that the history department would have to anticipate an additional demand of 25 credit hours on their department for these students. A further implication in terms of planning has to do with the course taking behavior of elementary education students. It is desirable that these students have a broad background in the areas of art, social science and science. If it is found that elementary education students are limiting their course demands to certain departments, advisers could,

therefore, begin placing emphasis on those areas of need that are not being incorporated into student programs.

Third, this study seeks to give the university as a whole an awareness of the contribution the School of Education makes to the enrollment of the university in that many students come to Portland State University because they want to become teachers or receive additional teacher training.

Fourth, it is hoped that this study will serve as a model for other departments throughout the university who wish to investigate the course demands of their own majors as well as determining which other student major groups they are serving and to what extent.

Research Questions: Does the average elementary education major take as many credit hours in history as he does in art, English, music, biology and other academic departments? Does this demand change over time?

Hypotheses: Elementary education majors place equal demands on each of the academic departments outside education for coursework. These demands have remained consistent over time.

Research Questions: Do other departments each make equal demands on the School of Education. For instance, does the average history major take as many credit hours in education courses as the average art, English, music or biology major? Does this demand change over time?

Hypotheses: Other major groups place equal demands on the School of Education for coursework. These demands have remained consistent over time.

Research Questions: Does the average graduate student in education take as many credit hours in history as he does in art, English, music, biology and the other academic departments? Does this demand change over time?

Hypotheses: Graduate students in education place equal demands on academic departments outside education for coursework. These demands have remained consistent over time.

The vehicle that will be used to measure these course demands is the Induced Course Load Matrix (ICLM). The ICLM is a foundation of the Resource Requirements Prediction Model (RRPM), a cost simulation model used in higher education. Basically, the ICLM computes the average number of credits the average full time equivalent (FTE) major takes in each department across the university. Knowledge of the course demand patterns of a particular major group would allow for the prediction of the level of future course demand, given an increase or decrease in the number of students enrolled in that major.

CHAPTER II

REVIEW OF RELATED LITERATURE

A search of the literature reveals that there has been little research published on the Induced Course Load Matrix (ICLM). A brief explanation of the ICLM is in order as well as some discussion about the larger concept of cost simulation models and in particular, those used in higher education.

Induced Course Load Matrix (ICLM)

An ICLM has both an historical and predictive aspect. Historically, it describes the relationship between student major groups and departments by calculating the average number of hours the average major takes in each department. The ICLM is derived by dividing the number of full time equivalent (FTE) students in a particular major into the total credit hours taken in each academic department. This can be expanded to show the ICLM by student level (i.e., freshman, sophomore, junior, senior, graduate) within the major and/or course level within each department (i.e., lower division, upper division, upper division-graduate, graduate). The total credit hours taken is referred to as the Induced Work Load Matrix (IWLM). The diagram below displays the IWLM by student level for undergraduate elementary education students in three academic departments for fall term, 1973 and the calculations of the ICLM.

	Freshmen	Sophomore	Junior	Seniors	
English	125	152	162	112	
Mathematics	105	34	103	35	IWLM
Psychology	66	127	231	69	÷
	63	72	142	157	FTE
English	1.98	2.11	1.14	.71	=
Mathematics	1.66	.47	.72	.22	
Psychology	1.04	1.76	1.62	.43	

This IWLM shows that freshmen took 125 credit hours in English, 105 credit hours in mathematics and 66 credit hours in psychology. Total credit hours taken by sophomores, juniors and seniors in these three departments are also shown.

During this fall term, there were 63 FTE freshmen, 72 FTE sophomores, 142 FTE juniors and 157 FTE seniors in elementary education. Therefore, to calculate the ICLM for these three departments, the IWLM is divided by the FTE for each level.

The resulting ICLM indicates that the average FTE freshmen took 1.98 credit hours in English, 1.66 credit hours in mathematics, and 1.04 credit hours in psychology. The average sophomore took 2.11 credit hours in English, .47 credit hours in mathematics and 1.76 credit hours in psychology. The average junior took 1.14 credit hours in English, .72 credit hours in mathematics and 1.62 credit hours in psychology. The average senior took .71 credit hours in English,

.22 credit hours in mathematics and .43 credit hours in psychology for this fall term.

The ICLM becomes predictive by utilizing the historical data. For example, by knowing that the average freshman took 1.98 credit hours of English, it could be predicted that if there were 100 FTE elementary education freshman, they would take 198 credit hours of English and 166 credit hours in mathematics and 104 credit hours in psychology.

The predictive aspect of the ICLM, however, has some limitations. At Humboldt State College, Jewett, et al (1970) conducted a study on the question of the stability of the ICLM. Conclusions of this major study indicate that a prediction of course enrollment from one term to the following term is not meaningful. For example, a fall term ICLM cannot be accurately used to predict a winter or spring term enrollment. The predictive aspect is more correctly applied when an ICLM for one term is used to predict enrollment for the same term of the following year, i.e., using a fall term ICLM to predict a fall term enrollment (Jewett, et al 1970). An ICLM is also subject to instability because of the changing enrollment behavior of student majors. While students may be taking credit hours in one department, the pattern may not continue to be consistent due to changes of student interests or changes of graduation or major requirements. Students may change majors from term to term, giving another element of instability to the ICLM. Furthermore, if the coding procedure used by the Admissions Office or the Registrar for majors is not consistent, the ICLM loses some of its predictive quality.

Cost Simulation Models

Some form of the ICLM is utilized in most cost simulation models in higher education for determining the resource requirements of the various programs. A cost simulation model mathematically describes the relationship between activities and the resources required to support these activities. These models also indicate the changes in resource requirements that would result from a change in the institutional activities. In these modes it is used for long range planning, programming and budgeting. Activities in higher education are usually defined in terms of courses, programs or student major groups. Resources are defined as personnel, facilities and equipment. Personnel resources include instructional staff, clerical staff, administrators and other supporting staff. Facility resources are defined as the space requirements needed for these activities, such as classrooms, gymnasiums, laboratories, and dormitories. Equipment resources include such items as media, laboratory supplies and stationery. Portions of these resources are then allocated to the activities as needs require. Therefore, given the cost per program, predictions can be made for long range planning given a change in the activities or programs.

Several cost simulation models have now been developed specifically for use in higher education. Some of these are SEARCH (System for Evaluating Alternative Resource Commitments in Higher Education) developed by Peat, Marwick and Mitchell and Co., PLANTRAN developed by the Midwest Research Institute for the Kansas City

Regional Council for Higher Education, CAMPUS (Comprehensive Analytical Methods of Planning a University System) developed by R. W. Judy and J. B. Levine in Toronto and RRPM (Resource Requirements Prediction Model) developed by the National Center for Higher Education Management Systems (NCHEMS) at the Western Interstate Commission for Higher Education (WICHE).

Eight small colleges made a collective effort to develop a model that would enable them to make realistic projections about enrollment and resources. This initial project was entitled, Computer Assisted Planning for Small Colleges (CAP:SC) which developed into SEARCH. However, Hopmann (1973) reports that there have been numerous problems involved with its utilization. Some of these problems include a lack of interest in the model on the part of the administrators, complexity of the model itself, and the inability of the model to perform as expected.

PLANTRAN is an outgrowth of HELP (Higher Education Long Range Planning). Adrian (1973) states that PLANTRAN is a completely different approach to the concept of planning, programming and budgeting and it is not really a model but merely a series of arithmetical calculations and projection techniques (Adrian, 1973, p. 46). It is extremely flexible in that it will accept data in any form, while other models will only accept data organized into a specific format. While this is an advantage as far as the speed in implementation, an institution is not likely to learn very much if there are inaccuracies and gaps in the data. The University of Denver has not felt that this system has been highly successful (Adrian, 1973).

The CAMPUS model was adopted for implementation in 1972 by the University of Colorado. This model performs basically the same function as the others in terms of planning, programming and budgeting, but it is very detailed and comprehensive. It focuses on activities and uses classes as the most disaggregated kind of basic activity. A class is defined in one of three ways: 1) lecture, 2) laboratory, or 3) consultation. Resources needed to support these activities are then related in terms of staff, space or equipment (Minter and Lawrence, 1969). This model is expensive to purchase and requires a sophisticated computer to run it (Hussain and Mason, 1973). However, Andrew (1973) feels that the experience of implementation at the University of Colorado has been worthwhile in the area of program planning.

In 1968, WICHE selected a cost simulation model developed by Dr. George Weathersby at the University of California at Berkeley after examination of several models. This model has been used successfully at the University of California at Berkeley and is conceptually simple in design so that administrators with little or no technical expertise will be able to make better use of it. It does not need a highly sophisticated computer to run it and therefore, is more adaptable to institutions with limited computer capabilities.

Further development of the Weathersby model to reflect policies of WICHE resulted in Resource Requirement Prediction Model-1 (RRPM-1). This model was then pilot tested during 1970 to 1971 at eight institutions of which Portland State University was one. Types of institutions in the pilot study included a community college, state

colleges, single campus, public and private universities, and colleges and universities which are part of a multi-campus system. Enrollment at the institutions ranged from under 2,000 to over 29,000. Much of the data needed for generation of the report was either not available in the form needed or had to be collected. While this data collection impeded efforts to get the model running, the importance of using accurate data for the purposes of accurate planning and programming was emphasized (Hussain and Martin, 1971).

Refinements were made on RRPm-1 on recommendations from the pilot institutions, and in 1972, RRPm-1.6 was tested at the California State University at Fullerton. This initial implementation provided Fullerton with insight into how resources had been used in the past and pointed the way for determining more efficient methods for future utilization. However, with all this information available, they stated that "the key to changing the planning and management cycle in an institution is people." (Implementation of NCHEMS Planning and Management Tools at California State University, Fullerton, 1972, p. 99). Administrators must learn how to use this new information in planning and analysis and to realize that sophisticated prediction models do not preclude the need to make subjective decisions. A cost simulation is only a tool to help make better decisions about questions of programming, planning, and budgeting. Evans (1972) concluded that among the institutions in which the administrators had greater knowledge about a particular model, there was a greater tendency to accept and utilize information produced from the model. The ICLM is a basic element of the RRPm and all institutional costs are directly

affected by it. Huff and Young state that "the ICLM provides useful ... management information even outside the context of RRPM." (Huff and Young, 1974, p. 9). Both the California and Oregon legislatures have adopted RRPM for use in their institutions of higher education.

CHAPTER III

PROCEDURES AND RESULTS

Procedures

The course demands of elementary education majors and graduate education students on other academic departments and the course demands made on the School of Education by other major groups were used in order to examine the interrelationship between the School of Education and the university. Data were collected from IWLM-ICLM Reports issued by the Chancellor's office of the State System of Higher Education. These reports were compiled from data supplied by the offices of the Registrar and Administration and Management Information Systems at Portland State University. Table I and Table II display the ICLM data extracted from these reports that were used in the study. These figures include all students enrolled in the specified majors during the fall term for 1972 and fall term 1973. In the Tables, lower division (LD) refers to all courses numbered from 100 to 299. Upper division (UD) refers to courses numbered from 300 to 499, excluding those courses with 400G numbers. Upper division-graduate (UD/G) refers to courses with 400G numbers which are offered for either graduate or undergraduate credit. Graduate (G) refers to all 500 number courses.

Table I displays the average credit hours taken by the average FTE education major by student level, by department and level, for

TABLE I

AVERAGE HOURS TAKEN BY AN FTE EDUCATION MAJOR
BY STUDENT LEVEL BY CLASS LEVEL
IN EACH DEPARTMENT

		Freshman		Sophomore		Junior		Senior		Graduate		MA/MS		Equivalency Program	
		'72	'73	'72	'73	'72	'73	'72	'73	'72	'73	'72	'73	'72	'73
FTE		78	63	105	72	181	142	182	157	47	59	99	98	57	72
Department by Level															
Art and															
Arch	LD	.27	.22	.39	.24	.19	.08	.20	.17	--	.05	.06	.08	.12	.13
	UD	.08	.10	.46	.21	.60	.89	.60	.51	.30	--	.09	.10	.63	.44
	UD/G	--	--	--	--	--	--	--	.02	--	.03	--	.09	--	--
	G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Theater Arts	LD	.08	.10	--	--	--	--	.02	--	--	--	--	--	--	--
	UD	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	UD/G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	G	--	--	--	--	--	--	--	--	--	--	--	.12	--	--
Music	LD	.22	.46	.20	.44	.30	.34	.15	.21	.13	.10	.03	.06	.11	.29
	UD	.04	.10	.78	.67	.77	.89	.45	.32	.06	--	.01	--	.19	.33
	UD/G	--	--	--	--	--	--	--	--	.04	--	--	--	--	.03
	G	--	--	--	--	--	--	--	--	.06	.10	--	--	--	.04
English	LD	2.10	1.78	.80	.67	.18	.15	.12	.08	--	.20	--	--	.11	--
	UD	.23	.21	.79	1.44	1.24	.99	.48	.64	.06	.07	--	--	.68	.49
	UD/G	--	--	--	--	--	--	--	--	.28	.14	.14	.18	.44	.06
	G	--	--	--	--	--	--	--	.03	--	.20	.06	.18	.04	--

TABLE I (Continued)

Speech	LD	1.62	1.90	.66	.96	.38	.14	.07	.03	.13	--	--	--	.23	.32
	UD	.04	--	.17	.25	.10	.13	.07	.04	.06	--	.09	--	--	.14
	UD/G	--	--	--	--	--	--	--	--	.06	--	.27	.06	.04	--
	G	--	--	--	--	--	--	.02	--	--	.10	.21	.21	.05	.04
Foreign Language	LD	.63	.92	.27	.13	.17	.10	.11	.04	.17	.14	.08	--	--	.33
	UD	.04	--	.08	--	.12	.06	--	.02	--	--	.03	.03	.05	--
	UD/G	--	--	--	--	--	--	--	--	--	--	--	--	.05	--
	G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Journalism	LD	.08	--	.04	--	--	--	.03	.02	--	--	--	--	--	--
	UD	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	UD/G	--	--	--	--	--	--	--	--	--	--	.03	--	--	--
	G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Psychology	LD	1.00	.62	.80	.46	.13	.17	.02	.04	.06	--	--	--	.05	.08
	UD	.42	.43	1.74	1.31	1.38	1.46	.43	.38	.06	.24	.13	.09	.53	.71
	UD/G	--	--	.06	--	.02	--	.02	.02	.70	.37	.62	.47	.26	--
	G	--	--	--	--	--	--	--	--	.13	.12	.59	.16	--	.06
Philosophy	LD	.31	.52	.68	.92	.75	.50	.26	.18	--	.17	--	--	.32	.15
	UD	--	--	--	.11	.09	.07	.02	.13	--	--	--	--	.05	--
	UD/G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthropology	LD	.35	.33	.14	.17	.05	.04	--	--	--	--	--	--	--	--
	UD	--	--	.11	.17	.09	.15	.05	.04	--	--	--	--	.11	.04
	UD/G	--	--	--	--	--	--	--	--	--	--	--	.03	--	--
	G	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE I (Continued)

Economics	LD	--	.05	.11	.17	--	.04	.02	--	--	.05	--	--	.11	.04
	UD	--	--	--	--	--	--	--	--	--	--	--	--	.05	.13
	UD/G	--	--	--	--	--	--	--	--	--	--	.03	.03	--	--
	G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Geography	LD	.38	.14	.26	.38	.28	.21	.07	.02	.13	.05	--	--	.11	.21
	UD	.04	--	.11	.08	.12	.04	.13	.06	--	--	--	--	.11	.08
	UD/G	--	--	--	--	--	--	--	--	.06	.05	.03	.06	.05	--
	G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
History	LD	1.15	1.00	.70	.33	.18	.11	.05	.02	--	--	.03	--	.11	.04
	UD	.08	--	.23	.38	.43	.42	.20	.19	--	--	--	--	.11	.21
	UD/G	--	--	--	--	--	--	--	--	.13	.20	.06	--	--	.17
	G	--	--	--	--	--	--	--	--	--	.10	.06	.06	.05	.04
Political Science	LD	.19	.16	.08	.07	.04	.04	.05	.06	--	--	--	--	.07	.07
	UD	--	--	--	.07	--	.03	--	--	--	--	--	--	--	.14
	UD/G	--	--	--	--	--	--	--	--	--	--	.05	--	.09	--
	G	--	--	--	--	--	--	--	--	.17	--	.08	--	.07	--
Sociology	LD	.54	.48	.23	.17	.08	--	.05	.08	--	--	--	--	--	--
	UD	.04	.05	.29	.79	.36	.42	.27	.35	.06	--	--	--	--	--
	UD/G	--	--	--	--	--	--	--	--	.32	.10	.21	.28	--	--
	G	--	--	--	--	--	--	--	--	--	.10	.06	--	--	.04
Admin. Jus.	LD	--	.05	--	.04	--	.02	--	--	--	--	--	--	--	--
	UD	--	--	--	--	.05	.02	.02	--	--	--	--	--	--	--
	UD/G	--	--	--	--	--	--	--	--	.06	--	--	--	--	--
	G	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE I (Continued)

Applied Science	LD	--	.05	--	--	--	--	--	--	--	--	--	--	--	--
	UD	--	--	--	--	.02	--	.02	--	--	--	--	--	.07	--
	UD/G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biology	LD	.32	.56	.19	.11	.15	.08	.03	.04	--	--	--	.03	.05	.04
	UD	--	--	.07	.06	.07	.13	.02	.06	--	--	--	--	--	.11
	UD/G	--	--	--	--	--	--	--	--	--	.05	--	--	.05	--
	G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
General Science	LD	1.35	1.24	1.54	1.08	.91	.76	.35	.19	.13	.05	--	.03	.26	.29
	UD	--	--	.17	.17	.23	.21	.08	.08	--	--	--	.03	.05	.04
	UD/G	--	--	--	--	.03	.02	--	--	.06	--	--	--	--	--
	G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mathematics	LD	1.76	1.57	.51	.39	.60	.58	.14	.15	.15	.10	.06	.03	.19	.43
	UD	--	.10	.06	.08	.07	.15	.12	.08	--	--	--	.03	.26	.13
	UD/G	--	--	--	--	--	--	--	--	--	.05	.03	--	.05	.04
	G	--	--	--	--	--	--	--	--	--	.05	.09	--	--	.04
Chemistry	LD	.27	.10	.04	.10	.09	.08	.03	.02	--	--	--	--	--	.04
	UD	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	UD/G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Physics	LD	--	--	--	.04	--	--	--	--	--	--	--	--	--	--
	UD	--	--	--	--	--	.02	--	--	.06	--	--	--	--	--
	UD/G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	G	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE I (Continued)

Earth Science	LD	.10	--	.03	.08	--	.03	.09	.05	--	--	--	.04	--	.18
	UD	--	--	--	.08	.03	.11	.02	.04	--	.05	--	.03	--	.04
	UD/G	--	--	--	--	--	--	--	--	--	.05	--	--	--	--
	G	--	--	--	--	--	--	--	--	.06	--	.06	--	--	--
Public Health	LD	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	UD	--	--	--	--	--	.02	--	--	--	--	--	--	--	--
	UD/G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Accounting	LD	.04	.10	--	.04	.02	.04	.03	.02	--	--	--	--	.05	.08
	UD	--	--	--	--	--	--	--	--	--	--	--	--	.11	--
	UD/G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	G	--	--	--	--	--	--	--	--	--	--	--	--	--	.04
Marketing	LD	--	--	--	--	--	--	--	--	--	--	--	--	--	.04
	UD	--	--	--	--	--	--	--	--	--	--	--	--	--	.04
	UD/G	--	--	--	--	--	--	--	--	--	--	--	--	--	.04
	G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Management	LD	--	--	--	--	--	.04	--	--	--	--	--	--	--	.04
	UD	--	--	--	--	--	--	.02	--	--	--	--	--	--	--
	UD/G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Finance Law	LD	.04	--	--	--	.02	--	--	.02	--	--	--	--	--	--
	UD	--	--	--	--	--	--	--	--	--	--	--	--	--	.04
	UD/G	--	--	--	--	--	--	--	--	--	.06	--	--	--	--
	G	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE I (Continued)

Business Ed	LD	.08	.03	.05	.06	.02	.04	--	.02	--	.03	--	--	--	--
	UD	.04	.05	--	--	--	--	--	--	--	--	--	--	.11	--
	UD/G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BU AD	LD	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	UD	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	UD/G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Education	LD	--	.14	--	.04	--	.04	--	.02	--	--	--	--	--	--
	UD	--	.11	1.29	1.32	4.10	4.37	9.46	10.13	1.02	1.47	.61	.86	6.91	6.79
	UD/G	--	--	--	--	--	--	.05	.06	2.74	3.15	2.39	2.88	.89	.75
	G	--	.05	.06	.11	.04	.17	.27	.10	7.21	6.88	8.54	8.54	.37	.50
Health	LD	.33	.27	.16	.07	.12	.16	.05	.05	--	--	--	--	--	.04
	UD	--	.05	.03	.04	.03	--	.05	--	--	--	--	--	.11	.08
	UD/G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	G	--	--	--	--	--	--	--	--	--	.05	--	.03	--	--
Physical Ed	LD	.60	.84	.31	.36	.21	.23	.09	.14	--	.02	.02	.04	.07	.11
	UD	--	.03	.06	--	.11	.16	.08	.02	--	--	--	--	.33	.15
	UD/G	--	--	--	--	--	--	--	--	--	--	--	.03	.05	--
	G	--	--	--	--	--	--	--	.02	--	.20	.06	.09	--	--
Social Work	LD	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	UD	--	--	.06	--	--	--	--	--	--	--	--	--	--	--
	UD/G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	G	--	--	--	--	--	--	--	--	.13	.17	.02	--	--	--

TABLE I (Continued)

System Science	G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Urban St.	UD	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	UD/G	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	G	--	--	--	--	--	--	--	--	.06	--	.03	--	--	--
General St.	LD	.08	.05	.06	--	.03	--	--	--	--	--	--	--	--	--
	UD	--	--	--	--	--	--	.02	--	--	--	--	--	--	--
Black St.	LD	.12	--	--	--	--	--	--	.02	--	--	.03	--	--	--
	UD	--	--	.03	--	--	--	--	.02	--	--	--	--	--	--
University Scholars	LD	--	.10	.03	.07	--	--	--	--	--	--	--	--	--	--
	UD	--	--	.03	--	--	.02	--	--	--	--	--	--	--	--
Arts & Letters	LD	--	--	.03	--	--	.02	.03	--	.13	--	--	--	--	--
	UD	--	--	.09	--	.02	.02	--	.02	--	--	--	--	--	--
	G	--	--	--	--	--	--	.01	--	--	--	.03	--	--	--
Gen Soc Studies	LD	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	UD	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	G	--	--	--	--	--	--	--	--	.06	--	.03	--	--	--

TABLE I (Continued)

Totals	LD	14.01	13.78	8.31	7.59	4.90	4.04	2.06	1.69	1.03	.96	.31	.31	1.89	2.95
	UD	1.05	1.23	6.65	7.23	10.03	10.78	12.61	13.13	1.68	1.86	.96	1.17	10.53	10.13
	UD/G	--	--	.06	--	.05	.02	.07	.10	4.51	4.19	3.86	4.11	1.97	1.09
	G	--	.05	.06	.11	.04	.17	.30	.15	7.88	8.07	9.92	9.43	.58	.80
*Total		15.06	15.06	15.08	14.93	15.02	15.01	15.04	15.07	15.10	15.05	15.05	15.02	14.97	14.97

*Deviation from 15.00 due to rounding error.

fall term, 1972 and fall term, 1973. For example, during fall term, 1972 the average FTE elementary education major at the freshman level took .27 credit hours in lower division and .08 credit hours in upper division art and architecture courses, .08 credit hours in lower division theater arts, .22 credit hours in lower division and .04 credit hours in upper division music, and 2.10 credit hours in lower division and .23 credit hours in upper division English. Total credit hours taken at all levels in all departments for each level total approximately 15, representing the credit hour load of the average FTE student.

Table II displays the average credit hours taken in education courses by the average FTE student in other major groups by student level within each major and by course level in education. For example, during fall term 1972, in upper division education courses the average FTE non admitted freshman took .02 credit hours, a sophomore took .05 credit hours, a junior took .16 credit hours, a senior took .72 credit hours and a graduate took .32 credit hours.

For the purpose of analysis, an ICLM was calculated for elementary education majors at the freshman, sophomore, junior and senior levels, resulting in the average credit hours taken in each department by each student level for each year. Each student level average was then used as an observation of the credit hours taken in each department. The same calculation was applied to graduate students using MA/MS as one observation and graduate elementary education students as the second observation.

TABLE II

AVERAGE HOURS TAKEN IN EDUCATION BY MAJOR GROUPS
BY STUDENT LEVEL AND COURSE LEVEL

Major/Level	FTE	FTE	Lower	Upper	Upper		Graduate		
	1972	1973	Division	Division	Division	Division	1972	1973	
			1973	1972	1973	Graduate	Graduate	1972	1973
Non Admitted									
Freshman	125	113	--	.02	.03	--	--	--	.06
Sophomore	120	105	--	.05	--	--	--	--	--
Junior	115	106	--	.16	.49	--	--	--	--
Senior	116	123	--	.72	.76	.75	.46	.03	--
Graduate	155	177	--	.32	.38	1.45	1.32	3.17	3.62
General Studies - General									
Freshman	--	96	--	--	.03	--	--	--	--
Sophomore	--	61	--	--	--	--	--	--	--
Junior	--	63	.05	--	--	--	--	--	--
Senior	--	59	--	--	.46	--	--	--	--
Graduate	--	4	--	--	--	--	.75	--	--
Business Administration									
Freshman	256	232	--	--	--	--	--	--	--
Sophomore	239	240	--	--	--	--	--	--	--

TABLE II (Continued)

Junior	397	377	--	--	--	--	--	--	--
Senior	317	301	.01	.05	.03	--	--	--	--
Graduate	108	134	--	.03	--	--	.02	--	.04
Undeclared									
Freshman	241	252	.01	.01	.02	--	--	--	.03
Sophomore	68	77	--	.31	.08	--	--	--	--
Junior	18	34	--	--	--	--	--	--	--
Senior	9	10	--	--	.90	--	--	--	--
Graduate	9	36	--	--	.33	1.33	.47	2.67	.83
Business Education									
Freshman	6	6	--	--	--	--	--	--	--
Sophomore	2	3	--	--	--	--	--	--	--
Junior	9	3	--	2.00	--	--	--	--	--
Senior	12	7	--	5.50	3.00	--	--	--	--
Graduate	15	10	--	.20	1.20	1.53	2.70	2.00	.60
Elementary Education									
Freshman	78	63	.14	--	.11	--	--	--	.05
Sophomore	105	72	.04	1.29	1.32	--	--	.06	.11
Junior	181	142	.04	4.10	4.37	--	--	.04	.17
Senior	182	157	.02	9.46	10.13	.05	.06	.27	.10
Graduate	47	59	--	1.02	1.47	2.74	3.15	7.21	6.88
Equivalency Program									
Graduate	57	72	--	6.91	6.79	.89	.75	.37	.50

TABLE II (Continued)

Health Education

Freshman	4	3	---	---	---	---	---	---	---
Sophomore	2	7	---	---	---	---	---	---	---
Junior	4	5	---	1.50	---	---	---	---	---
Senior	6	6	---	3.00	1.50	---	---	---	---
Graduate	---	---	---	---	---	---	---	---	---

Health and Physical Education

Freshman	19	14	---	---	---	---	---	---	---
Sophomore	23	24	---	.26	.25	---	---	---	---
Junior	46	25	---	1.04	.24	---	---	---	---
Senior	66	60	---	5.30	5.25	.05	---	.09	---
Graduate	12	6	---	.25	.50	2.75	2.50	.25	---

Physical Education

Freshman	33	29	---	---	---	---	---	---	---
Sophomore	26	19	---	---	---	---	---	---	.16
Junior	25	22	---	.36	.82	---	---	---	---
Senior	12	13	---	1.75	3.92	---	---	---	---
Graduate	---	6	---	---	2.00	---	2.00	---	1.00

Art

Freshman	116	79	---	---	---	---	---	---	---
Sophomore	82	74	---	---	.04	---	---	---	---
Junior	83	80	---	.04	.04	---	---	---	---
Senior	85	78	---	1.02	1.50	---	---	---	---
Graduate	15	14	---	.20	.21	.40	1.29	.60	.43

TABLE II (Continued)

English

Freshman	48	44	--	--	.07	--	--	--	--
Sophomore	81	59	--	.10	--	--	--	--	--
Junior	97	75	--	.19	.40	--	--	--	--
Senior	96	85	--	1.72	1.48	--	.04	--	--
Graduate	60	60	--	.95	.80	.35	.20	.17	.63

Foreign Language

Freshman	24	24	--	--	.08	--	--	--	--
Sophomore	15	16	.19	--	--	--	--	--	--
Junior	11	14	--	.27	--	--	--	--	--
Senior	7	10	--	--	3.00	--	--	--	--
Graduate	5	4	--	.60	3.75	3.60	--	1.80	--

French

Freshman	2	4	--	--	--	--	--	--	--
Sophomore	4	8	--	--	--	--	--	--	--
Junior	7	4	--	--	--	--	--	--	--
Senior	8	8	--	3.00	1.50	.38	--	--	--
Graduate	3	2	--	5.00	--	--	1.50	1.00	1.50

German

Freshman	10	6	--	--	--	--	--	--	--
Sophomore	7	4	--	--	--	--	--	--	--
Junior	2	6	--	--	.50	--	--	--	--
Senior	7	7	--	3.86	2.14	--	--	--	--
Graduate	3	--	--	--	--	2.00	--	--	--

TABLE II (Continued)

Spanish

Freshman	10	4	.75	--	--	--	--	--	--
Sophomore	11	7	--	--	.43	--	--	--	--
Junior	8	7	--	.75	2.14	--	--	--	--
Senior	7	8	--	2.14	5.25	--	--	--	--
Graduate	2	4	--	--	--	--	2.25	--	2.25

Romance Languages

Freshman	10	4	--	--	--	--	--	--	--
Sophomore	11	7	--	--	--	--	--	--	--
Junior	8	7	--	2.00	--	--	--	--	--
Senior	7	8	--	--	--	--	--	--	--
Graduate	2	4	--	15.00	--	--	--	--	--

General Studies -- Arts
and Letters

Freshman	87	70	--	--	--	--	--	--	--
Sophomore	50	40	--	--	.05	--	--	--	--
Junior	59	28	--	.15	.11	--	--	.05	--
Senior	61	29	--	--	.21	--	--	--	--
Graduate	4	3	--	--	--	.75	2.00	3.00	1.00

Speech

Freshman	--	12	--	--	--	--	--	--	--
Sophomore	--	23	--	--	.09	--	--	--	--
Junior	--	35	--	--	1.29	--	--	--	--
Senior	--	42	--	--	2.63	--	--	--	--
Graduate	12	12	--	.25	--	.50	--	.50	.25

TABLE II (Continued)

Pre-Journalism

Freshman	21	27	.11	--	--	--	--	--	--
Sophomore	23	14	--	--	--	--	--	--	--
Junior	6	3	--	--	--	--	--	--	--
Senior	3	2	--	--	--	--	--	--	--
Graduate	--	1	--	--	--	--	--	--	--

Speech and Hearing

Graduate	26	35	--	--	.17	.58	.43	1.04	1.54
----------	----	----	----	----	-----	-----	-----	------	------

Music

Freshman	58	67	--	--	--	--	--	--	--
Sophomore	31	34	--	.10	--	--	--	--	--
Junior	28	26	--	1.07	.12	--	--	--	--
Senior	22	36	--	1.91	2.08	.14	--	--	--
Graduate	9	8	--	1.89	.38	2.33	3.00	.33	.75

Philosophy

Freshman	13	7	--	--	--	--	--	--	--
Sophomore	15	14	--	--	--	--	--	--	--
Junior	22	19	--	--	--	--	--	--	--
Senior	13	15	--	--	.40	--	--	--	--
Graduate	1	--	--	--	--	--	--	--	--

Theater Arts

Freshman	--	16	--	--	--	--	--	--	--
Sophomore	--	9	--	--	--	--	--	--	--

TABLE II (Continued)

Junior	--	11	--	--	--	--	--	--	--
Senior	--	6	--	--	.50	--	--	--	--
Graduate	9	13	--	--	.92	.33	.46	2.11	--
Speech and Theater Arts									
Freshman	51	8	--	--	--	--	--	--	--
Sophomore	48	10	--	--	--	--	--	--	--
Junior	48	5	--	.50	--	--	--	--	--
Senior	39	3	--	1.67	--	--	--	.08	--
Graduate	5	1	--	1.80	--	--	--	--	3.00
Biology									
Freshman	84	44	--	--	--	--	--	--	--
Sophomore	76	66	--	--	--	--	--	--	--
Junior	86	86	--	--	.14	--	--	--	--
Senior	62	69	--	.19	.09	--	--	--	--
Graduate	48	42	--	.50	.29	.31	.29	--	.14
Chemistry									
Freshman	16	23	--	--	--	--	--	--	--
Sophomore	27	21	--	--	--	--	--	--	--
Junior	20	17	--	.75	.18	--	--	--	--
Senior	25	23	--	.36	.91	--	--	--	--
Graduate	12	8	--	--	--	.25	.38	.50	--
Pre-Dentistry									
Freshman	40	31	--	--	--	--	--	--	--
Sophomore	29	18	--	--	--	--	--	--	--

TABLE II (Continued)

Junior	29	21	--	--	--	--	--	--	--
Senior	13	18	--	.46	--	--	--	--	--
Graduate	8	11	--	--	--	--	--	--	--
Earth Science									
Freshman	11	11	--	--	--	--	--	--	--
Sophomore	17	19	--	--	--	--	--	--	--
Junior	27	26	--	.11	--	--	--	--	--
Senior	14	18	--	.43	--	--	--	--	--
Graduate	3	7	--	1.00	.86	--	1.71	--	--
Geology									
Freshman	--	--	--	--	--	--	--	--	--
Sophomore	1	--	--	--	--	--	--	--	--
Junior	--	--	--	--	--	--	--	--	--
Senior	--	--	--	--	--	--	--	--	--
Graduate	13	10	--	--	.30	.46	--	--	--
General Studies -- Science									
Freshman	26	44	--	--	--	--	--	--	--
Sophomore	15	18	--	--	.17	--	--	--	--
Junior	18	21	--	--	--	--	--	--	--
Senior	38	26	--	.79	1.50	--	--	--	--
Graduate	7	8	--	--	--	.86	1.50	--	--
Pre Home-Economics									
Freshman	8	1	--	--	--	--	--	--	--
Sophomore	6	2	--	1.50	--	--	--	--	--

TABLE II (Continued)

Junior	4	2	--	--	--	--	--	--	--
Senior	--	--	--	--	--	--	--	--	--
Graduate	--	--	--	--	--	--	--	--	--
Mathematics									
Freshman	54	37	--	--	--	--	--	--	--
Sophomore	50	36	.08	.06	--	--	--	--	--
Junior	59	35	--	.41	.60	--	--	--	--
Senior	56	53	--	.84	.68	--	--	.27	--
Graduate	35	31	--	.09	.48	.43	.87	.26	--
Pre-Medicine									
Freshman	111	93	--	.02	--	--	--	--	--
Sophomore	62	51	--	.05	--	--	--	--	--
Junior	24	50	--	--	--	--	--	--	--
Senior	13	14	--	--	--	--	--	--	--
Graduate	26	31	--	--	--	--	--	.12	--
Pre-Nursing									
Freshman	75	64	--	--	--	--	--	--	--
Sophomore	31	21	--	--	--	--	--	--	--
Junior	7	11	--	--	--	--	--	--	--
Senior	1	--	--	--	--	--	--	--	--
Graduate	2	2	--	--	--	--	1.00	--	--
Pre-Pharmacy									
Freshman	12	7	--	--	--	--	--	--	--
Sophomore	10	4	--	--	--	--	--	--	--

TABLE II (Continued)

Junior	--	2	--	--	--	--	--	--	--
Senior	--	--	--	--	--	--	--	--	--
Graduate	--	--	--	--	3.00	--	--	--	--
Physics									
Freshman	19	14	--	--	--	--	--	--	--
Sophomore	15	10	--	--	--	--	--	--	--
Junior	10	3	--	--	--	--	--	--	--
Senior	8	10	--	--	.30	--	--	--	--
Graduate	5	5	--	--	--	1.20	--	--	--
Anthropology									
Freshman	15	8	--	--	--	--	--	--	--
Sophomore	29	20	--	--	.15	--	--	--	--
Junior	38	28	--	.08	--	--	--	--	--
Senior	24	27	--	--	.22	--	--	--	--
Graduate	18	18	--	--	--	--	--	--	--
Economics									
Freshman	14	15	--	--	--	--	--	--	--
Sophomore	27	15	--	--	--	--	--	--	--
Junior	42	24	--	--	--	--	--	--	--
Senior	25	23	--	--	--	--	--	--	--
Graduate	15	15	--	--	.20	--	--	--	--
General Studies - Social Science									
Freshman	50	44	--	--	--	--	--	--	--

TABLE II (Continued)

Sophomore	34	42	--	.09	.07	--	--	--	--
Junior	82	57	--	.44	.42	--	--	--	.11
Senior	75	66	--	.83	1.27	--	--	--	.14
Graduate	25	18	--	2.88	1.00	2.04	2.00	1.60	.83
Geography									
Freshman	6	3	--	--	--	--	--	--	--
Sophomore	12	6	--	--	--	--	--	--	--
Junior	26	16	--	.23	--	--	--	--	--
Senior	37	25	--	--	--	--	--	.08	--
Graduate	11	12	--	--	.50	--	.25	.55	.25
History									
Freshman	33	30	--	--	--	--	--	--	--
Sophomore	52	33	--	.06	--	--	--	--	--
Junior	91	59	--	.26	.10	--	--	.07	--
Senior	99	74	--	1.45	1.66	--	--	--	.20
Graduate	37	31	--	.51	.29	.16	.19	.24	.10
Law Enforcement									
Freshman	52	16	--	--	--	--	--	--	--
Sophomore	38	32	--	--	--	--	--	--	--
Junior	31	50	--	--	--	--	--	--	--
Senior	9	27	--	--	.56	--	--	--	--
Graduate	1	1	--	--	--	--	--	--	--
Political Science									
Freshman	52	32	--	--	--	--	--	--	--

TABLE II (Continued)

Sophomore	75	55	--	.08	--	--	--	--	--
Junior	99	63	--	.03	.05	--	--	--	--
Senior	84	88	--	.04	.10	--	--	--	--
Graduate	33	26	--	.36	--	.09	.12	.27	.35
Psychology									
Freshman	116	62	--	.06	.05	--	--	--	--
Sophomore	154	122	--	--	.02	--	--	--	--
Junior	201	154	--	.04	.02	--	--	--	--
Senior	154	133	--	.25	.34	--	.02	--	.05
Graduate	29	33	--	.10	.18	--	--	--	--
Sociology									
Freshman	82	63	--	--	--	--	--	--	--
Sophomore	95	60	--	.09	.05	--	--	--	--
Junior	134	102	--	.10	.25	--	--	--	--
Senior	97	78	--	.15	.08	--	--	.07	--
Graduate	29	20	--	--	--	--	--	.10	--
Social Work									
Graduate	153	122	--	--	--	--	--	.02	--
MA-MS Education									
Graduate	99	98	--	.61	.86	2.39	2.88	8.54	8.58

To determine the demand on the School of Education by other major groups, an ICLM by major was calculated by the course level taken in education for each year. For this calculation, the total hours taken for each major at each level was divided by the total FTE for that particular major. For example, in fall term, 1972 the average FTE business education major took 1.98 credit hours in upper division education courses, .52 credit hours in upper division-graduate education courses and .68 credit hours in graduate education courses. Each of these levels was then used as an observation for analysis. Due to the capacity of the computer program, the number of different majors was limited to 45. Student major groups not included in this analysis were those who did not place demands on the School of Education during the two terms under investigation. A list of the student major groups excluded and their FTE is shown in Table III. One other student major group was not subjected to analysis in this study. This major group is identified as equivalency program. These are students who have a baccalaureate degree and are only seeking a teaching certificate. However, it could not be ascertained whether they were seeking an elementary or secondary certificate, or whether this group was a combination of both groups. The course demands of this major are included in Table I, since they took a majority of their work in education courses.

To test the hypothesis that elementary education majors place equal demands on other academic departments outside education, both an analysis of variance and a Friedman non-parametric analysis of variance were applied. The Friedman test was also used because it

TABLE III
 MAJOR GROUPS NOT INCLUDED IN STUDY
 WITH TOTAL FTE ENROLLMENT FOR
 FALL 1972 AND FALL 1973

MAJOR GROUP	FTE 1972	FTE 1973
Environmental Science	17	16
Systems Science	16	15
Urban Studies	25	35
Secretarial Science	3	9
Applied Design	5	6
Architecture-Pre	36	79
Teaching English as a Secondary Language	--	7
Japanese	1	--
Modern Languages	12	2
Persian	--	--
Portugese	1	--
Russian	16	8
Interior Architecture	6	5
Fine Arts	--	5
Landscape Architecture	8	9
Pre-Agriculture	3	3
Applied Science	14	10
Pre-Dental	20	13
Pre-Food	1	--
Pre-Forestry	15	11
Pre-Medical Technology	42	54
Administration of Justice	--	52
Public Health	6	6
Pre-Veterinary M.D.	42	36
Middle East Studies	5	2
International Business	2	2
Pre-Law	64	65
Social Service Certificate	1	2
Urban Studies	10	9
Engineering	244	209
Total FTE Not Included	615	670

could not be assumed that data were normally distributed. These two tests were also applied to data for graduate students in education as well as to data of the demands placed on the School of Education by other student major groups. A t-test was used to test the hypothesis that course demands were consistent over time for each of these groups.

Results

Results of the analysis of variance indicate a rejection ($p < .01$) of the hypothesis that elementary education majors place equal demands on each of the academic departments outside education for both fall terms of 1972 and 1973. The hypothesis that graduate education students place equal demands on each of the academic departments outside education is rejected ($p < .01$) for fall term, 1973, but not rejected for fall term, 1972. Also the hypothesis that other major groups place equal demands on the School of Education for coursework is rejected for fall term, 1973 ($p < .01$) but not rejected for fall term, 1972.

The Friedman non-parametric analysis of variance rejects the hypothesis that elementary education majors place equal demands on each of the academic departments outside education for both fall terms of 1972 and 1973 ($p < .01$). The hypothesis that graduate education students place equal demands on each of the academic departments outside education is rejected for both fall terms, 1972 and 1973 ($p < .05$). Also the hypothesis that other major groups place equal demands on the School of Education for coursework is rejected for fall term, 1972 ($p < .01$) and fall term, 1973 ($p < .05$).

The t-test applied to test stability over time for each of these three groups, elementary education majors, graduate education students and other major groups support the hypothesis that demands have remained consistent for elementary education majors and other major groups. For graduate students in education only one department showed a significant difference. This difference occurred in the Political Science Department where graduate students in education place significantly greater ($p < .01$) demands during the fall term, 1972 than they did during the fall term, 1973. All other demands by graduate students in education on departments outside of education remain consistent over the two year period. Negative t values indicate that greater demand was placed during fall term 1973 than during fall term 1972.

TABLE IV
ANALYSIS OF VARIANCE*

Group	F Calculated	
Fall 1972 Elementary Education Majors	10.24	significant at .01
Fall 1972 Graduate Education Students	1.34	
Fall 1972 Other Major Groups in Education	1.40	
Fall 1973 Elementary Education Majors	9.16	significant at .01
Fall 1973 Graduate Education Students	9.50	significant at .01
Fall 1973 Other Major Groups in Education	1.62	significant at .01

FRIEDMAN NON-PARAMETRIC ANALYSIS OF VARIANCE

Group	χ^2 Calculated	
Fall 1972 Elementary Education Majors	126.40	significant at .01
Fall 1972 Graduate Education Students	53.80	significant at .05
Fall 1972 Other Major Groups in Education	76.89	significant at .01
Fall 1973 Elementary Education Majors	130.54	significant at .01
Fall 1973 Graduate Education Students	55.80	significant at .05
Fall 1973 Other Major Groups in Education	64.07	significant at .05

*ANOVA tables are presented in Appendix A

TABLE V
 CALCULATIONS OF t TESTS FOR ELEMENTARY
 EDUCATION MAJORS AND GRADUATE
 EDUCATION STUDENTS

Department	Education Majors t -Calculated	Graduate Education t -Calculated
Art and Architecture	.50	.41
Theater Arts	.00	.54
Music	-.50	.00
English	-.03	-2.04
Speech	-.16	.85
Foreign Language	.16	1.05
Journalism	1.88	1.38
Psychology	.53	.02
Philosophy	-.39	.00
Anthropology	-.29	.92
Economics	-.72	-1.39
Geography	1.18	.36
History	.53	-.33
Political Science	-.41	7.50*
Sociology	-.86	1.25
Administration of Justice	-.93	1.00
Applied Science	-.18	.00
Biology	-.40	-4.00
General Science	.64	.42
Mathematics	.09	.49
Chemistry	.55	.00
Physics	-1.57	1.00
Earth Science	-.72	-1.67
Public Health	-1.00	.00
Accounting	1.42	.00
Marketing	.00	.00
Management	-.45	.00
Finance Law	.93	1.00
Business Education	-.09	-1.00
Business Administration	.00	.00

*Significant at .01

TABLE V (Continued)

Health	.43	-1.00
Physical Education	-.46	-.62
Social Work	1.00	-.10
System Science	.00	.00
Urban Studies	.00	3.00
General Studies	1.88	.00
Black Studies	.91	1.00
University Scholars	-1.19	.00
Arts and Letters	1.07	1.60
General Social Studies	.00	3.00

TABLE VI

CALCULATION OF t -TESTS FOR OTHER
MAJOR GROUPS ON EDUCATION

Major	t -Calculated
Non-Admitted	.15
General Studies - General	-1.06
Business Administration	.66
Undeclared	.07
Business Education	.97
Health Education	.90
Health and Physical Education	.24
Physical Education	-.66
Art	.02
English	.17
Foreign Language	-.01
French	1.05
German	.47
Spanish	-.90
Romance Languages	1.20
General Studies Arts and Letters	.00
Speech	1.04

TABLE VI (Continued)

Speech and Hearing	.02
Music	.53
Philosophy	-.85
Theater Arts	1.42
Speech and Theater Arts	1.04
Biology	.19
Chemistry	.41
Pre-Dentistry	1.20
Earth Science	.03
Geology	.50
General Studies - Science	.03
Pre-Home Economics	-.85
Mathematics	.12
Pre-Medicine	2.07
Pre-Nursing	-.85
Pre-Pharmacy	-.85
Physics	.52
Anthropology	-.58
Economics	-.85
General Studies - Social Science	.58
Geography	.19
History	.21
Law Enforcement	-.85
Political Science	.72
Psychology	-.03
Sociology	.04
Social Work	1.20
Pre-Journalism	.00

CHAPTER IV

ANALYSIS AND DISCUSSION

An examination of the extent of the course demands placed on other academic departments by both elementary education majors and by graduate students in education follows. Also an examination is made of the course demands placed by other major groups on the School of Education.

Elementary Education Majors

Application of both the analysis of variance and the Friedman tests found that elementary education majors did not distribute their course demands equally on the other academic departments during either fall term. The greatest course demands were made on the English, Psychology and General Science Departments, with somewhat less but consistently high demands on the Mathematics, Speech, History and Music Departments.

These course demands were to be expected in that there are required courses for elementary education majors in all these departments except for history. While other social sciences could be taken to fulfill university and School of Education requirements, education majors seemed to prefer history and took both lower and upper division courses in this department. Sociology was a second choice with geography a third, anthropology a fourth and political science a fifth choice. Elementary education majors placed little demand on

the Departments of Economics or Administration of Justice. The reason for this course taking behavior of these students could be any one or more of the following: student preferences due to interest in the courses, the time of day the courses are offered, adviser suggestions, or some notion of the types of social sciences taught in the elementary school based on the student's own recollection of their elementary social science curriculum.

In the sciences, the greatest demand was placed on the General Science Department with a concentration at the lower division level and with some demand on upper division and upper division graduate level. The lower division general science courses have been recommended for elementary education majors to fulfill the requirement of laboratory sciences. These general science courses are offered only for non-science majors. Data seemed to indicate that some elementary education majors also took courses in addition to the recommended lower division courses with some course demands at the upper division and upper division graduate level in this department. Some elementary education majors opt to take their biological laboratory science in the Biology Department with course demands placed at both the lower division and upper division level. Course demands were also made on the Chemistry and Earth Science Departments. The course demands on the Chemistry Department were all at the lower division level while the Earth Science Department has both lower division and upper division demands. In mathematics, the greatest demand is at the lower division level. This coincides with the lower division mathematics requirement for all elementary education majors. Upper division course

demand on the Mathematics Department was small. Elementary education majors placed few demands on the Departments of Applied Science and Physics. Elementary education majors do not seem to be greatly science oriented. Course demands indicate that little work was done in this area other than at the required level with most science work done at the lower division level.

In the Arts and Letters, the course demands on the English, Speech, Music and Art Departments were anticipated due to required courses in these departments. However, the course requirements in speech, music and art have been about the same. One course in each area has been required. Yet, elementary education majors placed greater demand on music and speech than they did on art. Course demands on the Music and Art Departments seem to be fairly evenly divided between lower division and upper division work, whereas demands in the Speech Department were mostly at the lower division level. The course demand on the Speech Department as shown is actually somewhat inflated due to the fact that many elementary education majors took a five credit hour lower division course to fulfill the speech requirement rather than the three hour course. The demand on the Philosophy Department has also been quite high, especially at the lower division level. This reflects that philosophy courses have been a prerequisite for the Philosophy of Education course which was required. There has also been some demand on the Foreign Language Department, mostly at the lower division level. Elementary education majors placed few demands on Departments of Theater Arts and Journalism.

Course demands on the School of Business by elementary education

majors have been small. No demand was made on the departments of Marketing or Business Administration. Most courses were taken in the Department of Business Education at the lower division level. This low demand is to be anticipated and is purely an indication of student interest.

In the area of health and physical education, the course demands were somewhat an indication of the university requirements of five physical education credits and one health credit. However, most are one credit hour courses and therefore, the course demands relative to other departments are understated. Also veterans and students over the age of 25 do not have to meet these requirements. Both health and physical education had the greatest course demands placed at the lower division level with some demand at the upper division level.

Elementary education majors placed few course demands on the Department of Social Work, General Studies, Black Studies, University Scholars and Arts and Letters. No demand was placed on the Department of General Social Studies for either year. The reasons for this low demand were probably due to the limited course offerings of these departments, specialized nature of the program and student preferences. No demand was placed on the Departments of Systems Science and Urban Studies which is to be expected since these are doctoral departments.

As demonstrated by the t-test, the course demands of elementary education majors have remained consistent during these two terms.

Graduate Education Students

The analysis of variance test did not reveal any significant difference in the demands placed by graduate education students for fall term, 1972, but did find a significant difference for fall term, 1973. The Friedman test found significant differences for both fall terms. Based on the non-parametric assumption, graduate education students did not distribute their course demands equally on other academic departments.

Course taking behavior of graduate education students is strictly a function of student preference since there are no required courses outside of education courses. Graduate education students placed the greatest course demands on the Psychology Department. While there was some demand at the lower division and upper division level, most demand was at the upper division-graduate and graduate levels. Other departments on which there were the greatest course demands included Speech, Sociology and English.

In the area of arts and letters the course demands on the English and Speech Departments were consistently the greatest with courses being taken at all levels. The greatest demand was at the upper division-graduate and graduate levels. The Departments of Music and Art and Architecture also received some course demands. However, the demand on art and architecture was at the lower division, upper division and upper division-graduate level while the Music Department also had demands at the graduate level. Demands on the Foreign Language Department were greater for fall, 1972 than for fall, 1973.

but the difference was not significant and all demands were at either the lower division or upper division level. Little demand was placed on the Departments of Theater Arts, Philosophy and Journalism. The course demands of graduate education students in the departments in arts and letters are quite similar to the course demands of elementary education majors.

Next to the great demand placed on the Psychology Department, other social science departments where graduate students in education placed course demands were History and Sociology followed by Geography. In both the History and Sociology Departments, the majority of course demands were at the upper division-graduate or graduate level. In the Geography Department, course demands were at either the lower division or upper division-graduate level. The Political Science Department had some demand on the upper division-graduate and graduate level for fall, 1972, but none in fall, 1973. This was the only department where the t-test indicated a significant difference in the demand over the two terms. There was little demand on the Departments of Anthropology, Economics and Administration of Justice. Again, the course demands of graduate education students in the social sciences were quite similar to the course demands of elementary education majors.

The Mathematics Department received the greatest course demands in the sciences for graduate education students. However, the majority of this demand was at the lower division level. It could be speculated that these graduate students were refreshing their mathematics skills, since they could not use lower division courses for graduate credit. There was also some demand on the General Science Department, again,

mostly at the lower division level. The Earth Science Department received course demands at the graduate level in 1972 and at the lower division, upper division and upper division-graduate level in 1973. Course demands on the Biology and Physics Departments were low and there were no demands placed on the Departments of Chemistry, Applied Science and Public Health for either term. Graduate education students do not seem to be any more science oriented than their undergraduate counterparts. Within the School of Business, no demands were placed on the Departments of Accounting, Marketing, Management or Business Administration. Few demands were placed on the Department of Finance Law and Business Education by graduate elementary education students, but none by MA/MS students.

The course demands on the Physical Education Department were fairly high with the majority at the graduate level. There was little demand on the Health Department, and then only at the graduate level for fall, 1973.

The School of Social Work received some demand at the graduate level, mostly from graduate elementary students. Few demands were also placed on the Departments of Urban Studies, Black Studies, Arts and Letters, and General Social Studies. No course demands were placed on the Departments of Systems Science, General Studies and University Scholars by graduate education students.

The course demands of graduate education students were very similar to the course demands of elementary education majors. It could be speculated that the foundation for undergraduate coursework stimulated an interest in doing further work in these academic areas.

A concentration of course demands for both elementary education majors and graduate education students in such Departments as Psychology, English, Speech, History, Sociology, Art and Architecture and Music seem to support this hypothesis. Also the small course demands on the Departments of Theater Arts, Journalism, Economics, Administration of Justice, Applied Science, Physics, Public Health, Social Work, Systems Science and Business courses demonstrate that both elementary education majors and graduate education students tend to avoid taking courses in these departments.

Course Demands of Other Major Groups on Education

The analysis of variance did not find a significant difference in the course demands placed on the School of Education by other major groups for the fall term, 1972, but did find a significant difference for fall term, 1973. The Friedman test found a significant difference for both fall term, 1972 and fall term, 1973. Based on a non-parametric assumption, other major groups did not place equal demands on the School of Education for coursework. The t-test found that course demands of other major groups were consistent over the two terms.

One lower division course was offered by the School of Education in the fall of 1973. This course was Introduction to Early Childhood Education. All other courses were at the upper division, upper division-graduate and graduate levels.

Major groups that placed consistently high course demands on the School of Education for both terms, included business education,

health and physical education, speech and hearing, and non admitted students. Foreign language majors in Spanish, French and German also placed great course demands on the School of Education.

The demand placed by business education majors is not surprising. These majors are, for the most part, committed to becoming secondary teachers. It would also seem that most health and physical education majors are also planning to teach at the secondary level, as indicated by their course demands on the School of Education. Speech and hearing majors are usually interested in obtaining a certificate as speech therapists in the public schools and therefore, need to take education courses. The course demands of majors in the foreign languages for which there is a possibility of certification indicate that many of these majors also plan to teach at the secondary level. The absence of course demands by majors in other foreign languages support this theory.

The great demand placed on the School of Education by non admitted majors is significant. A non admitted major is one who is taking six credit hours or less and therefore, does not need to be formally admitted to the university. The course demands this major group placed at the senior and graduate level were especially high. It is difficult to define the population of this major group. However, from their course demands on the School of Education, it could be supposed that many of them were either taking a course or two in preparation for teaching or are teachers and were taking additional education courses on a part time basis.

The General Studies-Social Science majors placed greater course demands on the School of Education than other social science majors such as history, political science, psychology and sociology. This reflects the certification requirements for social science teachers at the secondary level. Social science teachers must have course work in many of the social sciences. General Studies-Social Science is a recommended major for someone who plans on teaching at the secondary level.

Other major groups in the area of arts and letters that placed fairly heavy course demands on the School of Education were English, music, art, speech, speech and theater arts, theater arts, and general studies-arts and letters. Majors in pre-journalism and philosophy placed few course demands on the School of Education. This is to be expected since journalism is a minor teaching field in secondary education at Portland State University and there is no certification program at the secondary level for philosophy.

Of all the major groups in the sciences, mathematics majors placed the greatest course demands on the School of Education. This seems to indicate that many mathematics majors intend to become secondary teachers. Biology, chemistry and earth science majors placed a somewhat lower demand on the School of Education. Other than the pre-professional majors in the sciences such as pre-home economics, pre-medicine, pre-nursing and pre-pharmacy, the demands placed by the geology and physics majors were low. The demand that the pre-professional majors placed on the School of Education was sporadic and light and yet interesting. Education courses are not a part

of their regular program, so that the demands these groups place on the School of Education are attributable to student preferences alone.

As expected, major groups for which teacher certification is available placed the greatest course demands on the School of Education. Pre-professional and other majors for which there is no direct teacher education programs placed little demand on the School of Education.

CHAPTER V

SUMMARY AND IMPLICATIONS

This study has examined the function of the School of Education within and throughout the university by means of the course demands placed by elementary education majors and graduate education students on the other academic departments as well as the course demands placed on the School of Education by other major groups.

Statistical analysis of the course demands found that elementary education majors and graduate education students did not place equal demands on other academic departments. Also, other major groups did not place equal course demands on the School of Education. Course demands for these three groups have remained consistent, for the most part, between the fall term, 1972 and the fall term, 1973.

Elementary education majors placed the greatest course demands on departments in which there were required courses. Course demands placed on the History Department were, however, the exception. The course demands of graduate education students were similar to those of elementary education majors. Other major groups for which teacher certification is available placed the greatest course demands on the School of Education.

With some departments and their majors there is a strong inter-relationship with the School of Education. This is demonstrated by the reciprocal demands placed on these departments by elementary

education majors and graduate education students and by the demands their majors place on the School of Education. This is especially true for the Speech Department and their majors in the field of speech and hearing and speech. It is also true for the Health and Physical Education Department and their majors in health and physical education. There is a strong interrelationship between the social sciences and the School of Education with education majors placing heavy demands on the social sciences, especially psychology and history and General Social Science majors placing heavy demands on the School of Education.

In the sciences, education majors place a greater demand on science departments than science majors place on the School of Education. Since the dissolution of the General Science Department and its absorption by the Biology and Chemistry Departments, it can be expected that the course demands by elementary education majors on the Biology and Chemistry Departments will increase in the future.

Within departments in arts and letters, foreign language majors in Spanish, German and French place demands on the School of Education, and elementary education majors and graduate students in education place demands on the Foreign Language Department. English majors place some demands on the School of Education and elementary education majors and graduate students in education place great demand on the English Department. In art and music, there are demands from education students and by major groups in those areas. However, the demand on the School of Education is greater by the Business Education majors than is the demand made on the Business Education Department or any

other business department by elementary education majors. The reverse is true for the Philosophy Department where elementary education majors placed a high demand and a low demand was placed on the School of Education by philosophy majors.

New teacher education certification requirements may affect the course demands of elementary education majors in the future. From these new requirements, it can be expected that additional course demands will be made on the Departments of Art and Architecture and Music, since the requirements in these areas have risen from three to six credit hours. Also, Philosophy of Education is no longer a required course for certification and therefore a decrease in course demands of elementary education students on the Philosophy Department can be anticipated.

Graduate education students and elementary education majors place similar course demands on other academic departments. For example, both groups have placed high course demands on the Psychology Department and low on the Economics Department. The exceptions to this are the high demands placed by elementary education majors on the Philosophy and General Science Departments and the low demands placed on these departments by graduate education students.

Further research is needed to determine specific reasons for the course taking behavior of elementary education majors, especially in the area of the social sciences. It would be helpful, for instance, to know why elementary education majors placed much greater demands on the History Department than they did on the Economics Department. Also, while the course demands of elementary education majors can, for

the most part, be accounted for due to the requirements of the university and the School of Education, the course demands of graduate education students are not so easily anticipated, especially the lower division and upper division course demands that are made by this group. Research in this area would also be valuable.

Advisers of elementary education majors should be aware that these majors placed few demands on such departments as Economics, Administration of Justice and Theater Arts. They could, therefore, encourage students to enroll in appropriate courses in these areas.

The need for communication between the School of Education and other departments is demonstrated by the course demands made by elementary education majors and graduate education students on departments and the course demands made on the School of Education by other major groups. While this need is greater in some areas than others, decisions made have far reaching implications for all. In some departments, courses that were appropriate for elementary education majors and graduate education students might be offered more often if assurances were made that there would be a substantial increase in enrollment. Also, the need for departments to offer methods courses in their specific areas during certain terms might be identified.

The importance of accurate coding for major groups by the Admissions office and the Registrar's office has been emphasized by the fact that equivalency program majors could not be defined for the purpose of examination. The recently implemented Student Information System (SIS) now has the capability of separating elementary

equivalency students from secondary equivalency students. Also, previously there has been no method for identifying secondary education students except at the time of graduation. The SIS, however, is capable of carrying two majors. As a result of this study, in the future, secondary education students will have their second major identified as secondary education. This will permit the early identification of these majors and allow the School of Education and the university to make better predictions about enrollment patterns for this group.

While it is worthwhile to examine the course demands of student major groups by student and course level, it would be even more worthwhile to know exactly which courses were taken by each group. For example, the course demands placed on the History Department by elementary education majors were high. It would be helpful, as well as interesting, to know which history courses elementary education majors were taking.

Future course demands of elementary education majors and graduate education students should be analyzed in view of the new teacher education requirements in order to ascertain if the course taking behavior of these groups, does, in fact change. The ICLM provides the tool for this analysis. It is now the responsibility of administrators to use it.

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APPENDIX A

ANOVA SUMMARY TABLE ELEMENTARY
EDUCATION MAJORS, FALL 1972

Source	d.f.	SS	MS	F
Treatment	39	26.2525	0.6731	10.24*
Error	<u>117</u>	<u>7.6972</u>	0.0657	
Total	156	33.9497		

ANOVA SUMMARY TABLE GRADUATE
EDUCATION STUDENTS, FALL 1972

Source	d.f.	SS	MS	F
Treatment	39	1.8793	0.0481	1.34
Error	<u>39</u>	<u>1.3958</u>	0.0357	
Total	78	3.2751		

*Significant $p < .01$

ANOVA SUMMARY TABLE OTHER MAJOR
GROUPS ON EDUCATION, FALL 1972

Source	d.f.	SS	MS	F
Treatment	44	9.2308	0.2097	1.40
Error	<u>88</u>	<u>13.1397</u>	0.1493	
Total	132	22.3705		

ANOVA SUMMARY TABLE ELEMENTARY
EDUCATION MAJORS, FALL 1973

Source	d.f.	SS	MS	F
Treatment	39	22.9872	0.5894	9.16*
Error	<u>117</u>	<u>7.5278</u>	0.0643	
Total	156	30.5662		

*Significant $p < .01$

ANOVA SUMMARY TABLE GRADUATE
EDUCATION STUDENTS, FALL 1973

Source	d.f.	SS	MS	F
Treatment	39	1.5567	0.0399	9.50*
Error	<u>39</u>	<u>0.1658</u>	0.0042	
Total	78	1.7225		

ANOVA SUMMARY TABLE OTHER MAJOR
GROUPS ON EDUCATION, FALL 1973

Source	d.f.	SS	MS	F
Treatment	44	5.5396	0.1259	1.62*
Error	<u>132</u>	<u>10.2922</u>	0.0779	
Total	176	15.8318		

*Significant $p < .01$