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ABSTRACT

Since the first graduate course in educational media was offered in 1940, the program at Indiana University has grown into an integrated Audio-Visual Center/Division of Instructional Systems Technology program which offered 45 courses in 1968-69. The program seeks to combine opportunities for advanced study, practical experience, and research with a program of professional assistance to faculty members in the selection, development, and use of educational media. It also serves the educational community in such capacities as a library of educational media material and a center for developing and testing instructional materials. Indiana University cooperates with NET (National Educational Television), AID (Agency for International Development), and various foreign countries in projects concerned with instructional technology. During the period 1958-68, federal funds supported over 25 projects, including the National Instructional Television Center, and permitted aid to graduate students, institutes for media specialists, additional courses, and a re-evaluation of the existing curriculum in instructional technology. Although a recent cut in federal appropriations for educational media programs will reduce current activities, substantial progress has been made toward the goal of a professional education program. (JY)

April 22, 1970

INDIANA UNIVERSITY

AUDIO-VISUAL CENTER - INSTRUCTIONAL SYSTEMS TECHNOLOGY

CASE STUDY OF THE EFFECT OF NDEA TITLE VII AND OTHER FEDERAL LEGISLATION

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The first graduate course in educational media was offered at Indiana University during the 1940 summer session by L. C. Larson who joined the faculty that June under a joint appointment in the School of Education with the title of Instructor in Visual Education and the Extension Division where he was Consultant in Audio-Visual Aids responsible for the direction of the Bureau of Visual Education. With the addition of sound 16mm film to the film library collection in 1940, the title of the Bureau was changed in 1941 to the Bureau of Audio-Visual Aids and five years later in 1946 to the present title of Audio-Visual Center.

The professional education program in the School of Education became a Department of Audio-Visual Education in 1950. Following the National Defense Education Act in 1958 with its Title VII emphasizing research and experimentation in more effective utilization of the new educational media, the name of the Department was changed in 1959 to a Division of Educational Media, reflecting the influence of the NDEA Title VII legislation. Ten years later in 1969, the title was again changed to Division of Instructional Systems Technology.

From 1940 until the present time, the professional education aspects of the program have been in the School of Education reporting directly to the Dean of that School. From 1940 to 1969, during which time the Director of the Audio-Visual Center became additionally the Associate Dean of the Division of University Extension, the professional service aspects of the program have been in the Division of University Extension (earlier called the Extension Division). In 1969 the Center was placed under the Vice-President and Dean for Academic Affairs of Indiana University's state-wide system including the Bloomington campus, the Indianapolis campus, and five regional campuses.

The program in educational media at Indiana University has been organized since 1940 on the assumption that long-term development of a broad program of professional education and research, as well as satisfactory on- and off-campus services in educational media, is best served by an integrated program. As this program is presently conceived, Indiana University's integrated Audio-Visual Center and Division of Instructional Systems Technology undertakes activities and projects which will contribute to one or more of these three basic purposes:

1. to provide opportunities for advanced study, practicum and internship experience, and research in the practical and theoretical aspects of instructional development; for the design, development, production and use of educational media; and for the organization and administration of an instructional development and materials program;

2. to contribute to instructional and research activities of all academic schools and departments of Indiana University by providing faculty members and students with professional assistance in the selection, the development and production, and the use of all types of educational media for instructional purposes;

3. to serve school and community groups to the extent that is necessary to enable the Audio-Visual Center to support a professional staff; to develop a general and specialized library of all types of educational media materials: and to support specialized academic and professional staff, equipment, and facilities for the designing, developing, field testing, packaging, diffusing and distributing of instructional materials and systems needed for discharging the first two purposes.

The integrated Audio-Visual Center/Division of Instructional Systems Technology program is analogous to that of the Medical Center/School of Medicine, in that most faculty members divide their energies among teaching, research and development, and professional practice or service responsibilities. An integration of the various programs in instructional technology makes it possible to support a large enough staff to permit specialists in a number of areas to be responsible for courses, to engage in research and development projects, and to serve the campus, state, and nation in their areas of specialization. The sharing of facilities, laboratories, and equipment for the various programs makes available far more resources for any one program than would be possible if the various programs were administered on an independent basis.

As one of the functions of the third purpose above, Indiana University entered into an agreement with the Educational Television and Radio Center (ETRC) in 1955 in the establishment of the NET film service under the Audio-Visual Center which would serve as the national center for non-television distribution of educational program materials produced by ETRC. The name of ETRC has since been changed to National Educational Television (NET) with headquarters in New York City.

In 1956 the Audio-Visual Center entered into an open-ended agreement with the Agency for International Development (AID) in providing an Audio-Visual Communication Leadership Training Program for persons from developing countries to develop the competencies necessary to work with government agencies in their countries in the production and use of audio-visual communications materials and equipment. Three years later in 1959 ICA contracted with the Audio-Visual Center to assist the Government of Nigeria in developing communications media facilities. This project was terminated in 1966. Also in 1959 under ICA contracts the Audio-Visual Center undertook for a period of three years a comparable program for Government of Sierra Leone and for a period of six months a mobile unit training program in the following French speaking countries: Malagasy Republic, Congo Republic/ Brazzaville, Central Africa Republic, Chad Republic, Gabon Republic, and Mali Republic.

While the integrated program, together with the NET Film Service and the AID Leadership Training Program, made considerable progress during the period 1942-1958, the greatest growth has been made since 1958 with the support provided through federal support beginning with the National Defense Education Act in 1958 and subsequently the Elementary and Secondary Education Act and Higher Education Act in 1965.

During the period of 1958-1968, over 25 projects were supported at Indiana University under Title VII with funding totaling almost $2 million. One of the largest grants was support for a national instruction TV library demonstration project which has now become the National Instructional Television Center associated with Indiana University.

Over one-half million dollars was provided for the direct support of twelve faculty-directed research and development projects and eight small grants for the support of doctoral student research projects. Dr. H. A. Bern was funded in 1959 for a project concerned with improving the quality of teacher performance by use of the video tape recorder, which was one of the pioneering studies in this area. Dr. James Q. Knowlton was funded in 1959 for a study of patterns of influence in a school situation that may affect the use of audio-visual materials which provided the basis for the later development of a doctoral curriculum emphasis area in diffusion, adoption, in-service education, and information transfer.

Drs. Gene Faris and John Moldstad were funded in 1960 to study organizational patterns, practices and facilities used in the preparation of visual materials for instructional purposes. The report of the study was published in 1963 by the U. S. Office of Education under the title of "Improving the Learning Environment" with approximately 15,000 copies being distributed free to all school systems. This publication greatly influenced the acceptance and role of the design and production of materials by individual school production centers, city and county-wide school production centers, and instructional television production centers.

Dr. Harvey B. Black was funded in 1961 for a project concerned with improving the programing of complex pictorial materials, in 1963 for investigating the effects of observation of pictorial stimuli on transfer tasks, and in 1964 for a project concerned with relevant and irrelevant pictorial color cues in discrimination learning. These and other studies by Dr. Black and his associates provided the knowledge base for the development of a doctoral program in instructional technology and the funding in 1967 of an ESEA Title IV three-year doctoral fellowship program for students interested in instructional technology research. The Learning Systems Technology program originally funded under ESEA is described in a brochure "Learning Systems Technology" which has been mailed widely to colleges and universities and other types of agencies with personnel concerned with instructional technology research and development.

Dr. Malcolm L. Fleming was funded in 1961 to study the influence of three machine factors--feedback to programer, participation by learner and feedback to learner--on the production and utilization of science films and again in 1965 for a project dealing with instructional illustrations and a second project concerned with the temporal dimensions of message structure and design. These studies provided the basis for the development of a course R634, Theory and Principle of Message Design, a basic course in the doctoral curriculum task force area of Message Design and Production. It is currently taught by Dr. Fleming each semester.

Dr. Mendel Sherman and Dr. Gene Faris were funded in 1965 for a study to formulate quantitative guidelines for the audio-visual communications field. The study resulted in the publication of a national set of standards, "Quantitative Standards for Audio-Visual Personnel, Equipment and Materials in Elementary, Secondary, and Higher Education" which was distributed widely by the Department of Audiovisual Instruction and the Association of Chief State School Audio-Visual Officers and is recognized as serving as the basis for the current and widely used joint DAVI/AASL Standards for School Media Programs.

The opportunities provided under Title VII for faculty members and students to participate in research and development projects provided the beginning of a knowledge base which has enabled faculty members to take advantage of opportunities under other titles of NDEA as well as of ESEA, the Higher Education Act, and the Educational Professions Development Act. NDEA institutes for media specialists were funded under Title XI for the summers of 1965, 1966, 1967, and 1968 to provide advanced preparation for 30 media specialists each summer in the area of additional skills, information, and insight concerning the selection, utilization, production, and management of newer instructional tools and materials which hold promise of improving instruction. Also, Indiana University qualified, beginning in 1966, for NDEA Title IV fellowships for students interested in academic teaching careers in instructional technology. As has been previously indicated, Indiana University was funded in 1967 under ESEA Title IV for six 3-year doctoral fellowships for students interested in instructional technology research and development. Also under the Higher Education Act Title VI-b, academic institutes to improve undergraduate instruction through the development of instructional systems were held during the academic years of 1967-68, 1968-69, and 1969-70. In these institutes, 7-8 teams of 3-4 faculty members from various disciplines and professional schools worked during the year with doctoral students in instructional development to reach the following objectives:

1. Plan and produce an instructional segment which
   a. is limited to a portion of an undergraduate course, such as a unit of some 9 to 18 student learning hours
   b. utilizes a systematic approach containing provisions for objectives, evaluation, revision, and effective interaction of all elements of the learning environment
   c. specifies the instructional strategies which are most likely to produce desired learner behavior
   d. contains specific designs and pieces of instructional material for making the instruction operational.
2. Use and evaluate the segment with a target population of undergraduate students.
3. Make indicated revisions.
4. Repeat (2) and (3) with actual classes.

Funded in 1969 under the Educational Professions Development Act are the current Pett-Fleming fellowship program in the design, development, and evaluation of

instructional materials for 18 two-year fellowships and the Sherman-Stevens fellowship program for directors of instructional development for institutions of higher learning in disadvantaged areas for ten 2-year doctoral fellowships.

As has been indicated, the growth of the integrated Audio-Visual Center/Instructional Systems Technology program at Indiana University since 1958 has been greatly influenced initially by the large number of research and development projects funded under Title VII of NDEA and later support of institutes and fellowhips under NDEA Titles IV and XI, ESEA Title IV, Title VI-Part B of the Higher Education Act, and the Education Professions Development Act. Moreover, a great deal of support for the Audio-Visual Center income in terms of the rental and sale of all types of educational media materials on a state and national basis has been derived from the federal support of the development of educational media programs in schools, colleges and other agencies through funds available from NDEA Title III, ESEA Titles II and III and Title VI part A of the Higher Education Act. This growth is indicated in the following tables covering faculty development and growth, reorganizing and restructuring the professional education program, the number of courses and sections offered in instructional systems technology, the enrollment of majors in instructional systems technology, specialist and doctoral degrees awarded, and a comparison of 1958-59 and approved 1970-71 School of Education and Audio-Visual Center budgets in the general area of instructional systems technology and educational media.

As indicated in Table I, the professorial-level faculty in instructional systems technology has increased from 8 out of an academic staff of 40 in 1958-59 to a total of 23 out of an academic staff of 51 in 1969-70.

TABLE I
GROWTH OF PROFESSORIAL AVC-IST STAFF
DURING PERIOD OF 1958-59--1969-70

	1958-59			1969-70		
	FT	PT	TOTAL	FT	PT	TOTAL
Professor				7		7
Associate Professor	4		4	10		10
Assistant Professor	3	1	4	6		6
Lecturer	10	1	11	8	4	12
Instructor	10	1	11	1		1
Associate	10		10	9	6	15
Total	37	3	40	41	10	51

The Instructional Systems Technology faculty decided, during the summer of 1966, to undertake a complete re-evaluation of all programs and courses. While considerable progress was made during the 1966-67 academic year, it was realized that it would take at least another year to arrive at a consensus on course programs for the various recommended specializations. Even though substantial progress had been made at the end of two years, it was decided in June, 1968, that

it would probably take another two years of experimentation and development to formulate final recommendations. The reorganizing and restructuring of the professional education program has been reported in some detail in an article by L. C. Larson with the title "Developing a Graduate Program to Train Design and Media Specialists" in the January, 1969, issue of Audiovisual Instruction. During the past three years a number of new courses have been taught on an experimental basis under a temporary R590 number. It is expected that those courses which make a definite contribution to the achievement of competencies needed by students for undergraduate minors, in the masters career areas, in the specialist and doctoral curriculum emphasis areas, and in the competency areas, will be given permanent course numbers subject to approval of the curriculum committees in the Graduate Division of the School of Education and the Graduate School. The titles of courses taught on an experimental basis and the periods taught are given in Table II.

TABLE II

EXPERIMENTAL COURSES OFFERED UNDER R590 - 1967-70

	1967-68			1968-69			1969-70		
	Sem I	Sem II	SS	Sem I	Sem II	SS	Sem I	Sem II	SS
Advanced Experimental Laboratory in Instructional Systems		x							
Applied Systems Methodology		x							
Electronic Instrumentation for Learning Systems Research and Development		x		x	x		x		
Experimental Approach to Design of Individualized Instruction		x		x			x		
Instructional Systems for Educational Program Development in the Newer Nations		x							
Electronics for Instructional Technology			x						
Instructional Design and Evaluation			x		x				
Scriptwriting			x						
Cognitive Processes and Media Variables				x		x			
Instructional Design and Analysis				x					
Internship in Instructional Analysis				x			x		
Systems Analysis				x			x		
Advanced Systems and Computer Applications					x				
Instructional Design for Areas of Rapid Acculturation					x				
Instructional Development in Biology					x			x	
Internship in Instructional Synthesis					x			x	
Media Variables; Their Definition and Measurement					x				
Research and Theory in Diffusion and Adoption					x		x		
Future of Research and Development on Media						x			
Topical Seminar in Diffusion of Instructional Innovations						x			
Research and Theory in Product Evaluation							x		
Task Analysis							x		

TABLE II (Cont.)

	1967-68			1968-69			1969-70		
	Sem I	Sem II	SS	Sem I	Sem II	SS	Sem I	Sem II	SS
Instructional Learner Analysis								x	
Instructional Technology Computer Applications								x	
Perceptual Process in Instructional Research and Development								x	
Practicum in Diffusion and Adoption								x	
Principles of Photographic Communication								x	
Seminar in Product Evaluation								x	
Theoretical Foundations of Mediated Instruction								x	
Suggested for Summer Session 1970									
The Learner, Media and Research									x
Learner Environments Design									x
Topical Seminar in Sociological Aspects of Diffusion and Adoption									x
Advanced Writing for Educational Media									x
Instructional Design and Analysis									x
Cooperative Information Systems									x
Seminar on Instructional Systems Research and Development									x
Message Evaluation									x
Topical Seminar in Instructional Design and Development									x
Administrative Integration of Universities' Instructional and Professional Technology Programs									x
Totals		5	3	6	8	3	7	9	10

A comparison of the number of courses and sections offered during the academic years of 1958-59 and 1968-69 is given in Table III. As is indicated, 15 courses and 24 sections were taught during the academic year 1958-59 as compared with a total of 45 courses and 67 sections during the period of 1968-69.

TABLE III

NUMBER OF COURSES AND SECTIONS OFFERED
DURING ACADEMIC YEAR 1958-1970

Year	Sem. I	Sections	Sem. II	Sections	Total Courses	Total Sections
1958-59	5	10	10	14	15	24
1968-69	20	33	25	34	45	67

As is indicated in Table IV, the enrollment of instructional systems technology majors has more than tripled with a total of 59 in the fall of 1958-59 to a total

of 181 during the fall semester of 1969-70. The increase in 1966-67 was due in part to the approval of an NDEA Title IV fellowship program in instructional technology. The increase between 1967 and 1968 from 102 to 142 reflects the approval of an ESEA Title IV research fellowship program in instructional technology with the U. S. Office of Education circulating widely announcements of the availability of fellowship programs at various institutions. During the winter of 1967-68 an attractive brochure announcing the learning systems technology program in the Division of Instructional Systems Technology, resulted in a substantial increase in the number of applications and the increase, during 1969-70, reflects the funding of 26 Education Professions Development Act fellowships and eight fellowships in Instructional Development under Title VI B of the Higher Education Act previously mentioned.

TABLE IV

ENROLLMENT OF D.I.S.T. MAJORS
AS OF BEGINNING OF FALL SEMESTER 1958-69

Fall -	M.S. & M.A.	Ed.S.	Ed.D. & Ph.D.	Total
1958-59 Majors and Minors	13	7	39	59
1959-60 Majors and Minors	5	9	33	47
1960-61 Majors	26	7	31	64
1961-62 Majors	19	6	31	56
1962-63 Majors	24	3	19	46
1963-64 Majors	36	6	27	69
1964-65 Majors	43	8	26	77
1965-66 Majors	45	6	31	82
1966-67 Majors	53	11	38	102
1967-68 Majors	75	6	61	142
1968-69 Majors	62	19	85	166
1969-70 Majors	58	25	98	181

Information on specialist and doctoral degrees awarded is presented in Table V. Of the 118 doctoral degrees awarded between the years of 1959-69, eight were completed under small-grant support and the faculty report that another 48, in terms of subject, time, and support, were developed either directly or indirectly out of Title VII supported student and faculty projects.

TABLE V

SPECIALIST AND DOCTORAL DEGREES AWARDED, 1959--1970

Year	Ed.S. Awarded	Ed.D. & Ph.D. Awarded
1959	5	7
1960	10	10
1961	9	5
1962	5	12
1963	9	9
1964	6	12
1965	5	11
1966	5	7
1967	11	12
1968	8	15
1969	8	23
1970	Estimated 12	Estimated 22

As is indicated in Table VI, the approved expenditures for the integrated Audio-Visual Center--Instructional Systems Technology Program increased from $1,024,799 in 1958-59 to a total in 1970-71 of $2,572,000 or a 250% increase. During that same period the University appropriation for the Instructional Systems Technology Program in the School of Education increased from $42,420 to $235,000 in 1970-71 or over an 554% increase. Graduate assistant support increased during the period from $62,471 to $105,000. In the approved budgets for 1970-71 the University appropriation is $585,000 and the estimated income is $1,987,000. As has been indicated, much of this income reflects increasing federal support for educational media programs in schools, colleges, universities and other educational agencies. This income supports a large number of graduate assistants, associates, and part-time professional staff. Unfortunately, because of the reduction in federal appropriations for educational media programs, the Audio-Visual Center is running a deficit of approximately $80,000 during the 1969-70 year which will probably be even greater during 1970-71 causing a substantial reduction in funds available for the appointment of graduate assistants and associates and the support of faculty, staff, materials, and equipment. Consequently, the integrated Audio-Visual Center--Instructional Systems Technology Program at Indiana University which has had a remarkable growth over the past twelve years due in part to increasedfederal support for education has probably crested, and program activities will need to be reduced

in proportion to reductions in federal spending for educational media with schools and colleges experiencing increasing difficulties in obtaining adequate support for minimum educational media programs. As this report indicates, the NDEA Title VII Program made a significant contribution in providing an opportunity to begin to build the knowledge base necessary for reorganzing and restructuring the professional education program. The NDEA Title VII initial support, complemented later with support from other Titles from NDEA, ESEA, The Higher Education Act and the Education Professions Development Act, helped to provide the necessary academic and professional staff, support staff, materials and equipment which enabled Indiana University's integrated Audio-Visual Center--Instructional Systems Technology Program to make substantial progress during the period of 1958-70.

TABLE VI

COMPARISON OF 1958-59 AND APPROVED 1970-71
SCHOOL OF EDUCATION AND AUDIO-VISUAL CENTER BUDGETS

	1958-59			1970-71		
	School of Educ.	A-V Center	Total	School of Educ.	A-V Center	Total
Expenditures	$42,420	$982,379	$1,024,799	$235,000	$2,337,000	$2,572,000
Professorial Staff	(42,420)	(230,760)	(273,180)	(200,000)	(410,000)	(610,000)
Graduate Assistants	--	(62,471)	(62,471)	(12,000)	(93,000)	(105,000)
Income	--	806,487	806,487	--	1,987,000	1,987,000
University Appropriation	$42,420	$175,892	$ 218,312	$235,000	$ 350,000	$ 585,000